BFC581908

57/97

# Gloucestershire Minerals Plan
# Dryleaze Farm Somerford Keynes

## Agricultural Land Classification

**September 1997**

Resource Planning Team
Bristol
FRCA Western Region

Job Number 57/97

MAFF Ref EL 14/976

# DRYLEAZE FARM SOMERFORD KEYNES

# AGRICULTURAL LAND CLASSIFICATION SURVEY

## CONTENTS

# DRYLEAZE FARM SOMERFORD KEYNES
# AGRICULTURAL LAND CLASSIFICATION SURVEY

## INTRODUCTION

1 This report presents the findings of a detailed Agricultural Land Classification (ALC) survey of 39 9 ha of land at Dryleaze Farm Somerford Keynes Field survey was based on 42 auger borings and 3 soil profile pits and was completed in September 1997 During the survey 2 samples were analysed for particle size distribution (PSD)

2 The survey was conducted by the Resource Planning Team of FRCA Western Region on behalf of MAFF in its statutory role in the preparation of Gloucestershire Minerals Plan

3 Information on climate geology and soils and from previous ALC surveys was considered and is presented in the relevant section Apart from the published regional ALC map (MAFF 1977) which shows the site at a reconnaissance scale as Grade 3 with a lobe of Grade 2 from the south the site had not been surveyed previously However the current survey uses the Revised Guidelines and Criteria for grading the quality of agricultural land (MAFF 1988) and supersedes any previous ALC survey Grade descriptions are summarised in Appendix I

4 An adjacent area was surveyed at Shorncote in 1995 (ADAS 1995) which showed Subgrade 3a land with a moderate droughtness limitation due to stony subsoils and in places a moderate workability limitation Similar soil types were found in the current survey area

5 At the time of survey land cover was grass in the south east and arable cropping in the other fields

## SUMMARY

6 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 Dryleaze Farm Somerford Keynes**

| Grade | Area (ha) | % Surveyed Area (39 9 ha) |
|---|---|---|
| 2 | 9 7 | 24 |
| 3a | 16 9 | 42 |
| 3b | 5 5 | 14 |
| 4 | 7 8 | 20 |
| Total site area | 39 9 | |

7 Several areas of best and most versatile land have been mapped Grade 2 and Subgrade 3a These soils are stony at depth imposing droughtness limitations and some of the soils have a workability limitation imposed by topsoil texture The other land shown as Subgrade 3b and Grade 4 is further limited by the restricted workability and wetness

## CLIMATE

8 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

9 Since the ALC grade of land is determined by the most limiting factor present overall climate is considered first 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

10 Climatic variables also affect ALC grade through interactions with soil conditions The most important interactive variables are Field Capacity Days (FCD) which are used in assessing soil wetness and potential Moisture Deficits calculated for wheat and potatoes which are compared with the moisture available in each profile in assessing soil droughtiness limitations These are described in later sections A critical FC Day boundary crosses the southern part of the site In the south east the value is 175 increasing to 176 and higher to the north This has the effect of downgrading similar soils across the boundary

**Table 2 Climatic Interpolations Dryleaze Farm Somerford Keynes**

| Grid Reference | | SU 029 978 | SU 031 973 |
|---|---|---|---|
| Altitude (m) | | 95 | 94 |
| Accumulated Temperature (day C) | | 1420 | 1421 |
| Average Annual Rainfall (mm) | | 766 | 762 |
| Overall Climatic Grade | | 1 | 1 |
| Field Capacity Days | | 176 | 175 |
| Moisture deficit (mm) | Wheat | 97 | 97 |
| | Potatoes | 86 | 86 |

## RELIEF

11 Altitude ranges from 102 metres at the NW corner to 94 metres at the SW corner The site is gently undulating

## GEOLOGY AND SOILS

12 The underlying geology of the site is shown on the published geology map (IGS 1974) as alluvium across most of the site with Kimmeridge and Forest and Marble clays on the eastern and western edges There is also an area of First Terrace River Gravel mapped in the south The current survey found soils related to this geology although the gravels extended to the north of the site and further west in the southern field

13 Soils were mapped by the Soil Survey of England and Wales at a reconnaissance scale of 1 250 000 (SSEW 1983) as Evesham Association across the majority of the site with Kelmscot Association running along the stream in the east Elmton 2 Association in the north west and south and a small area of Badsey 2 in the south east

14 Evesham 1 Association is described as slowly permeable calcareous clayey soils associated with well drained brashy calcareous soils over limestone Elmton 2 Association is described as shallow well drained brashy calcareous fine loamy soils over limestone with some deeper loamy soils over clay Kelmscot and Badsey 2 are both loamy soils over gravel variably affected by groundwater

15 The loamy soils over gravel were found to be more widespread than the published soils map indicated being found in the southern and northern areas The poorly drained clays were restricted to the central area and in the east where they were found over stony soils
A small area of soils similar to Elmton soils were found in the north west

## AGRICULTURAL LAND CLASSIFICATION

16 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

### Grade 2

17 An area of Grade 2 very good quality land has been mapped in the south These soils generally have medium silty clay loam topsoils and are free draining being assessed as Wetness Class I (see Appendix II) The soil profile becomes increasingly stony with depth At Pit 2 the stone content was measured as 48% in the subsoil but with only 5% in the topsoil The subsoil was light textured coarse sandy loam These soils experience minor limitations due to restricted workability and droughtiness

### Subgrade 3a

18 Two areas of Subgrade 3a good quality land have been mapped These soils are also stony particularly in the far north having a lighter textured lower subsoil and a higher stone content 73% stone content was measured sieving and displacement in water at Pit 3 The topsoil texture is a heavy clay loam which imposes a moderate workability limitation on such

Wetness Class I soils over most of the site with over 175 FC Days The small area of Subgrade 3a in the south east is limited mainly by droughtiness

**Subgrade 3b**

19 Two small areas of Subgrade 3b moderate quality land have been mapped In the west clay topsoils over well drained Wetness Class I profiles impose a moderate workability limitation In the east the profiles are poorly drained Wetness Class III and IV with the 175 FC Days boundary passing through the block These soils have a moderate wetness limitation with heavy clay loam topsoil Both areas have stony lower subsoils but droughtiness is not the main limitation

**Grade 4**

20 Two areas of Grade 4 poor quality land are mapped In the north west a small area of poorly drained clay is found with evidence of limestone beneath The eastern area is also poorly drained Wetness Class IV but over light textured stony material Droughtiness is not a significant limitation in either case Pit 1 was dug in the eastern area to confirm the presence of a slowly permeable subsoil

G M SHAW
Resource Planning Team
FRCA Bristol
September 1997

## REFERENCES

ADAS RESOURCE PLANNING TEAM (1995) Agricultural Land Classification Survey of Shorncote Quarry Scale 1 10 000 Reference 64/95 FRCA Bristol

INSTITUTE OF GEOLOGICAL SCIENCES (1974) Sheet 252 Swindon 63 360 series Solid and Drift edition IGS London

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

MAFF (1977) 1 250 000 series Agricultural Land Classification South West Region MAFF Publications Alnwick

MAFF (1988) Agricultural Land Classification of England and Wales Revised Guidelines and Criteria for grading the quality of agricultural land MAFF Publications Alnwick

METEOROLOGICAL OFFICE (1989) Climatological Data for Agricultural Land Classification Meteorological Office Bracknell

SOIL SURVEY OF ENGLAND AND WALES (1983) Sheet 5 Soils of South West England 1 250 000 scale SSEW Harpenden

SOIL SURVEY OF ENGLAND AND WALES (1984) Soils and Their Use in South West England Bulletin No 14 SSEW Harpenden

## 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 which 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 which 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 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 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 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 which 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

| SITE NAME | PROFILE NO | SLOPE AND ASPECT | LAND USE | | | PARENT MATERIAL |
|---|---|---|---|---|---|---|
| Dryleaze Farm<br>Somerford Keynes | Pit 1 (ASP24) | Flat | Ploughed | Av Rainfall<br>ATO<br>FC Days<br>Climatic Grade<br>Exposure Grade | 766 mm<br>1420 day C<br>176<br>1<br>1 | Alluvium |
| JOB NO<br>57/97 | DATE<br>16/9/97 | SU 030978 | DESCRIBED BY<br>HLJ/PRW | | | PSD SAMPLES TAKEN |

| Horizon No | Lowest Av Depth (cm) | Texture | | 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 | 18 | HCL | 10YR42 | 1% HR ( s) | None | None | WCSAB breaking to MMSAB | Friable | Moderate | Good | CF + VF | | Clear Wavy |
| 2 | 44 | C | 2 5YR54 (2 5 Y53) | 0% ( ) | CDFO (10YR58) FDFG (10Y61) | None | MCAB *[1] | Firm | Poor | Poor | FF + VF | | Abrupt Smooth |
| 3 | 57 | C | 2 5Y51 10Y51 | 0% ( ) | CDFO (1 0YR58) | None | MCAB *[1] | Firm | Poor | Poor | FF + VF | | Abrupt Smooth |
| 4 | 115+ | LMS | 10YR68 81 83 | 5% h 2 m ( )<br>58% HR<2 m ( +d)<br>63% HR Total | None | None | Single Grain | Loose | Moderate | Good | FF + VF*[2] | | |

Profile Gleyed From 18 cm

Slowly Permeable Horizon From 18 cm

Wetness Class IV

Wetness Grade 4

| | | |
|---|---|---|
| Available Water | Wheat | 93 mm |
| | Potatoes | 89 mm |
| Moisture Deficit | Wheat | 97 mm |
| | Potatoes | 86 mm |
| Moisture Balance | Wheat | 4 mm |
| | Potatoes | +3 mm |
| Droughtiness Grade | 3a | (Calculated to 120 cm) |

Final ALC Grade 4

Main Limiting Factor(s) Wetness

Remarks *[1] Some prismatic
*2 Seen to 80 cm

| SITE NAME | PROFILE NO | SLOPE AND ASPECT | LAND USE | | | PARENT MATERIAL |
|---|---|---|---|---|---|---|
| Dryleaze Farm<br>Somerford Keynes | Pit 2 (ASP30 40) | Flat | Cultivated | Av Rainfall<br>ATO<br>FC Days<br>Climatic Grade<br>Exposure Grade | 766 mm<br>1420 day C<br>176<br>1<br>1 | River Gravel |
| JOB NO<br>57/97 | DATE<br>16/9/97 | SU 02809755 | DESCRIBED BY<br>PRW/HLJ | | | PSD SAMPLES TAKEN<br>Topsoil MZCL S 18% Z 58% C 24%<br>Subsoil LCS S 82% Z 11% C 7% |

| Horizon No | Lowest Av Depth (cm) | Texture | | 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 | MZCL | 10YR44 | 5% HR (VIS) | None | None | MDCSAB | Friable | Moderate | Good | CF + VF | | Abrupt Smooth |
| 2 | 120 | LCS | 10YR46 | 1% > 2 m (s)<br>46% 2 m ( + d)<br>47% HR T t l | None | None | Single Grain | Loose | Moderate | Good | FF + VF | | Abrupt Smooth |

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

| | | |
|---|---|---|
| Available Water | Wheat | 114 mm |
| | Potatoes | 89 mm |
| Moisture Deficit | Wheat | 97 mm |
| | Potatoes | 86 mm |
| Moisture Balance | Wheat | 17 mm |
| | Potatoes | 3 mm |
| Droughtiness Grade | 2 | (Calculated to 120 cm) |

| | |
|---|---|
| Final ALC Grade | 2 |
| Main Limiting Factor(s) | Droughtiness and Workability |

Remarks

* average of 45% taken

? Restricted root depth because of compaction but this could be relieved by subsoiling

| SITE NAME | PROFILE NO | SLOPE AND ASPECT | LAND USE | | | PARENT MATERIAL |
|---|---|---|---|---|---|---|
| Dryleaze Farm<br>Somerford Keynes | Pit 3 (ASP4) | Flat | Fodder crops | Av Rainfall<br>ATO | 766 mm<br>1420 day C | Alluvium/Forest Marble Clay |
| JOB NO<br>57/97 | DATE<br>16/9/97 | SU 0310 9830 | DESCRIBED BY<br>HLJ/PRW | FC Days<br>Climatic Grade<br>Exposure Grade | 176<br>1<br>1 | PSD SAMPLES TAKEN |

| Horizon No | Lowest Av Depth (cm) | Texture | | 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 | 24 | HCL | 10YR43 | 1% > 2 m ( )<br>9% 2 m ( + d)<br>10% HR T t l | None | None | MDCSAB | Friable | Moderate | Good | MF + VF | | Abrupt Smooth |
| 2 | 42 | C | 10YR46 | 15% HR T t l ( )* | None | None | MDMSAB | Friable | Good | Good | CF + VF | | Abrupt Smooth |
| 3 | 100+ | LCS | 25Y64 | 3% > 2 m (s)<br>70% 2 m ( + d)<br>73% GH T t l | None | None | Single Grain | Loose | Moderate | Good | FF + VF | | |

| | | |
|---|---|---|
| Profile Gleyed From | Not gleyed | |
| Slowly Permeable Horizon From | No spl | |
| Wetness Class | I | |
| Wetness Grade | 3a | |

| | | |
|---|---|---|
| Available Water | Wheat | 79 mm |
| | Potatoes | 77 mm |
| Moisture Deficit | Wheat | 97 mm |
| | Potatoes | 86 mm |
| Moisture Balance | Wheat | 18 mm |
| | Potatoes | 9 mm |
| Droughtiness Grade | 3a | (Calculated to 120 cm) |

| | |
|---|---|
| Final ALC Grade | 3a |
| Main Limiting Factor(s) | Droughtiness and Workability |

Remarks
* about x 2 the topsial
* common in upper 20 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 |

**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