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MODBURY SOUTH  
AGRICULTURAL LAND CLASSIFICATION SURVEY

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## MODBURY SOUTH

### AGRICULTURAL LAND CLASSIFICATION SURVEY

#### INTRODUCTION

1. This report presents the findings of a semi-detailed Agricultural Land Classification (ALC) survey of 211.4 ha of land south of Modbury, Devon. Field survey was based on 98 auger borings and 2 soil profile pits, and was completed in October, 1998. 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 the South Hams Local 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 mainly Grade 3 with Grade 4 along the river valleys, 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. A recent ALC survey of land to the north of the current site (FRCA 1998) found mainly Subgrade 3b limited by workability and wetness with Grade 4 limited mainly by wetness but also with Subgrade 3a on specific geological deposits where medium clay loam topsoil was found and where gradient was not limiting. One small area of Subgrade 3a was also identified near Fancy Cross where heavy clay loam topsoils were found at Wetness Class I but below the 225 FC Day boundary.
5. At the time of survey land cover was mainly grass for beef and sheep with smaller areas of mainly winter cereals. Other land which was not surveyed included a large part of the village of Modbury, other residential land, small areas of woodland, roads and farm buildings.

#### SUMMARY

6. The distribution of ALC grades is shown on the accompanying 1: 15 000 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: Modbury South**

| <b>Grade</b>    | <b>Area (ha)</b> | <b>% Surveyed Area (188.0 ha)</b> |
|-----------------|------------------|-----------------------------------|
| 3a              | 2.0              | 1                                 |
| 3b              | 115.5            | 61                                |
| 4               | 65.4             | 35                                |
| 5               | 5.1              | 3                                 |
| Other land      | 23.4             |                                   |
| Total site area | 211.4            |                                   |

7. This shows that only 1% of the area was found to be best and most versatile. This was a small area of Subgrade 3a limited only by restricted workability. The rest of the land was found to be Subgrade 3b limited mainly by restricted workability, wetness and gradient and also Grade 4 limited mainly by wetness and gradient.

## **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 an overall climatic limitation which limits the higher land to Grade 2.

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 boundary of 225 FC Days was found to run at around the 50 m contour.

**Table 2: Climatic Interpolations: Modbury South**

| Grid Reference                   | SX 645 514 | SX 665 513 |
|----------------------------------|------------|------------|
| Altitude (m)                     | 45         | 80         |
| Accumulated Temperature (day °C) | 1573       | 1533       |
| Average Annual Rainfall (mm)     | 1089       | 1182       |
| Overall Climatic Grade           | 1          | 2          |
| Field Capacity Days              | 220        | 235        |
| Moisture deficit (mm): Wheat     | 96         | 87         |
| Potatoes                         | 88         | 76         |

11. The highest land to the east of the village was considered to be limited by exposure, but to no more than Grade 2 or possibly Subgrade 3a, which in either case would not be the primary limitation.

### **RELIEF**

12. Altitude ranges from 5 metres at Goutsford Bridge on the Sheepharn Brook to 90 metres east of the village with the majority of the area having gentle and moderate slopes which are not limiting. However, the area is markedly undulating with a main river valley running from east to west through the site with moderately steep and steep valley sides where the grade of the land is limited to Grade 4 or even to Grade 5.

### **GEOLOGY AND SOILS**

13. The underlying geology of the site is shown on the published geology map (IGS, 1974) as mainly Lower Devonian slates and grits of the Meadfoot Group with deposits of alluvium and river gravel in the main valleys. This rather simplified distribution was largely borne out by the current survey which found the slates to be generally freely drained or imperfectly drained at worst with the alluvial and river gravel deposits showing more variable wetness characteristics, frequently imperfectly to poorly drained.

14. Soils were mapped by the Soil Survey of England and Wales at a reconnaissance scale of 1: 250 000 (SSEW 1983) as Denbigh 1 Association in the west of the site with Denbigh 2 Association in the east. Denbigh 1 Association is described as well drained fine loamy and fine silty soils over rock with some similar soils having slowly permeable subsoils and slight seasonal waterlogging, whereas Denbigh 2 Association is described as comprising well drained fine loamy soils over slate or slate rubble. The current survey found this to be a considerable simplification reflecting the scale of mapping of the published information whereas in fact a range of soil types and wetness characteristics were found throughout the survey area. Soils characteristic of the Trusham Association were found in a small area underlain by igneous schalsteins and tuffs as described at Pit 1.

## **AGRICULTURAL LAND CLASSIFICATION**

15. The distribution of ALC grades found by the current survey is shown on the accompanying 1: 15 000 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**

16. The small area of Subgrade 3a as shown on the final ALC map was found to be limited only by restricted workability with heavy clay loam topsoil at Wetness Class I and lying below the 225 FC day boundary.

17. Several other scattered and isolated borings of Subgrade 3a were found but as they do not form a contiguous mapping unit have been included mainly within the area shown as Subgrade 3b but also in the case of ASP 30 and 32 within a Grade 4 mapping unit, depicting the variable soils found on alluvial deposits of the valley floor.

### **Subgrade 3b**

18. The area shown as Subgrade 3b was found to have mainly heavy clay loam topsoil at Wetness Class I or II, limited by restricted workability or wetness. Other similar borings were also found to be limited by gradient, in which case gradient has been recorded as the primary limitation.

### **Grade 4**

19. Much of the area shown as Grade 4 was found to be limited by gradient with slopes of 12 to 18° on the steeper slopes, mainly on valley sides.

20. Other areas shown as Grade 4 were found to be limited by wetness with mainly heavy clay loam topsoil at Wetness Class III, normally with a slowly permeable layer in the lower subsoil or at Wetness Class IV with a slowly permeable layer in the middle subsoil and with gleying evident within 40 cm. There are also several scattered and isolated borings of Grade 4 limited by wetness with similar characteristics, but which do not form a contiguous mapping unit and have been included within the area shown as Subgrade 3b. Such localised wet spots can be seen clearly in recently ploughed land where small areas of grey and yellow clay have been brought to the surface can be seen contrasting with the reddish brown colours of the better drained soils.

### **Grade 5**

21. The several small areas shown as Grade 5 were found to be limited by gradient with steepest slopes generally just over 20°.

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23 November 1998

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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 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, Silsoe.

## 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

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

**GRDNT:** Gradient as estimated or measured by hand-held optical clinometer.

**GLEYS, 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.

|              |                        |               |             |               |                   |
|--------------|------------------------|---------------|-------------|---------------|-------------------|
| <b>MREL:</b> | Microrelief limitation | <b>FLOOD:</b> | Flood risk  | <b>EROSN:</b> | Soil erosion risk |
| <b>EXP:</b>  | Exposure limitation    | <b>FROST:</b> | Frost prone | <b>DIST:</b>  | Disturbed land    |
| <b>CHEM:</b> | Chemical limitation    |               |             |               |                   |

**LIMIT:** The main limitation to land quality: The following abbreviations are used.

|            |                 |            |          |            |             |
|------------|-----------------|------------|----------|------------|-------------|
| <b>OC:</b> | Overall Climate | <b>AE:</b> | Aspect   | <b>EX:</b> | Exposure    |
| <b>FR:</b> | Frost Risk      | <b>GR:</b> | Gradient | <b>MR:</b> | Microrelief |

|                              |                            |   |
|------------------------------|----------------------------|---|
| <b>FL:</b> Flood Risk        | <b>TX:</b> Topsoil Texture | <b>DP:</b> Soil Depth                   |
| <b>CH:</b> Chemical          | <b>WE:</b> Wetness         | <b>WK:</b> Workability                  |
| <b>DR:</b> Drought           | <b>ER:</b> Erosion Risk    | <b>WD:</b> Soil<br>Wetness/Droughtiness |
| <b>ST:</b> Topsoil Stoniness |                            |   |

**TEXTURE:** Soil texture classes are denoted by the following abbreviations:-

|                             |                             |                               |
|-----------------------------|-----------------------------|-------------------------------|
| <b>S:</b> Sand              | <b>LS:</b> Loamy Sand       | <b>SL:</b> Sandy Loam         |
| <b>SZL:</b> Sandy Silt Loam | <b>CL:</b> Clay Loam        | <b>ZCL:</b> Silty Clay Loam   |
| <b>ZL:</b> Silt Loam        | <b>SCL:</b> Sandy Clay Loam | <b>C:</b> Clay                |
| <b>SC:</b> Sandy clay       | <b>ZC:</b> Silty clay       | <b>OL:</b> Organic Loam       |
| <b>P:</b> Peat              | <b>SP:</b> Sandy Peat       | <b>LP:</b> Loamy Peat         |
| <b>PL:</b> Peaty Loam       | <b>PS:</b> Peaty Sand       | <b>MZ:</b> 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:-

|  |
|--|
| <b>F:</b> Fine (more than 66% of the sand less than 0.2mm)               |
| <b>M:</b> Medium (less than 66% fine sand and less than 33% coarse sand) |
| <b>C:</b> 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

|   |
|---|
| <b>F:</b> faint - indistinct mottles, evident only on close inspection                            |
| <b>D:</b> distinct - mottles are readily seen   |
| <b>P:</b> 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.

|                                      |  |
|--------------------------------------|--|
| <b>HR:</b> All hard rocks and stones | <b>SLST:</b> Soft oolitic or dolimitic limestone |
|--------------------------------------|--|

|              |  |              |                                      |
|--------------|--|--------------|--------------------------------------|
| <b>CH:</b>   | Chalk                                      | <b>FSST:</b> | Soft, fine grained sandstone         |
| <b>ZR:</b>   | Soft, argillaceous, or silty rocks         | <b>GH:</b>   | Gravel with non-porous (hard) stones |
| <b>MSST:</b> | Soft, medium grained sandstone             | <b>GS:</b>   | Gravel with porous (soft) stones     |
| <b>SI:</b>   | 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

|                                     |                                      |                               |
|-------------------------------------|--------------------------------------|-------------------------------|
| <b><u>Degree of development</u></b> | <b>WA:</b> Weakly developed Adherent | <b>WK:</b> Weakly developed   |
|                                     | <b>MD:</b> Moderately developed      | <b>ST:</b> Strongly developed |
| <b><u>Ped size</u></b>              | <b>F:</b> Fine                       | <b>M:</b> Medium              |
|                                     | <b>C:</b> Coarse                     | <b>VC:</b> Very coarse        |
| <b><u>Ped Shape</u></b>             | <b>S:</b> Single grain               | <b>M:</b> Massive             |
|                                     | <b>GR:</b> Granular                  | <b>AB:</b> Angular blocky     |
|                                     | <b>SAB:</b> Sub-angular blocky       | <b>PR:</b> Prismatic          |
|                                     | <b>PL:</b> Platy                     |                               |

**CONSIST:** Soil consistence is described using the following notation:

|                      |                           |                           |                 |
|----------------------|---------------------------|---------------------------|-----------------|
| <b>L:</b> Loose      | <b>VF:</b> Very Friable   | <b>FR:</b> Friable        | <b>FM:</b> Firm |
| <b>VM:</b> Very firm | <b>EM:</b> Extremely firm | <b>EH:</b> 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:

|                    |                 |                        |
|--------------------|-----------------|------------------------|
| <b>VIS:</b> Visual | <b>S:</b> Sieve | <b>D:</b> Displacement |
|--------------------|-----------------|------------------------|

**MOTTLE SIZE:**

|                                |                         |
|--------------------------------|-------------------------|
| <b>EF:</b> Extremely fine <1mm | <b>M:</b> Medium 5-15mm |
| <b>VF:</b> Very fine 1-2mm>    | <b>C:</b> Coarse >15mm  |
| <b>F:</b> 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

|                        |                      |        |
|------------------------|----------------------|--------|
| <b>N:</b> None         | <b>M:</b> Many       | 20-40% |
| <b>F:</b> Few <2%      | <b>VM:</b> Very Many | >40%   |
| <b>C:</b> 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 <sup>2</sup> : |          | Very Fine and Fine | Medium and Coarse |
|--|----------|--------------------|-------------------|
| <b>F:</b>                                    | Few      | 1-10               | 1 or 2            |
| <b>C:</b>                                    | Common   | 10.25              | 2 - 5             |
| <b>M:</b>                                    | Many     | 25-200             | >5                |
| <b>A:</b>                                    | Abundant | >200               |                   |

**ROOT SIZE**

|                           |                  |         |
|---------------------------|------------------|---------|
| <b>VF:</b> Very fine <1mm | <b>M:</b> Medium | 2 - 5mm |
| <b>F:</b> Fine 1-2mm      | <b>C:</b> Coarse | >5mm    |

**HORIZON BOUNDARY DISTINCTNESS:**

|                            |                          |
|----------------------------|--------------------------|
| <b>Sharp:</b> <0.5cm       | <b>Gradual:</b> 6 - 13cm |
| <b>Abrupt:</b> 0.5 - 2.5cm | <b>Diffuse:</b> >13cm    |
| <b>Clear:</b> 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     |  | Av Rainfall: 1180 mm |  | PARENT MATERIAL                 |  |  |  |
| Modbury South |  | Pit 1 (ASP 94) | 4° S             |  | Ley          |  | ATO: 1535 day °C     |  | Igneous tuffs                   |  |  |  |
| JOB NO.       |  | DATE           | GRID REFERENCE   |  | DESCRIBED BY |  | FC Days: 235         |  | PSD SAMPLES TAKEN               |  |  |  |
| 93.98         |  | 28.10.98       | SX 6640 5142     |  | PB           |  | Climatic Grade: 2    |  | TS 0-25 cm: HCL (S38:Z34: C28%) |  |  |  |
|               |  |                |                  |  |              |  | Exposure Grade: 1    |  |                                 |  |  |  |

| 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                    | HCL     | 7.5YR44                   | 10%HR (vis)                             | 0   | 0            | -   | -           | -                    | -                | CF, VF                    | -                         | Clear Smooth                            |
| 2           | 50                    | HCL     | 7.5YR46                   | 60%HR (vis)                             | 0   | 0            | MDFSAB                                    | FR          | G                    | G                | CF, VF                    | -                         | Grad Smooth                             |
| 3           | 90+*                  | HCL     | 7.5YR46                   | 90%ZR/HR (vis) *                        | 0   | 0            | Too stony                                 | -           | (M)                  | G                | FVF                       | -                         |   |

|                                  |                       |                        |  |
|----------------------------------|-----------------------|------------------------|--|
| Profile Gleyed From: -           | Available Water       | Wheat: 108 mm          | Final ALC Grade: 3b                          |
| Slowly Permeable Horizon From: - |                       | Potatoes: 89 mm        | Main Limiting Factor(s): Wk                  |
| Wetness Class: I                 | Moisture Deficit      | Wheat: 95 mm           |  |
| Wetness Grade: 3b                |                       | Potatoes: 86 mm        |  |
|                                  | Moisture Balance      | Wheat: +13 mm          | Remarks: * Pit dug to 70 cm, probed to 90 cm |
|                                  |                       | Potatoes: +3 mm        | * H3 99% stone entered for Ap calculation.   |
|                                  | Droughtiness Grade: 2 | (Calculated to 120 cm) |  |

|                            |  |                               |                                |                    |  |  |  |  |  |  |  |  |
|----------------------------|--|-------------------------------|--------------------------------|--------------------|--|--|--|--|--|--|--|--|
| SITE NAME<br>Modbury South |  | PROFILE NO.<br>Pit 2 (ASP 66) | SLOPE AND ASPECT<br>2° SE      | LAND USE<br>PGR    |  | Av Rainfall: 1180 mm<br>ATO: 1535 day °C               |  | PARENT MATERIAL<br>Meadfoot Group : slates & grit    |  |  |  |  |
| JOB NO.<br>93.98           |  | DATE<br>28.10.98              | GRID REFERENCE<br>SX 6614 5138 | DESCRIBED BY<br>PB |  | FC Days: 235<br>Climatic Grade: 2<br>Exposure Grade: 1 |  | PSD SAMPLES TAKEN<br>TS 0-25 cm: HCL (S37: Z33:C30%) |  |  |  |  |

| 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           | 26                    | HCL     | 10YR44                    | 10%HR (vis)                             | 0   | 0            | -   | -           | -                    | -                | MF, VF                    | -                         | Grad Smooth                             |
| 2           | 56                    | HCL     | 10YR46                    | 20%HR (vis)                             | 0   | 0            | MDM,FSAB                                  | FR          | G                    | G                | CVF                       | -                         | Clear Smooth                            |
| 3           | 72                    | ZC      | 10YR64                    | 10%ZR (vis)                             | CDFO,G<br>10YR56                              | F            | WKCSAB                                    | FM          | P                    | G                | FVF                       | -                         | Clear Smooth                            |
| 4           | 90+                   | ZC      | 2.5Y73                    | 20%ZR (vis)                             | MDCO,G<br>10YR58                              | C            | M   | VM          | P                    | P                | FVF                       | -                         |   |

Profile Gleyed From: 56 cm  
Slowly Permeable Horizon From: 70 cm  
Wetness Class: III  
Wetness Grade: 4

Available Water Wheat: 132 mm  
Potatoes: 109 mm  
Moisture Deficit Wheat: 95 mm  
Potatoes: 86 mm  
Moisture Balance Wheat: +37 mm  
Potatoes: +23 mm  
Droughtiness Grade: 2 (Calculated to 120 cm)

Final ALC Grade: 4  
Main Limiting Factor(s): We

Remarks: