

**A1**  
**M40 Motorway Service Areas**  
**Site 1, Booker, Bucks**  
**Agricultural Land Classification**  
**ALC Map and Report**  
**October 1994**

# AGRICULTURAL LAND CLASSIFICATION REPORT

## M40 MOTORWAY SERVICE AREAS, WYCOMBE DISTRICT COUNCIL, BOOKER, BUCKS AGRICULTURAL LAND CLASSIFICATION

### Summary

- 1.1 ADAS was commissioned by MAFF's Land Use Planning Unit to provide information on land quality on land near Booker. This work was in connection with proposed M40 motorway service areas.
- 1.2 Approximately 21.3 hectares of land relating to this area was surveyed in September 1994. The survey was undertaken at a detailed level of approximately one boring per hectare. A total of 22 borings, 2 soil inspection pits and soil riddling at 9 locations were undertaken 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.
- 1.3 The work was carried out by members of the Resource Planning Team in the Huntingdon Statutory Group of ADAS.
- 1.4 At the time of survey, the agricultural land use was bare soil.
- 1.5 The distribution of the grades and subgrades is shown on the attached ALC map and the areas are given in the table below. The map has been drawn at a scale of 1:10,000. It is accurate at this scale but any enlargement would be misleading. This map supersedes any previous survey information for this site.

**Table 1 : Distribution of Grades and Subgrades**

| <b>Grade</b> | <b>Area (ha)</b> | <b>% of Site</b> | <b>% of Agricultural Area</b> |
|--------------|------------------|------------------|-------------------------------|
| 3a           | 8.3              | 39               | 39                            |
| 3b           | 13.0             | 61               | 61                            |
| <b>Total</b> | <b>21.3 ha</b>   | <b>100%</b>      | <b>100% (21.3 ha)</b>         |

- 1.6 A general description of the grades, subgrades and land use categories is provided in Appendix 1. 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.
- 1.7 The land quality on the site has been classified as 3a (good quality land) as a result of topsoil stoniness limitations and 3b (moderate quality land) principally as a result of topsoil stoniness limitations, with a small area where wetness and workability limitations are significant. Subgrade 3b is the predominant ALC grade on site.
- 2.0 **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, as a measure of the relative warmth of a locality. The combination of rainfall and temperature at this site mean an overall climatic grade of 1.

**Table 2 : Climatic Interpolations**

|   |           |           |
|---|-----------|-----------|
| Grid Reference                                | SU 826915 | SU 825918 |
| Altitude (m, AOD)                             | 150       | 160       |
| Accumulated Temperature<br>(° days, Jan-June) | 1341      | 1330      |
| Average Annual Rainfall (mm)                  | 761       | 768       |
| Field Capacity Days                           | 163       | 164       |
| Moisture Deficit, wheat (mm)                  | 92        | 90        |
| Moisture Deficit, potatoes (mm)               | 80        | 78        |
| Overall Climatic Grade                        | 1         | 1         |

- 3.0 **Relief**
- 3.1 The site is bisected in a northwest - southeast direction by the M40 motorway and has gently undulating topography at an average altitude range of 145 m to 160 m. Neither gradient nor relief impose a limitation on ALC grade.
- 4.0 **Geology and Soils**
- 4.1 The published geology map for the site area, (BGS Sheet 225 1948, Drift, Beaconsfield, 1:63,360) shows the site to be underlain by Cretaceous Upper Chalk.

- 4.2 The published reconnaissance scale soil map for the area (SSEW 1983, Sheet 6, 1:250,000) shows the site to comprise the Marlow Association (\*1) with a small area to the north east comprising the Andover 1 Association (\*2).

#### 5.0 Agricultural land Classification

- 5.1 The ALC classification of the site is shown on the attached ALC map.
- 5.2 The location of the soil observation points is shown on the attached sample point map.

#### Subgrade 3a

- 5.3 Subgrade 3a land has been mapped to the west and south of the site. Soils typically comprise slightly stony sandy clay loam or medium clay loam topsoils directly over moderately-very stony red clays. Wetness class has been assessed as II, with mottling evident in the subsoils. This area is limited to subgrade 3a due to the presence of common stones greater than 2 cms in size in the topsoil. Topsoil stone content ranges from 10 to 14% and imposes a moderate limitation on the flexibility of the land for agricultural use. The stones act as an impediment to seedling germination and cause wear and tear on farm machinery. Consequently land has been restricted to subgrade 3a (good quality agricultural land).

#### Subgrade 3b

- 5.4 Subgrade 3b land covers the majority of the site through its centre and to the northeast. Soil profiles are identical to those described in paragraph 5.3 with the exception that topsoils are more stony and typically comprise 16-17% stones which are greater than 2 cms in size. The area is limited to subgrade 3b due to the presence of many stones in the topsoil. The abundance of stones will cause additional implement wear and tear and affect the successful germination of seeds and effective nutrient supply to crops. Thus significant topsoil stoniness precludes the land from a higher grade.

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(\*1) Marlow Association: Well drained fine loamy over clayey soils, with flinty loamy over reddish and red mottled clayey soils developed in plateau and river terrace drift over chalk.

(\*2) Andover 1 Association: Shallow well drained calcareous silty soils over chalk on slopes and crests. Deep calcareous and non-calcareous fine silty soils in valley bottoms.

5.5 In a small area of land to the south gleyed clayey soils with a wetness class of IV have been graded 3b. Significant wetness and workability limitations exclude the land from a higher grade. This area is currently lying fallow and is a separate and distinct unit, and is possibly the site of a former pond or chalk pit which has been infilled.

ADAS Reference: 0305/205/94  
MAFF Reference : EL03/924

Resource Planning Team  
Huntingdon Statutory Group  
ADAS Cambridge

## REFERENCES

BRITISH GEOLOGICAL SURVEY, 1948, Drift Edition, 1:63,360 scale,  
Beaconsfield, Sheet 255.

MAFF, 1971 Agricultural Land Classification Sheet 159, Provisional 1:63,360 scale.

METEOROLOGICAL OFFICE, 1989. Data extracted from the published  
agroclimatic dataset.

SOIL SURVEY OF ENGLAND AND WALES, 1983, Sheet 6, 1:250,000 scale.

## Appendix 1

### **DESCRIPTION OF THE GRADES AND SUBGRADES**

The ALC grades and subgrades are described below in terms of the types of limitation which can occur, typical cropping range and the expected level of consistency of yield. *In practice, the grades are defined by reference to physical characteristics and the grading guidance and cut-offs for limitation factors in Section 3 enable land to be ranked in accordance with these general descriptions.* The most productive and flexible land falls in Grades 1 and 2 and Subgrade 3a and collectively comprises about one-third of the agricultural land in England and Wales. About half the land is of moderate quality in Subgrade 3b or poor quality in Grade 4. Although less significant on a national scale such land can be locally valuable to agriculture and the rural economy where farmland predominates. The remainder is very poor quality land in Grade 5, which most occurs in the uplands.

#### **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 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 levels of yields. It is mainly suited to grass with occasional arable crops (e.g. cereals and forage crops) the yield 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.

### **Descriptions of other land categories used on ALC maps**

#### **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/airfields. 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 (e.g. polythene tunnels erected for lambing) may be ignored.

### **Open water**

Includes lakes, ponds and rivers as map scale permits.

### **Land not surveyed**

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

## Appendix 2

### FIELD ASSESSMENT OF SOIL WETNESS CLASS

#### Definition of Soil Wetness Classes

| Wetness Class | Duration of Waterlogging <sup>1</sup>   |
|---------------|---|
| I             | The soil profile is not wet within 70 cm depth for more than 30 days in most years <sup>2</sup> .   |
| II            | The soil profile is wet within 70 cm depth for 31-90 days in most years <u>or</u> , 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.         |
| III           | The soil profile is wet within 70 cm depth for 91-180 days in most years <u>or</u> , 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. |
| 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 <u>or</u> , 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.     |
| 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.  |

<sup>1</sup> The number of days specified is not necessarily a continuous period.

<sup>2</sup> 'In most years' is defined as more than 10 out of 20 years.

Appendix 3

**SOIL BORING AND SOIL PIT DESCRIPTIONS**

Contents:

- \* Soil boring descriptions
- \* Soil pit descriptions
- \* Soil Abbreviations : Explanatory Note

| SAMPLE | DEPTH  | TEXTURE | COLOUR    | ----MOTTLES----- |      |      | PED         |       | ----STONES---- |    |      | STRUCT/<br>CONSIST | SUBS |     |     |     |     |      |
|--------|--------|---------|-----------|------------------|------|------|-------------|-------|----------------|----|------|--------------------|------|-----|-----|-----|-----|------|
|        |        |         |           | COL              | ABUN | CONT | COL.        | GLEYS | >2             | >6 | LITH |                    | TOT  | STR | POR | IMP | SPL | CALC |
| 1      | 0-30   | sc1     | 10YR43 00 |                  |      |      |             |       | 12             | 4  | HR   | 12                 |      |     |     |     |     |      |
| 2      | 0-35   | mc1     | 10YR43 00 |                  |      |      |             |       | 14             | 4  | HR   | 14                 |      |     |     |     |     |      |
| 3      | 0-30   | mc1     | 10YR43 00 |                  |      |      |             |       | 11             | 3  | HR   | 11                 |      |     |     |     |     |      |
|        | 30-40  | c       | 75YR44 00 |                  |      |      |             |       | 0              | 0  | HR   | 15                 |      |     |     |     |     |      |
| 4      | 0-30   | mc1     | 10YR43 00 |                  |      |      |             |       | 16             | 4  | HR   | 16                 |      |     |     |     |     |      |
| 5      | 0-30   | mc1     | 10YR43 00 |                  |      |      |             |       | 16             | 6  | HR   | 16                 |      |     |     |     |     |      |
| 6      | 0-30   | mc1     | 10YR43 00 |                  |      |      |             |       | 16             | 4  | HR   | 16                 |      |     |     |     |     |      |
| 7      | 0-20   | sc1     | 10YR43 00 |                  |      |      |             |       | 16             | 5  | HR   | 16                 |      |     |     |     |     |      |
| 8      | 0-30   | sc1     | 10YR43 00 |                  |      |      |             |       | 14             | 4  | HR   | 14                 |      |     |     |     |     |      |
| 9      | 0-25   | sc1     | 10YR43 00 |                  |      |      |             |       | 16             | 6  | HR   | 16                 |      |     |     |     |     |      |
| 10     | 0-35   | sc1     | 10YR43 00 |                  |      |      |             |       | 17             | 5  | HR   | 17                 |      |     |     |     |     |      |
| 11     | 0-30   | sc1     | 10YR43 00 |                  |      |      |             |       | 16             | 4  | HR   | 16                 |      |     |     |     |     |      |
| 11P    | 0-30   | mc1     | 10YR43 00 |                  |      |      |             |       | 16             | 4  | HR   | 16                 |      |     |     |     |     |      |
|        | 30-120 | c       | 75YR56 00 | 75YR58 00 C      |      |      | 75YR52 00 S |       | 0              | 0  | HR   | 35                 |      |     | P   | Y   |     |      |
| 12     | 0-30   | sc1     | 10YR43 00 |                  |      |      |             |       | 14             | 4  | HR   | 14                 |      |     |     |     |     |      |
| 13     | 0-30   | mc1     | 10YR43 00 |                  |      |      |             |       | 17             | 6  | HR   | 17                 |      |     |     |     |     |      |
| 14     | 0-30   | sc1     | 10YR43 00 |                  |      |      |             |       | 17             | 6  | HR   | 17                 |      |     |     |     |     |      |
| 15     | 0-25   | sc1     | 10YR43 00 |                  |      |      |             |       | 16             | 5  | HR   | 16                 |      |     |     |     |     |      |
| 16     | 0-25   | sc1     | 10YR43 00 |                  |      |      |             |       | 11             | 5  | HR   | 11                 |      |     |     |     |     |      |
| 17     | 0-30   | mc1     | 10YR43 00 |                  |      |      |             |       | 15             | 5  | HR   | 15                 |      |     |     |     |     |      |
|        | 30-45  | c       | 75YR44 46 | 10YR52 00 C      |      |      | S           |       | 0              | 0  | HR   | 15                 |      |     |     |     |     |      |
| 18     | 0-20   | hc1     | 10YR43 00 |                  |      |      |             |       | 16             | 5  | HR   | 16                 |      |     |     |     |     |      |
| 19     | 0-30   | sc1     | 10YR43 00 |                  |      |      |             |       | 11             | 5  | HR   | 11                 |      |     |     |     |     |      |
| 20     | 0-10   | c       | 10YR51 00 |                  |      |      |             |       | 0              | 0  |      | 0                  |      |     |     |     |     |      |
|        | 10-120 | c       | 10YR71 00 | 10YR76 00 C      |      |      |             | Y     | 0              | 0  |      | 0                  |      |     | P   | Y   |     | Y    |
| 21     | 0-25   | sc1     | 10YR43 00 |                  |      |      |             |       | 11             | 4  | HR   | 11                 |      |     |     |     |     |      |

| SAMPLE | DEPTH  | TEXTURE | COLOUR    | ----MOTTLES----- |      | PED  |           | ----STONES---- |    | STRUCT/ |      | SUBS |         |     |     |     |     |      |
|--------|--------|---------|-----------|------------------|------|------|-----------|----------------|----|---------|------|------|---------|-----|-----|-----|-----|------|
|        |        |         |           | COL              | ABUN | CONT | COL.      | GLE            | >2 | >6      | LITH | TOT  | CONSIST | STR | POR | IMP | SPL | CALC |
| 21P    | 0-30   | mc1     | 10YR43 00 |                  |      |      |           |                |    | 13      | 3    | HR   | 13      |     |     |     |     |      |
|        | 30-120 | c       | 75YR56 00 | 75YR58 00        | C    |      | 10YR52 00 | S              | 0  | 0       | HR   | 35   | VM      | P   | Y   |     |     |      |
| 22     | 0-25   | sc1     | 10YR43 00 |                  |      |      |           |                |    | 11      | 3    | HR   | 11      |     |     |     |     |      |

| SAMPLE NO. | GRID REF   | ASPECT USE | --WETNESS-- |      |     |       | -WHEAT- |     | -POTS- |     | M.REL |     | EROSN | FROST | CHEM  | ALC         | COMMENTS |
|------------|------------|------------|-------------|------|-----|-------|---------|-----|--------|-----|-------|-----|-------|-------|-------|-------------|----------|
|            |            |            | GRDNT       | GLEY | SPL | CLASS | GRADE   | AP  | MB     | AP  | MB    | DRT | FLOOD | EXP   | DIST  | LIMIT       |          |
| 1          | SU82509180 | PLO E      | 02          |      |     |       |         | 000 | 0      | 000 | 0     |     |       |       | ST 3A | IMP 30      |          |
| 2          | SU82409170 | PLO SE     | 01          |      |     |       |         | 000 | 0      | 000 | 0     |     |       |       | ST 3A | IMP 35      |          |
| 3          | SU82609170 | PLO SE     | 01          |      |     |       |         | 000 | 0      | 000 | 0     |     |       |       | ST 3A | IMP 40      |          |
| 4          | SU82709170 | PLO E      | 02          |      |     |       |         | 000 | 0      | 000 | 0     |     |       |       | ST 3B | IMP 30      |          |
| 5          | SU82809170 | PLO E      | 03          |      |     |       |         | 000 | 0      | 000 | 0     |     |       |       | ST 3A | IMP 30      |          |
| 6          | SU82909170 | PLO E      | 03          |      |     |       |         | 000 | 0      | 000 | 0     |     |       |       | ST 3B | IMP 30      |          |
| 7          | SU82409160 | PLO SE     | 02          |      |     |       |         | 000 | 0      | 000 | 0     |     |       |       | ST 3B | IMP 20      |          |
| 8          | SU82509160 | PLO SE     | 02          |      |     |       |         | 000 | 0      | 000 | 0     |     |       |       | ST 3A | IMP 30      |          |
| 9          | SU82709160 | FLW SE     | 01          |      |     |       |         | 000 | 0      | 000 | 0     |     |       |       | ST 3A | IMP 25      |          |
| 10         | SU82809160 | FLW N      |             |      |     |       |         | 000 | 0      | 000 | 0     |     |       |       | ST 3B | IMP 35      |          |
| 11         | SU82909160 | PLO NW     | 02          |      |     |       |         | 000 | 0      | 000 | 0     |     |       |       | ST 3B | IMP 30      |          |
| 11P        | SU82909160 | PLO NW     | 02          |      | 1   | 1     |         | 097 | 5      | 081 | 1     | 3A  |       |       | ST 3B | SL. GLEY 30 |          |
| 12         | SU82609150 | PLO        |             |      |     |       |         | 000 | 0      | 000 | 0     |     |       |       | ST 3A | IMP 30      |          |
| 13         | SU82709150 | PLO SE     | 02          |      |     |       |         | 000 | 0      | 000 | 0     |     |       |       | ST 3B | V.FLINTY    |          |
| 14         | SU82909150 | PLO N      | 02          |      |     |       |         | 000 | 0      | 000 | 0     |     |       |       | ST 3B | IMP 30      |          |
| 15         | SU83009150 | PLO N      | 02          |      |     |       |         | 000 | 0      | 000 | 0     |     |       |       | ST 3B | IMP 25      |          |
| 16         | SU82609140 | PLO N      | 01          |      |     |       |         | 000 | 0      | 000 | 0     |     |       |       | ST 3A | IMP 25      |          |
| 17         | SU82709140 | PLO N      | 02          |      |     |       |         | 000 | 0      | 000 | 0     |     |       |       | ST 3A | SL. GLEY 30 |          |
| 18         | SU82809140 | PLO N      | 01          |      |     |       |         | 000 | 0      | 000 | 0     |     |       |       | ST 3B | IMP 20      |          |
| 19         | SU82609130 | PLO N      | 01          |      |     |       |         | 000 | 0      | 000 | 0     |     |       |       | ST 3A | IMP 30      |          |
| 20         | SU82709130 | FLW N      | 01          | 010  | 010 | 4     | 3B      | 000 | 0      | 000 | 0     |     |       |       | WE 3B |             |          |
| 21         | SU82809130 | PLO NW     | 01          |      |     |       |         | 000 | 0      | 000 | 0     |     |       |       | ST 3A | IMP 25      |          |
| 21P        | SU82809130 | PLO NW     | 01          |      | 1   | 1     |         | 098 | 6      | 083 | 3     | 2   |       |       | ST 3A | SL. GLEY 30 |          |
| 22         | SU82909130 | PLO NW     | 02          |      |     |       |         | 000 | 0      | 000 | 0     |     |       |       | ST 3A | IMP 25      |          |

SOIL PIT DESCRIPTION

Site Name : M40 MSA, BOOKER, BUCKS Pit Number : 11P

Grid Reference: SU82909160 Average Annual Rainfall : 768 mm  
 Accumulated Temperature : 1330 degree days  
 Field Capacity Level : 164 days  
 Land Use : Ploughed  
 Slope and Aspect : 02 degrees NW

| HORIZON | TEXTURE | COLOUR    | STONES >2 | TOT.STONE | LITH | MOTTLES | STRUCTURE | CONSIST | SUBSTRUCTURE | CALC |
|---------|---------|-----------|-----------|-----------|------|---------|-----------|---------|--------------|------|
| 0- 30   | MCL     | 10YR43 00 | 16        | 16        | HR   |         |           |         |              |      |
| 30-120  | C       | 75YR56 00 | 0         | 35        | HR   | C       |           |         | P            |      |

Wetness Grade : 1 Wetness Class : I  
 Gleying : cm  
 SPL : No SPL

Drought Grade : 3A APW : 097mm MBW : 5 mm  
 APP : 081mm MBP : 1 mm

FINAL ALC GRADE : 3B  
 MAIN LIMITATION : Topsoil Stoniness

SOIL PIT DESCRIPTION

Site Name : M40 MSA, BOOKER, BUCKS Pit Number : 21P

Grid Reference: SUB2809130 Average Annual Rainfall : 768 mm  
 Accumulated Temperature : 1330 degree days  
 Field Capacity Level : 164 days  
 Land Use : Ploughed  
 Slope and Aspect : 01 degrees NW

| HORIZON | TEXTURE | COLOUR    | STONES >2 | TOT.STONE | LITH | MOTTLES | STRUCTURE | CONSIST | SUBSTRUCTURE | CALC |
|---------|---------|-----------|-----------|-----------|------|---------|-----------|---------|--------------|------|
| 0- 30   | MCL     | 10YR43 00 | 13        | 13        | HR   |         |           |         |              |      |
| 30-120  | C       | 75YR56 00 | 0         | 35        | HR   | C       |           | VM      | P            |      |

Wetness Grade : 1 Wetness Class : I  
 Gleying : cm  
 SPL : No SPL

Drought Grade : 2 APW : 098mm MBW : 6 mm  
 APP : 083mm MBP : 3 mm

FINAL ALC GRADE : 3A  
 MAIN LIMITATION : Topsoil Stoniness



Appendix 3 (Cont)

**SOIL PROFILE DESCRIPTIONS : EXPLANATORY NOTE**

Soil profile and pit information obtained during ALC surveys is held on a database. This has commonly used notations and abbreviations as set out below.

**BORING HEADERS**

1. GRID REF : National grid square followed by 8 figure grid reference.

2. USE : Land-use at the time of survey.

The following abbreviations are used

|                               |                             |
|-------------------------------|-----------------------------|
| ARA - arable                  | PAS/PGR - permanent pasture |
| WHT - wheat                   | RGR - rough grazing         |
| BAR - barley                  | LEY - ley grassland         |
| CER - cereals                 | CFW - coniferous woodland   |
| OAT - oats                    | DCW - deciduous woodland    |
| MZE - maize                   | SCR - scrub                 |
| OSR - oilseed rape            | HTH - heathland             |
| BEN - field beans             | BOG - bog or marsh          |
| BRA - brassicae               | FLW - fallow                |
| POT - potatoes                | PLO - ploughed              |
| SBT - sugar beet              | SAS - set-aside             |
| FDC - fodder crops            | OTH - other                 |
| FRT - soft and top fruit      | LIN - linseed               |
| HOR/HRT - horticultural crops |                             |

3. GRDNT : Gradient as measured by optical reading clinometer.

4. GLEY/SPL : Depth in centimetres (cm) to gleyed and/or slowly permeable horizons.

5. AP (WHEAT/POTS) : Crop-adjusted available water capacity. The amount of soil water (in millimetres) held in the soil profile that is available to a growing crop (wheat and potatoes are used as reference crops).

6. MB (WHEAT/POTS) : The moisture balance for wheat and potatoes obtained by subtracting the soil moisture deficit from the crop-adjusted available water capacity.
7. DRT : Grade according to soil droughtiness assessed against soil moisture balances.
8. M REL : Micro-relief )  
 FLOOD : Flood risk ) If any of these factors are  
 EROSN : Soil erosion ) considered significant in terms  
 of  
 EXP : Exposure ) the assessment of agricultural  
 land  
 FROST : Frost prone ) quality a 'y' will be entered in the  
 DIST : Disturbed land ) relevant column.  
 CHEM : Chemical limitation )

9. LIMIT : Principal limitation to agricultural land quality.

The following abbreviations are used:

|                      |  |
|----------------------|--|
| OC - overall climate | CH - chemical limitations                    |
| AE - aspect          | WE - wetness                                 |
| EX - exposure        | WK - workability                             |
| FR - frost           | DR - drought                                 |
| GR - gradient        | ER - erosion                                 |
| MR - micro-relief    | WD - combined soil wetness/soil droughtiness |
| TX - soil texture    | ST - topsoil stoniness                       |
| DP - soil depth      |  |

## PROFILES AND PITS

1. TEXTURE : Soil texture classes are denoted by the following abbreviations:

|      |                          |
|------|--------------------------|
| S    | - sand                   |
| LS   | - loamy sand             |
| SL   | - sandy loam             |
| SZL  | - sandy silt loam        |
| ZL   | - silt loam              |
| MZCL | - medium silty clay loam |
| MCL  | - medium clay loam       |
| SCL  | - sandy clay loam        |
| HZCL | - heavy silty clay loam  |
| HCL  | - heavy clay loam        |
| SC   | - sandy clay             |
| ZC   | - silty clay             |
| C    | - clay                   |

For the sand, loamy sand, sandy loam and sandy silt loam classes, the predominant size of sand fraction may be indicated by the use of prefixes.

|   |  |
|---|--|
| F | - fine (more than $\frac{2}{3}$ of the sand less than 0.2 mm)                        |
| C | - coarse (more than $\frac{1}{3}$ of sand greater than 0.6 mm)                       |
| M | - medium (less than $\frac{2}{3}$ fine sand and less than $\frac{1}{3}$ coarse sand) |

The sub-divisions of clay loam and silty clay loam classes according to clay content are indicated as follows:

|   |                               |
|---|-------------------------------|
| M | - medium (less than 27% clay) |
| H | - heavy (27-35% clay)         |

Other possible texture classes include:

OL - organic loam

P - peat

SP - sandy peat

LP - loamy peat

PL - peaty loam

PS - peaty sand

MZ - marine light silts

2. MOTTLE COL : Mottle colour

3. MOTTLE ABUN : Mottle abundance

F - few - less than 2% of matrix or surface described

C - common - 2-20% of the matrix

M - many - 20-40% of the matrix

VM - very many - 40% + of the matrix

4. MOTTLE CONT : Mottle continuity

F - faint - indistinct mottles, evident only on close examination

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

6. STONE LITH : Stone lithology. One of the following is used.

HR - all hard rocks or stones

MSST - soft, medium or coarse grained sandstone

SI - soft weathered igneous or metamorphic

SLST - soft oolitic or dolomitic limestone

FSST - soft fine grained sandstone

ZR - soft, argillaceous, or silty rocks

CH - chalk

GH - gravel with non-porous (hard) stones

GS - gravel with porous (soft) stones

Stone contents (>2 cm, >6 cm and total) are given in percentages (by volume).

7. **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 well developed

- ped size                      F - fine  
   M - medium  
   C - coarse  
   VC - very coarse

- ped shape                    S - single grain  
   M - massive  
   GR - granular  
   SB/SAB - sub-angular blocky  
   AB - angular blocky  
   PR - prismatic  
   PL - platy

8. **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

9. **SUBS STR** : Subsoil structural condition recorded for the purpose of calculating profile droughtiness.

G - good  
M - moderate  
P - poor

10. POR : Soil porosity. If a soil horizon has less than 0.5% biopores >0.5 mm, a 'y' will appear in this column.
11. IMP : If the profile is impenetrable a 'y' will appear in this column at the appropriate horizon.
12. SPL : slowly permeable layer. If the soil horizon is slowly permeable a 'y' will appear in this column.
13. CALC : If the soil horizon is calcareous, a 'y' will appear in this column.
14. 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