

8FCS 8188

**Land West of Redditch**  
**Agricultural Land Classification**  
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Resource Planning Team  
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**LAND WEST OF REDDITCH**  
**AGRICULTURAL LAND CLASSIFICATION SURVEY**

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## LAND WEST OF REDDITCH

### AGRICULTURAL LAND CLASSIFICATION SURVEY

#### INTRODUCTION

1. This report presents the findings of a detailed Agricultural Land Classification (ALC) survey of 92.8 ha of land on the western edge of Redditch, near Webheath. Field survey was based on 85 auger borings and five soil profile pits, and was completed in July 1997. During the survey three 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 Bromsgrove District 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 being all Grade 3, the site was also surveyed in 1986 at a scale of 1:25 000 (ADAS 1986). 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. The 1986 survey was carried out under the previous classification system and was at a semi-detailed level, one auger boring per two hectares. This shows two large Subgrade 3a mapping units, in the north and south of the site, with Subgrade 3b in the middle. Most of the site consists of reddish clayey soils developed over Mercia Mudstone (Keuper Marl) where because of their colouration evidence of wetness and therefore poor drainage may be masked. The method for assessing wetness class (see Appendix II) has been adjusted by the revised guidelines (MAFF 1988), so that it now relies more on the identification of slow permeable layers at depths upto 80cm and places less emphasis on the observation of mottles. The revised guidelines also specify precise criteria for the calculation of droughtiness which were not available to the 1986 survey. The recent survey has also ignored isolated observations reflecting natural soil variation, whereas the 1986 survey has identified several mapping units of better quality land which are supported by only a few observations.

5. At the time of survey land cover was all permanent and ley grassland. Other land which was not surveyed included woodland, agricultural buildings and residential areas, and the pumping station.

#### 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: Land West of Redditch**

<b>Grade</b>	<b>Area (ha)</b>	<b>% Surveyed Area (84.7 ha)</b>
1	11.9	14
2	1.4	2
3a	8.1	9
3b	63.3	75
Other land	8.1	-
Total site area	92.8	100

7. An area of 21.4 ha of land was graded as best and most versatile, this being 25 % of the agricultural land surveyed. The Grade 1 land, mapped around Foxlydiate and Cur Lane, has no or only very minor limitations to its agricultural use. These profiles are deep, sandy and well drained with no drought limitation. They are developed over the Bromsgrove sandstone. A few of these profiles show distinct signs of wetness in their subsoil horizons but because of the light textures they are freely draining.

8. The smaller Grade 2 mapping unit has a combination of minor workability and wetness limitations. The textures are slightly heavier than those of the Grade 1 land with some slowly permeable red clay lower subsoils.

9. The small areas of Subgrade 3a land have a combination of moderate drought and wetness limitations. Some of the profiles have impaired drainage in their red clay subsoils but with the slowly permeable layers starting higher up the profile than in the Grade 2 land. Others are developed over localised areas of hard sandstone and gravel deposits which lead to the drought limitation.

10. The rest of the site was mapped as Subgrade 3b (moderate quality) land with a moderate wetness limitation to its agricultural use. There are slowly permeable red clay subsoils higher up the profiles which will impair the drainage of the land and gleying is evident in some of the upper subsoils.

## **CLIMATE**

11. 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.

12. 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.

**Table 2: Climatic Interpolations: Land West of Redditch**

Grid Reference	SP 005 660	SP 009 664	SP 014 674
Altitude (m)	100	120	135
Accumulated Temperature (day °C)	1344	1362	1344
Average Annual Rainfall (mm)	729	712	729
Overall Climatic Grade	1	1	1
Field Capacity Days	165	159	165
Moisture deficit (mm):			
Wheat	91	94	91
Potatoes	79	83	79

13. 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.

## RELIEF

14. Altitude ranges from 99 metres where Pumphouse Lane crosses Spring Brook to 140 metres near Foxlydiate. There are also high spots of 135 metres near Holborne Farm and Boxnot Farm. Gradients within the site area are mainly level (0-1°), gently (2-3°) and moderately (4-7°) sloping with no limitation to the agricultural use of the land.

## GEOLOGY AND SOILS

15. The underlying geology of the site is shown on the published geology map (BGS 1989) as being mainly Mercia Mudstone (Keuper Marl). There are small areas of Boulder Clay near Pumphouse Lane and Holborne Farm, and alluvium along Spring Brook. An area of Bromsgrove Sandstone is mapped along Cur Lane on the western side of the site. The recent survey found Keuper Marl throughout the site but the area underlain by sandstone was slightly larger than that shown by the geological survey and it had a slightly different distribution. There was no distinct evidence of the boulder clay deposits.

16. Soils were mapped by the Soil Survey of England and Wales at a reconnaissance scale of 1:250 000 (SSEW 1983) with more detailed soils information being available from the 1:50 000 scale survey of the Worcester and Malverns District (SSEW 1986). Most of the site is shown as being from the Salop and Brockhurst Associations. The Bromsgrove Association is mapped in the north west of the site with Whimple 3 Association in the north east.

17. The Salop and Brockhurst 1 soils are both described as being slowly permeable seasonally waterlogged reddish fine loamy over clayey soils. There are some associated areas which have fine loamy over clayey soils with slowly permeable subsoils which may have only slight waterlogging. Bromsgrove soils are described as being well drained reddish coarse loamy soils over soft sandstone which may be deep in places. They are associated with fine

loamy soils over slowly permeable subsoils which experience slight seasonal waterlogging. The Whimple 3 Association is described as being reddish fine loamy, or fine silty over clayey soils, with slowly permeable subsoils and slight seasonal waterlogging. Some similar clayey soils are found on brows while slowly permeable seasonally waterlogged fine loamy and fine silty over clayey soils are found on lower slopes.

18. The soils found in the north-west are similar to those of the Bromsgrove Association and these were also found near the pumping station on Cur Lane. The rest of the site has reddish clay loam over clay profiles with slowly permeable subsoils which are similar to those of the Salop and Brockhurst 1 Associations. Some slightly better drained areas were also found within the site.

## **AGRICULTURAL LAND CLASSIFICATION**

19. 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 1**

20. The Grade 1 land which is mapped near Foxlydiate and Cur Lane has no, or only minor, limitations to its agricultural use. The profiles are deep and mainly well drained with no drought limitation. These soils have developed over the weathered sandstones and have medium clay loam and fine sandy silt loam topsoils over banded clay loam, sandy clay loam and loamy sand subsoils. Although there is distinct mottling in the subsoils of some of the profiles they were assessed as Wetness Class I (see Appendix 2) and Pits 2 and 5 are representative of the mapping units.

### **Grade 2**

21. This small mapping unit has a mixture of soil types which have minor wetness and workability limitations. The profiles typically have medium clay loam topsoils over sandy clay loam and reddish heavy clay loam upper subsoils, and reddish clay lower subsoils. The subsoils are of varying permeability but they all shows evidence of wetness. They were assessed as Wetness Classes I and II.

### **Subgrade 3a**

22. The land mapped as Subgrade 3a tends to have a combination of profile types all with moderate limitation. Most of them have slowly permeable lower subsoils, some of which are red clays and others which are gleyed. They were assessed as Wetness Class III and have medium clay loam topsoils. The southern mapping unit has some well drained, Wetness Class I profiles and some impenetrable profiles over gravel.

### **Subgrade 3b**

23. The land mapped as Subgrade 3b has a moderate wetness limitation. These profiles have medium clay loam topsoils over red clayey subsoils. These subsoils are slowly permeable, starting above 60 cm and continuing to below 100 cm, so the profiles were assessed as Wetness Class IV. There is evidence of wetness in some of the profiles which may be gleyed. Pits 1, 3 and 4 are typical of these profiles. There are a few isolated Subgrade 3a profiles included within this mapping unit which could not be mapped separately.

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December 1997

## REFERENCES

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## **APPENDIX I**

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

#### **Grade 1 - excellent quality agricultural land**

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

#### **Grade 2 - very good quality agricultural land**

Land with minor limitations 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 (e.g. cereals and forage crops) the yields of which are variable. In most climates, yields of grass may be moderate to high but there may be difficulties in utilisation. The grade also includes very droughty arable land.

### **Grade 5 - very poor quality agricultural land**

Land with very severe limitations 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 (In preparation) Soil Survey Field Handbook, Revised Edition.

## 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, 1974).

#### 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.

**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.

<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 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.

**GLEYS:** 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

**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**      **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

<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%		

**STRUCTURE:** Ped Development \*

<b>WA:</b> Weakly adherent	<b>M:</b> Moderately developed
<b>W:</b> Weakly developed	<b>S:</b> Strongly developed

**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, 1974) for details.

SITE NAME		PROFILE NO.	SLOPE AND ASPECT	LAND USE	Av Rainfall: 712 mm	PARENT MATERIAL
Land West of Redditch		Pit 1 (ASP 67)	3° West	PGR	ATO: 1362 day °C	Boulder Clay
JOB NO.		DATE	GRID REFERENCE	DESCRIBED BY	FC Days: 159	PSD SAMPLES TAKEN
29/97		29/7/97	SP 0110 6630	HLJ/GMS	Climatic Grade: 1	Topsoil
					Exposure Grade: 1	MCL: S46; Z33; C21

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	20	MCL	7.5YR42	2% HR (VIS) Total	CDFO * <sup>1</sup> 7.5YR46	None	-	-	-	-	MF, VF	-	Clear wavy
2	30	C	7.5YR53 (7.5YR52)	5% HR (VIS) Total	CDFO 7.5YR56	Common	MDCSAB	Firm	Moderate	Poor	CF, VF	-	Gradual wavy
3	45	C	05YR53,54 (05YR53)	1% HR (VIS)	MDFO 7.5YR56, 46	Common	MDCPR	Firm	Poor	Poor	CVF	-	Gradual smooth
4	100+	C	05YR43 (05YR53) 05Y62	1% HR (VIS)	CDFO* <sup>2</sup> 7.5YR56	Many	WKCSAB becoming massive	Firm	Poor	Poor	FVF	-	-

Profile Gleyed From: Surface  
Depth to Slowly Permeable Horizon: 30 cm  
Wetness Class: IV  
Wetness Grade: 3b

Available Water Wheat: 125 mm  
Potatoes: 102 mm  
Moisture Deficit Wheat: 94 mm  
Potatoes: 83 mm  
Moisture Balance Wheat: 31 mm  
Potatoes: 19 mm  
Droughtiness Grade: 1 (Calculated to 120 cm)

Final ALC Grade: 3b  
Main Limiting Factor(s): Wetness

Remarks: \*<sup>1</sup> common in few patches  
\*<sup>2</sup> common in few patches



SITE NAME		PROFILE NO.	SLOPE AND ASPECT	LAND USE	Av Rainfall: 712 mm	PARENT MATERIAL
Land West of Redditch		Pit 2 (ASP 38)	4° North	Permanent Grass	ATO: 1362 day °C	Bromsgrove Sandstone
JOB NO.		DATE	GRID REFERENCE	DESCRIBED BY	FC Days: 159	PSD SAMPLES TAKEN
29/97		29/7/97	SP 0110 6680	GMS/HLJ	Climatic Grade: 1	Topsoil FSZL: S46; Z38; C16
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	26	FSZL	75YR42	2% HR (VIS) Total	None	None	-	-	-	-	MF, VF	-	Clear smooth
2	95	HCL*	05YR43 (05YR53)	2% HR (VIS) Total	FFFO (75YR56)	FFFO (75YR56)	MDCPR breaking into AB becoming MDCSAB at depth	Friable	Moderate	Good	CVF	-	-

Profile Gleyed From: Not gleyed

Depth to Slowly Permeable Horizon: No SPL

Wetness Class: I

Wetness Grade: 1

Available Water Wheat: 162 mm

Potatoes: 125 mm

Moisture Deficit Wheat: 94 mm

Potatoes: 83 mm

Moisture Balance Wheat: 68 mm

Potatoes: 42 mm

Droughtiness Grade: 1 (Calculated to 120 cm)

Final ALC Grade: 1

Main Limiting Factor(s):

Remarks: \* great variety of FSL, C etc. HCL overall

SITE NAME Land West of Redditch		PROFILE NO. Pit 3 (ASP 90)	SLOPE AND ASPECT 4° South	LAND USE Permanent Grass	Av Rainfall: 712 mm ATO: 1362 day °C FC Days: 159 Climatic Grade: 1 Exposure Grade: 1	PARENT MATERIAL Head
JOB NO. 29/97		DATE 30/7/97	GRID REFERENCE SP 0110 6600	DESCRIBED BY GMS/HLJ		PSD SAMPLES TAKEN Topsoil MCL (HCL): S27; Z47; C26

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	30	MCL	7.5YR43	2% HR (VIS)	None	None	-	-	-	Good	MF + VF	-	Clear smooth
2	55	C	7.5YR43 (05YR42)	1% HR (VIS)	CDFO (75YR56)	Common	MDCAB	Firm	Moderate * <sup>1</sup>	Poor	CVF	-	Gradual smooth
3	80+	C	2.5YR34 (05YR42) 05GY61	< 1% HR (VIS)	CDFO (75YR56)	Common becoming many	WKCSAB* <sup>1</sup> becoming massive	Firm	Moderate * <sup>2</sup> becoming poor	Poor	FVF	-	-

Profile Gleyed From: 30 cm	Available Water	Wheat: 141 mm	Final ALC Grade: 3b
Depth to Slowly Permeable Horizon: 30 cm		Potatoes: 117 mm	Main Limiting Factor(s): Wetness
Wetness Class: IV	Moisture Deficit	Wheat: 94 mm	
Wetness Grade: 3b		Potatoes: 83 mm	
	Moisture Balance	Wheat: 47 mm	
		Potatoes: 34 mm	
	Droughtiness Grade: 1	(Calculated to 120 cm)	Remarks: Augered to 100 cm * <sup>1</sup> including WKPCR and WKAB * <sup>2</sup> no mottling on ped faces

SITE NAME		PROFILE NO.	SLOPE AND ASPECT	LAND USE	Av Rainfall: 712 mm	PARENT MATERIAL	
Land West of Redditch		Pit 4 (ASP 28)	2° North West	PGR	ATO: 1362 day °C	Head	
JOB NO.		DATE	GRID REFERENCE	DESCRIBED BY	FC Days: 159	PSD SAMPLES TAKEN	
29/97		30/7/97	SP 0140 6700	GMS/HLJ	Climatic Grade: 1	None	
					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	27	MCL	7.5YR42	5% HR (VIS)	None	None	-	-	-	-	MF, VF, M	-	Abrupt wavy
2	47	HCL	10YR63, 64	5% HR (VIS)	MDF + MO 10YR56	None	WKCSAB with prismatic tendencies	Friable	Moderate	Poor	CVF	-	Abrupt wavy
3	110+	C	2.5YR43 (05YR53)	None (VIS)	None	Common	MDCPR becoming massive	Firm	Poor	Poor	FVF mainly ex ped	-	-

Profile Gleyed From: 27 cm  
Depth to Slowly Permeable Horizon: 27 cm  
Wetness Class: IV  
Wetness Grade: 3b

Available Water Wheat: 130 mm  
Potatoes: 107 mm  
Moisture Deficit Wheat: 94 mm  
Potatoes: 83 mm  
Moisture Balance Wheat: 36 mm  
Potatoes: 24 mm  
Droughtiness Grade: 1 (Calculated to 120 cm)

Final ALC Grade: 3b  
Main Limiting Factor(s): Wetness

Remarks:

SITE NAME		PROFILE NO.	SLOPE AND ASPECT	LAND USE	Av Rainfall: 712 mm	PARENT MATERIAL
Land West of Redditch		Pit 5 (ASP 1)	3° South	Permanent Grass	ATO: 1362 day °C	
JOB NO.		DATE	GRID REFERENCE	DESCRIBED BY	FC Days: 159	PSD SAMPLES TAKEN
29/97		30/7/97	SP 0140 6740	GMS/HLJ	Climatic Grade: 1	
					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	24	MCL	7.5YR43	3% HR (VIS)	FDFO (75YR56)	None	-	-	-	Good	CF + VF	-	Clear smooth
2	52	HCL	7.5YR54	5% HR (VIS)	None	Few	MDCSAB	Friable	Moderate	Good	CF + VF	-	Gradual smooth
3	80+ (110+ augered)	HCL	7.5YR63	5% HR (VIS)	CDFO 75YR56	Few	WKCSAB	Friable	Moderate	Good	FVF	-	-

Profile Gleyed From: 52 cm

Depth to Slowly Permeable Horizon: No SPL

Wetness Class: I

Wetness Grade: 1

Available Water Wheat: 148 mm

Potatoes: 112 mm

Moisture Deficit Wheat: 94 mm

Potatoes: 83 mm

Moisture Balance Wheat: 54 mm

Potatoes: 29 mm

Droughtiness Grade: 1 (Calculated to 120 cm)

Final ALC Grade: 1

Main Limiting Factor(s):

Remarks: