A1
Oxfordshire Structure Plan
Land at Easington, Banbury

# Agricultural Land Classification Report
Semi-detailed Survey

March 1996

Resource Planning Team
Guildford Statutory Group

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MAFF Reference EL 33/00838

# AGRICULTURAL LAND CLASSIFICATION REPORT

## OXFORDSHIRE STRUCTURE PLAN
## LAND AT EASINGTON BANBURY

### Introduction

1 This report presents the findings of a semi detailed Agricultural Land Classification (ALC) survey of 123 hectares of land to the immediate south of Easington a suburb of Banbury in Oxfordshire The survey was carried out during March 1996

2 The survey was commissioned by the Ministry of Agriculture Fisheries and Food (MAFF) from its Land Use Planning Unit in Reading in connection with the Oxfordshire Structure Plan The results of this survey supersede any previous ALC information for this land The northern most part of the site was surveyed at a detailed level in 1990 (ADAS Ref 3301/012/90) Information collected during that survey was used in the current grading of the land Equally data gathered during the most recent survey has been used to update the 1990 survey and the grade boundaries as mapped in 1990 have been slightly amended accordingly

3 The work was conducted by members of the Resource Planning Team in the Guildford Statutory Group of ADAS The land has been graded in accordance with the published MAFF ALC guidelines and criteria (MAFF 1988) A description of the ALC grades and subgrades is given in Appendix I

4 At the time of survey the agricultural land on this site was in a variety of arable uses including cereals potatoes and field vegetables The areas shown as Other Land comprise farm buildings and tracks allotment gardens and an area where a pipeline was being laid at the time of survey

### Summary

5 The findings of the survey are shown on the enclosed ALC map The map has been drawn at a scale of 1 10 000 It is accurate at this scale but any enlargement would be misleading

6 The area and proportions of the ALC grades and subgrades on the surveyed land are summarised in Table 1 overleaf

Table 1 Area of grades and other land

| Grade/Other land | Area (hectares) | / site area | % surveyed land |
|---|---|---|---|
| 2 | 78 8 | 64 2 | 67 8 |
| 3a | 5 2 | 4 2 | 4 5 |
| 3b | 32 2 | 26 2 | 27 7 |
| Other Land | 6 6 | 5 4 | |
| Total surveyed land | 116 2 | | 100 0 |
| Total site area | 122 8 | 100 0 | |

7 The fieldwork was conducted at an average density of approximately 1 boring every 1 5 hectares of agricultural land A total of 38 borings and 3 soil inspection pits were described during the current survey An additional 37 borings and one soil pit were described during the 1990 survey

8 The site has been classified largely as Grade 2 (very good quality land) and Subgrade 3b (moderate quality land) on the basis of slight soil droughtiness and moderate soil wetness or gradient restrictions respectively A small area of Subgrade 3a, (good quality land) has also been mapped

9 Land assigned to Grade 2 comprises relatively deep well drained although slightly to moderately stony soils derived from Marlstone Rockbed The combination of soil characteristics and the local climatic regime imparts a slight restriction on the land in terms of soil droughtiness Moisture balance calculations indicate that there are insufficient reserves of available water to meet the demands of a growing crop throughout the year This land is also subject to a slight soil workability restriction in parts arising from heavy topsoil textures which will affect the opportunities for landwork

10 Land graded as Subgrade 3b is principally affected by soil wetness where heavily textured soils derived from Lias Clay are poorly drained and subject to seasonal waterlogging This will adversely affect crop growth and development as well as influencing the opportunities for cultivations and/or grazing The Subgrade 3a land mapped towards the north of the site is also affected by soil wetness but to a lesser extent than elsewhere on the site since the slowly permeable clay occurs deeper in the profile

11 A small area of Subgrade 3b land has been mapped along the western boundary of the site where gradients in the range 7 9 degrees limit the effective use of agricultural machinery

**Factors Influencing ALC Grade**

**Climate**

12 Climate affects the grading of land through the assessment of an overall climatic limitation and also through interactions with soil characteristics

13 The key climatic variables used for grading this site are given in Table 2 and were obtained from the published 5km grid datasets using the standard interpolation procedures (Met Office 1989)

Table 2 Climatic and altitude data

| Factor | Units | Values | Values |
|---|---|---|---|
| Grid reference | N/A | SP 445 385 | SP 455 382 |
| Altitude | m AOD | 130 | 120 |
| Accumulated Temperature | day°C (Jan June) | 1352 | 1363 |
| Average Annual Rainfall | mm | 698 | 693 |
| Field Capacity Days | days | 157 | 156 |
| Moisture Deficit Wheat | mm | 100 | 101 |
| Moisture Deficit Potatoes | mm | 89 | 91 |

14 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

15 The main parameters used in the assessment of an overall climatic limitation are average annual rainfall (AAR) as a measure of overall wetness and accumulated temperature (ATO January to June) as a measure of the relative warmth of a locality

16 The combination of rainfall and temperature at this site mean that there is no overall climatic limitation (Climatic Grade 1) However climatic factors can interact with soil properties to influence soil wetness and droughtiness

17 Local climatic factors such as frost risk and exposure are not thought likely to adversely affect agricultural land use on this site

**Site**

18 The land on this site slopes gently from 112m AOD in the south west to 135m AOD in the north west Gradient and microrelief do not affect agricultural land quality across the majority of the site However a small area of land along the western most boundary of the site is limited to Subgrade 3b on the basis of gradient where slopes of 8° were measured

19 Flooding does not appear to be limiting on this site

**Geology and soils**

20 The relevant geological sheet for the site (BGS 1968) maps Upper Lias Clay across the northern part of the survey area Marlstone Bedrock in the middle and southern parts of the site and areas of Middle Lias Clay have been mapped in the south west and south eastern parts of the site

21 The most recently published soils information for this area (SSEW 1983) maps the Banbury soil association across most of the site with an area of Denchworth soils across the

northern part of the site The former are described as well drained brashy fine and coarse loamy ferruginous soils over Ironstone Some deep fine loamy over clayey soils with slowly permeable subsoils and slight seasonal waterlogging (SSEW 1983) The latter are slowly permeable seasonally waterlogged clayey soils with similar fine loamy over clayey soils and some slowly permeable calcareous soils (SSEW 1983)

**Agricultural Land Classification**

22 The details of the classification of the site are shown on the attached ALC map and the area statistics of each grade are given in Table 1 page 2

23 The location of the auger borings and pits is shown on the attached sample location map and the details of the soils data are presented in Appendix III

*Grade 2*

24 Very good quality land has been mapped across the majority of the agricultural land on the site It comprises two distinctly different soil types

25 Across the north western part of the site where soils are developed from deposits of Upper Lias Clay two small units of Grade 2 land have been mapped on the basis of a minor soil wetness restriction Profiles typically comprise non calcareous medium or heavy clay loam topsoils overlying similar upper subsoils and passing to bluish grey Lias clay which is slowly permeable in the lower subsoil from about 60 cm depth Profiles tend to be stoneless or only very slightly stony throughout Impeded drainage through the lower subsoils is evidenced by gleying below about 60 80 cm Soils with such a drainage status are assigned to wetness class I or II (see Appendix II) which in combination with the prevailing climate and the topsoil textures gives rise to a land classification of Grade 2

26 Across the remainder of the area mapped as Grade 2 land is limited by minor soil droughtiness and/or workability restrictions Soils have developed from Marlstone Rockbed and profiles were found to comprise non calcareous medium or heavy clay loam topsoils which contain 1 15% total stones (hard fragments of Marlstone) These overlie similar subsoils which tend to become heavier and more stony with depth Many observations were impenetrable (to the soil auger) at variable depths between 35 100 cm but two soil inspection pits 1p and 3p (see Appendix III) revealed that the soil resource although containing between 10 and 50% hard Marlstone fragments did extend to at least 120 cm However moisture balance calculations show that as a result of the interaction between soil characteristics and the local climatic conditions there is insufficient moisture in the soil to meet the demands of a growing crop throughout the year such that the land cannot be classified higher than Grade 2 These soils are assessed as wetness class I but the land is limited by a slight workability restriction in places where heavy clay loam topsoils occur The result will be a restriction on the timing of cultivations and/or grazing as trafficking may cause soil structural damage

*Subgrade 3a*

27 Good quality agricultural land has been mapped across the north central part of the site where soils are affected by imperfect drainage having developed from deposits of Upper Lias Clay Non-calcareous topsoils of medium or heavy clay loam overlie similar subsoils which become progressively heavier with depth and pass to clay from about 30 60 cm Such profiles are typically gleyed and slowly permeable from 40 60 cm thereby being classed as wetness class II or III Such drainage characteristics along with topsoil textures and the prevailing climate combine to give rise to Subgrade 3a on the basis of soil wetness/workability restrictions

*Subgrade 3b*

28 Moderate quality land has been mapped across the north western and western parts of the site The majority of this grade of land is limited by soil wetness/workability having developed over Upper Lias Clay deposits whilst the small unit of Subgrade 3b along the western boundary is associated with steep slopes and a gradient limitation

29 Across the north western part of the site soils typically comprise non-calcareous heavy clay loam or occasionally clay topsoils which directly overlie clay in the subsoil Drainage through the clayey subsoils is significantly impeded such that gleying is evident from shallow depths A soil inspection pit 2p (see Appendix III) proved subsoil structural conditions to be poor and the clay horizons to be slowly permeable Consequently wetness class III or IV is appropriate for these soils which when combined with the heavy topsoil textures and the prevailing climate gives rise to a land classification of Subgrade 3b Soil wetness and workability will adversely affect crop establishment and growth as well as restricting the opportunities for landwork since badly timed cultivations or grazing may lead to soil structural damage

30 A small unit of Subgrade 3b land has been mapped along the western site boundary where slopes of 8 9° were measured Such gradients will restrict the safe and efficient use of farm machinery

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ADAS Reading

## SOURCES OF REFERENCE

British Geological Survey (1968) *Sheet No 218 Chipping Norton* 1 50 000 Series
BGS London

Ministry of Agriculture Fisheries and Food (1988) *Agricultural Land Classification of England and Wales Revised guidelines and criteria for grading the quality of agricultural land*
MAFF London

Met Office (1989) *Climatological Data for Agricultural Land Classification*
Met Office Bracknell

Soil Survey of England and Wales (1983) *Sheet 6 Soils of South East England*
SSEW Harpenden

Soil Survey of England and Wales (1984) *Soils and their Use in South East England*
SSEW Harpenden

## APPENDIX I

## DESCRIPTION OF THE 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 includes 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 or horticultural crops can usually be grown but on some land of this 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 land

### Grade 3 Good to Moderate Quality Land

Land with moderate limitations which affect the choice of crops the timing and type of cultivation harvesting or the level of yield When more demanding crops are grown yields are generally lower or more variable than on land in Grades 1 and 2

### Subgrade 3a Good Quality Agricultural Land

Land capable of consistently producing moderate to high yields of a narrow range of arable crops especially cereals or moderate yields of a wide range of crops including cereals grass oilseed rape potatoes sugar beet and the less demanding horticultural crops

### Subgrade 3b Moderate Quality Agricultural Land

Land capable of producing moderate yields of a narrow range of crops principally cereals and grass or lower yields of a wider range of crops or high yields of grass that can be grazed or harvested over most of the year

### Grade 4 Poor Quality Agricultural Land

Land with severe limitations which significantly restrict the range of crops and/or the 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 moist 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 severe limitations that restricts use to permanent pasture or rough grazing except for occasional pioneer forage crops

## APPENDIX II

## SOIL WETNESS CLASSIFICATION

### Definitions of Soil Wetness Classes

Soil wetness is classified according to the depth and duration of waterlogging in the soil profile Six soil wetness classes are identified and are defined in the table below

| Wetness Class | Duration of waterlogging[1] |
|---|---|
| I | The soil profile is not wet within 70 cm depth for more than 30 days in most years [2] |
| 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 only wet within 40 cm depth for 30 days in most years |
| 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 present 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 90 days in most years |
| IV | The soil profile is wet within 70 cm depth for more than 180 days but not wet within 40 cm depth for more than 210 days in most years **or** if there is no slowly permeable layer present 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 |

### Assessment of Wetness Class

Soils have been allocated to wetness classes by the interpretation of soil profile characteristics and climatic factors using the methodology described in *Agricultural Land Classification of England and Wales Revised guidelines and criteria for grading the quality of agricultural land* (MAFF 1988)

[1] The number of days is not necessarily a continuous period
[2] In most years is defined as more than 10 out of 20 years

# APPENDIX III

# SOIL DATA

Contents

# SOIL PROFILE DESCRIPTIONS EXPLANATORY NOTE

Soil pit and auger boring information collected during ALC fieldwork is held on a computer database This uses notations and abbreviations as set out below

## Boring Header Information

1 **GRID REF** national 100 km grid square and 8 figure grid reference

2 **USE** Land use at the time of survey The following abbreviations are used

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

3 **GRDNT** Gradient as estimated or measured by a hand held optical clinometer

4 **GLEY/SPL** Depth in centimetres (cm) to gleying and/or slowly permeable layers

5 **AP (WHEAT/POTS)** Crop adjusted available water capacity

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

7 **DRT** Best grade according to soil droughtiness

8 If any of the following factors are considered significant Y' will be entered in the relevant column

| | | | | | |
|---|---|---|---|---|---|
| **MREL** | Microrelief limitation | **FLOOD** | Flood risk | **EROSN** | Soil erosion risk |
| **EXP** | Exposure limitation | **FROST** | Frost prone | **DIST** | Disturbed land |
| **CHEM** | Chemical limitation | | | | |

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

| | | | | | |
|---|---|---|---|---|---|
| **OC** | Overall Climate | **AE** | Aspect | **EX** | Exposure |
| **FR** | Frost Risk | **GR** | Gradient | **MR** | Microrelief |
| **FL** | Flood Risk | **TX** | Topsoil Texture | **DP** | Soil Depth |
| **CH** | Chemical | **WE** | Wetness | **WK** | Workability |
| **DR** | Drought | **ER** | Erosion Risk | **WD** | Soil Wetness/Droughtiness |
| **ST** | Topsoil Stoniness | | | | |

## Soil Pits and Auger Borings

1 **TEXTURE** soil texture classes are denoted by the following abbreviations

| | | | | | |
|---|---|---|---|---|---|
| **S** | Sand | **LS** | Loamy Sand | **SL** | Sandy Loam |
| **SZL** | Sandy Silt Loam | **CL** | Clay Loam | **ZCL** | Silty Clay Loam |
| **ZL** | Silt Loam | **SCL** | Sandy Clay Loam | **C** | Clay |
| **SC** | Sandy Clay | **ZC** | Silty Clay | **OL** | Organic Loam |
| **P** | Peat | **SP** | Sandy Peat | **LP** | Loamy Peat |
| **PL** | Peaty Loam | **PS** | Peaty Sand | **MZ** | Marine Light Silts |

For the sand loamy sand sandy loam and sandy silt loam classes the predominant size of sand fraction will be indicated by the use of the following prefixes

**F** Fine (more than 66% of the sand less than 0 2mm)
**M** Medium (less than 66% fine sand and less than 33% coarse sand)
**C** Coarse (more than 33% of the sand larger than 0 6mm)

The clay loam and silty clay loam classes will be sub divided according to the clay content **M** Medium (<27% clay) **H** Heavy (27 35% clay)

2 **MOTTLE COL** Mottle colour using Munsell notation

3 **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% +

4 **MOTTLE CONT** Mottle contrast

**F** faint indistinct mottles evident only on close inspection
**D** distinct mottles are readily seen
**P** prominent mottling is conspicuous and one of the outstanding features of the horizon

5 **PED COL** Ped face colour using Munsell notation

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

7 **STONE LITH** Stone Lithology One of the following is used

| | | | |
|---|---|---|---|
| **HR** | all hard rocks and stones | **SLST** | soft oolitic or dolimitic limestone |
| **CH** | chalk | **FSST** | soft fine grained sandstone |
| **ZR** | soft argillaceous or silty rocks | **GH** | gravel with non porous (hard) stones |
| **MSST** | soft medium grained sandstone | **GS** | gravel with porous (soft) stones |
| **SI** | soft weathered igneous/metamorphic rock | | |

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

8 **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 | |

9 **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

10 **SUBS STR** Subsoil structural condition recorded for the purpose of calculating profile droughtiness **G** good **M** moderate **P** poor

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

12 **IMP** If the profile is impenetrable to rooting a Y' will appear in this column at the appropiate horizon

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

14 **CALC** If the soil horizon is calcareous a Y will appear in this column

15 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

SOIL PIT DESCRIPTION

Site Name OXON SP EASINGTON P t N mbe 1P

G id Referenc SP44403830 A g A l R f ll 693 mm
Acc mul ted Tempe t re 1363 degree days
F eld Capac ty Le el 157 d y
Land Use
Slope and Aspect 02 degrees E

| HORIZON | TEXTURE | COLOUR | STONES 2 | TOT STONE | LITH | MOTTLES | STRUCTURE | CONSIST | SUBSTRUCTURE | CALC |
|---|---|---|---|---|---|---|---|---|---|---|
| 0 30 | MCL | 75YR34 00 | 0 | 10 | HR | | | | | |
| 30 60 | HCL | 75YR44 00 | 25 | 46 | HR | | WKCSAB | FR | M | |
| 60 100 | HCL | 10YR44 00 | 0 | 30 | HR | | MDCOAB | FR | M | |
| 100 120 | C | 10YR46 00 | 0 | 10 | HR | | | | M | |

Wetness G ade 1 Wet ss Class I
Gley ng cm
SPL cm

Drought Grade 2 APW 116mm MBW 15 mm
APP 88 mm MBP 3 mm

FINAL ALC GRADE 2
MAIN LIMITATION Drought ess

SOIL PIT DESCRIPTION

S te Name OXON SP EASINGTON P t Numbe 2P

G d Reference SP44403860 A e ge A al Rainf ll 693 mm
Accumulated Temperature 1363 degree days
F eld Capacity Level 157 days
Land Use Potatoes
Slope and Aspect 01 degrees SW

| HORIZON | TEXTURE | COLOUR | STONES 2 | TOT STONE | LITH | MOTTLES | STRUCTURE | CONSIST | SUBSTRUCTURE | CALC |
|---|---|---|---|---|---|---|---|---|---|---|
| 0 28 | HCL | 75YR46 00 | 0 | 2 | HR | | | | | |
| 28 44 | C | 10YR46 00 | 0 | 5 | HR | C | WKCSAB | FM | M | |
| 44 75 | C | 25 Y52 00 | 0 | 5 | HR | C | MDCOAB | FM | P | Y |

Wetness Grade 3B Wetness Class III
Gley ng 028 cm
SPL 044 cm

Drought G ade 3A APW 98 mm MBW 3 mm
APP 106mm MBP 15 mm

FINAL ALC GRADE 3B
MAIN LIMITATION Wetness

SOIL PIT DESCRIPTION

Site Name OXON SP EASINGTON P t N mbe 3P

Grid Reference SP45003830

| | |
|---|---|
| Ave g A al Ra f 11 | 693 mm |
| Accumul ted Temperature | 1363 degree days |
| Field Capacity Level | 157 d ys |
| L nd U e | Cereals |
| Slope and Aspect | 01 degree SE |

| HORIZON | TEXTURE | COLOUR | STONES 2 | TOT STONE | LITH | MOTTLES | STRUCTURE | CONSIST | SUBSTRUCTURE | CALC |
|---|---|---|---|---|---|---|---|---|---|---|
| 0 23 | MCL | 10YR34 00 | 1 | 14 | HR | | | | | |
| 23 55 | HCL | 75YR46 00 | 10 | 27 | HR | | WKCSAB | FR | M | |
| 55 120 | HCL | 75YR46 00 | 0 | 30 | HR | | WKCSAB | FR | M | |

| | | | |
|---|---|---|---|
| Wetness Grade 1 | Wetness Class | I | |
| | Gleying | cm | |
| | SPL | No SPL | |
| Drought Grade 2 | APW 118mm | MBW | 17 mm |
| | APP 91 mm | MBP | 0 mm |

FINAL ALC GRADE 2

MAIN LIMITATION Droughtine

| SAMPLE NO | GRID REF | USE | ASPECT | GRDNT | GLEY | SPL | WETNESS CLASS | WHEAT GRADE | POTS AP | POTS MB | M REL AP | M REL MB | DRT | FLOOD | EROSN EXP | FROST DIST | CHEM LIMIT | ALC | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | SP44203860 | CER | N | 02 | | | 1 | 1 | 53 | 48 | 53 | 38 | 3B | | | | DR | 2 | IMP 32 SEE 3P |
| 1P | SP44403830 | HOR | E | 02 | | | 1 | 1 | 116 | 15 | 88 | 3 | 2 | | | | DR | 2 | |
| 2 | SP44303860 | CER | N | 02 | 028 | 028 | 3 | 3B | 88 | 13 | 96 | 5 | 3A | | | | WE | 3B | IMP 60 |
| 2P | SP44403860 | POT | SW | 01 | 028 | 044 | 3 | 3B | 98 | 3 | 106 | 15 | 3A | | | | WE | 3B | |
| 3 | SP44403860 | POT | | | 055 | 040 | 3 | 3B | 116 | 15 | 116 | 25 | 2 | | | | WE | 3B | |
| 3P | SP45003830 | CER | SE | 01 | | | 1 | 1 | 118 | 17 | 91 | 0 | 2 | | | | DR | 2 | |
| 4 | SP44503860 | POT | | | 040 | 040 | 3 | 3B | 114 | 13 | 118 | 27 | 2 | | | | WE | 3B | |
| 5 | SP44703860 | POT | | | 035 | 035 | 4 | 3B | 99 | 2 | 114 | 23 | 3A | | | | WE | 3B | IMP 70 |
| 6 | SP44203850 | CER | NW | 01 | | | 1 | 1 | 59 | 42 | 59 | 32 | 3B | | | | DR | 2 | IMP 35 SEE 3P |
| 7 | SP44403850 | POT | | | | 035 | 3 | 3B | 86 | 15 | 89 | 2 | 3A | | | | WE | 3B | SL GLEY 35 |
| 8 | SP44603850 | POT | | | | | 1 | 2 | 72 | 29 | 72 | 19 | 3B | | | | WD | 2 | IMP 42 SEE 3P |
| 9 | SP44803850 | CER | | | 034 | 034 | 3 | 3B | 105 | 4 | 116 | 25 | 3A | | | | WE | 3B | |
| 10 | SP45003850 | CER | | | 045 | 035 | 3 | 3B | 106 | 5 | 118 | 27 | 2 | | | | WE | 3B | |
| 11 | SP44903850 | CER | S | 01 | 050 | 035 | 3 | 3B | 110 | 9 | 118 | 27 | 2 | | | | WE | 3B | |
| 12 | SP45403850 | PLO | S | 02 | | | 1 | 1 | 63 | 38 | 63 | 28 | 3B | | | | DR | 2 | IMP 50 SEE 3P |
| 13 | SP44403840 | HOR | | | | | 1 | 1 | 97 | 4 | 104 | 13 | 3A | | | | DR | 2 | IMP 65 SEE 3P |
| 14 | SP44603840 | CER | S | 01 | | | 1 | 1 | 116 | 15 | 108 | 17 | 2 | | | | DR | 2 | IMP 100 |
| 15 | SP45203840 | PGR | E | 01 | | | 1 | 1 | 149 | 48 | 115 | 24 | 1 | | | | | 1 | |
| 16 | SP45503840 | PLO | S | 01 | | | 1 | 1 | 91 | 10 | 100 | 9 | 3A | | | | DR | 2 | SEE 3P |
| 17 | SP45703840 | PLO | S | 01 | | | 1 | 1 | 145 | 44 | 117 | 26 | 1 | | | | | 1 | SL GLEY 75 |
| 18 | SP44203830 | CER | W | 03 | | | 1 | 1 | 76 | 25 | 76 | 15 | 3B | | | | DR | 2 | SEE 3P |
| 19 | SP44403830 | HOR | | | | | 1 | 1 | 152 | 51 | 115 | 24 | 1 | | | | | 1 | |
| 20 | SP44603830 | CER | SW | 01 | | | 1 | 1 | 150 | 49 | 113 | 22 | 1 | | | | | 1 | |
| 21 | SP44703830 | CER | S | 01 | | | 1 | 2 | 80 | 21 | 80 | 11 | 3B | | | | WD | 2 | IMP 50 SEE 3P |
| 22 | SP44803830 | CER | SE | 01 | | | 1 | 1 | 75 | 26 | 75 | 16 | 3B | | | | DR | 2 | IMP 45 SEE 3P |
| 23 | SP45003830 | CER | S | 01 | | | 1 | 1 | 64 | 37 | 64 | 27 | 3B | | | | DR | 2 | IMP 42 SEE 3P |
| 24 | SP45203830 | CER | E | 02 | | | 1 | 1 | 130 | 29 | 117 | 26 | 2 | | | | DR | 2 | IMP 95 |
| 25 | SP45403830 | CER | S | 01 | | | 1 | 1 | 110 | 9 | 110 | 19 | 2 | | | | DR | 2 | IMP 82 |
| 26 | SP45603830 | PLO | SE | 02 | 060 | 060 | 2 | 2 | 119 | 18 | 110 | 19 | 2 | | | | WD | 2 | |
| 27 | SP45803830 | CER | W | 02 | | | 1 | 2 | 88 | 13 | 91 | 0 | 3A | | | | WD | 2 | SEE 3P |
| 28 | SP44303820 | CER | W | 02 | | | 1 | 1 | 49 | 52 | 49 | 42 | 4 | | | | DR | 2 | IMP 30 SEE 3P |
| 29 | SP44503820 | CER | SE | 01 | | | 1 | 2 | 132 | 31 | 110 | 19 | 1 | | | | WK | 2 | |
| 30 | SP44703820 | CER | SE | 01 | | | 1 | 2 | 135 | 34 | 110 | 19 | 1 | | | | WK | 2 | |
| 31 | SP44903820 | CER | SE | 01 | | | 1 | 1 | 151 | 50 | 114 | 23 | 1 | | | | | 1 | |
| 32 | SP45403820 | CER | S | 01 | | | 1 | 1 | 141 | 40 | 117 | 26 | 1 | | | | | 1 | |
| 33 | SP45603820 | PLO | E | 01 | | 080 | 1 | 2 | 131 | 30 | 111 | 20 | 1 | | | | WK | 2 | |
| 34 | SP44303810 | CER | W | 04 | | | 1 | 1 | 66 | 35 | 66 | 25 | 3B | | | | DR | 2 | IMP 40 SEE 3P |
| 35 | SP44603810 | CER | SE | 01 | | | 1 | 2 | 63 | 38 | 63 | 28 | 3B | | | | WD | 2 | IMP 40 SEE 3P |
| 36 | SP44803810 | CER | SE | 01 | | | 1 | 2 | 97 | 4 | 109 | 18 | 3A | | | | WD | 2 | IMP 72 SEE 3P |
| 37 | SP45003810 | CER | SE | 01 | | | 1 | 2 | 73 | 28 | 73 | 18 | 3B | | | | WD | 2 | IMP 45 SEE 3P |
| 38 | SP45203810 | CER | E | 02 | 090 | 090 | 1 | 1 | 136 | 35 | 109 | 18 | 1 | | | | | 1 | |

| SAMPLE | DEPTH | TEXTURE | COLOUR | MOTTLES COL | ABUN | CONT | PED COL | GLEY | STONES 2 | 6 LITH | TOT | STRUCT/ CONSIST | SUBS STR | POR | IMP | SPL | CALC | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0 25 | mcl | 10YR44 00 | | | | | | 3 | 0 HR | 5 | | | | | | | |
| | 25 32 | hcl | 10YR44 00 | | | | | | 0 | 0 HR | 10 | | M | | | | | Imp ma l tone |
| 1P | 0 30 | mcl | 75YR34 00 | | | | | | 0 | 0 HR | 10 | | | | | | | |
| | 30 60 | hcl | 75YR44 00 | | | | | | 25 | 0 HR | 46 | WKCSAB FR | M | | | | | |
| | 60 100 | hcl | 10YR44 00 | | | | | | 0 | 0 HR | 30 | MDCOAB FR | M | | | | | |
| | 100 120 | c | 10YR46 00 | | | | | | 0 | 0 HR | 10 | | M | | | | | |
| 2 | 0 28 | c | 10YR44 00 | | | | | | 0 | 0 HR | 2 | | | | | | | |
| | 28 60 | | 10YR54 00 | 10YR68 00 | C | | | Y | 0 | 0 HR | 5 | | M | | Y | | | I p ma l to e |
| 2P | 0 28 | hcl | 75YR46 00 | | | | | | 0 | 0 HR | 2 | | | | | | | |
| | 28 44 | c | 10YR46 00 | 10YR58 00 | C | | | S | 0 | 0 HR | 5 | WKCSAB FM | M | | | | | |
| | 44 75 | c | 25 Y52 00 | 25 Y56 00 | C | | | Y | 0 | 0 HR | 5 | MDCOAB FM | P | Y | Y | Y | | |
| 3 | 0 25 | hcl | 10YR44 00 | | | | | | 0 | 0 HR | 1 | | | | | | | |
| | 25 40 | c | 10YR44 00 | | | | | | 0 | 0 HR | 2 | | M | | | | | |
| | 40 55 | c | 25 Y66 00 | 10YR54 00 | C | | | S | 0 | 0 | 0 | | M | | Y | | | |
| | 55 90 | c | 25 Y63 64 | 10YR68 00 | C | | | Y | 0 | 0 | 0 | | M | | Y | | | |
| 3P | 0 23 | mcl | 10YR34 00 | | | | | | 1 | 0 HR | 14 | | | | | | | |
| | 23 55 | hcl | 75YR46 00 | | | | | | 10 | 0 HR | 27 | WKCSAB FR | M | | | | | |
| | 55 120 | hcl | 75YR46 00 | | | | | | 0 | 0 HR | 30 | WKCSAB FR | M | | | | | |
| 4 | 0 35 | hcl | 10YR44 00 | | | | | | 0 | 0 HR | 1 | | | | | | | |
| | 35 40 | c | 10YR44 00 | | | | | | 0 | 0 HR | 1 | | M | | | | | |
| | 40 85 | c | 25 Y64 00 | 10YR58 00 | C | | | Y | 0 | 0 | 0 | | M | | Y | | | |
| 5 | 0 25 | h l | 10YR44 00 | | | | | | 0 | 0 HR | 2 | | | | | | | |
| | 25 35 | c | 10YR44 00 | 00MN00 00 | C | | | | 0 | 0 HR | 2 | | M | | | | | |
| | 35 70 | c | 25Y 64 00 | 10YR58 00 | C | | 25Y 52 00 | Y | 0 | 0 HR | 3 | | M | | Y | | | Imp ma l t ne |
| 6 | 0 27 | mcl | 10YR44 00 | | | | | | 0 | 0 HR | 5 | | | | | | | |
| | 27 35 | hcl | 10YR44 00 | | | | | | 0 | 0 HR | 5 | | M | | | | | Imp ma l tone |
| 7 | 0 25 | hcl | 10YR44 00 | | | | | | 0 | 0 HR | 2 | | | | | | | |
| | 25 35 | c | 10YR44 00 | | | | | | 0 | 0 HR | 2 | | M | | | | | |
| | 35 53 | | 10YR54 00 | 75YR58 00 | C | | 25Y 63 00 | S | 0 | 0 | 0 | | M | | Y | | | Imp ma lstone |
| 8 | 0 27 | hcl | 10YR44 00 | | | | | | 0 | 0 HR | 1 | | | | | | | |
| | 27 33 | c | 10YR44 00 | | | | | | 0 | 0 HR | 2 | | M | | | | | |
| | 33 42 | c | 10YR58 00 | 10YR54 00 | C | | | S | 0 | 0 HR | 1 | | M | | | | | Imp ma l t ne |
| 9 | 0 28 | hcl | 10YR44 00 | | | | | | 0 | 0 HR | 1 | | | | | | | |
| | 28 34 | | 10YR44 00 | | | | | | 0 | 0 HR | 1 | | M | | | | | |
| | 34 75 | c | 10YR54 00 | 10YR66 00 | C | | | S | 0 | 0 HR | 1 | | M | | Y | | | |
| 10 | 0 35 | hcl | 10YR44 00 | | | | | | 0 | 0 HR | 2 | | | | | | | |
| | 35 45 | | 10YR54 00 | 10YR66 00 | C | | | S | 0 | 0 | 0 | | M | | | | | |
| | 45 75 | c | 25Y 53 00 | 10YR68 00 | C | | 25Y 62 00 | Y | 0 | 0 | 0 | | M | | Y | Y | | |

| SAMPLE | DEPTH | TEXTURE | COLOUR | MOTTLES COL | ABUN | CONT | PED COL | GLEY | STONES 2 | 6 | LITH | TOT | STRUCT/ CONSIST | SUBS STR | POR | IMP | SPL | CALC | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 11 | 0 35 | hcl | 10YR44 00 | | | | | | 0 | 0 | HR | 2 | | | | | | | |
| | 35 50 | c | 10YR53 00 | 10YR64 00 | C | | | S | 0 | 0 | HR | 1 | | M | | | Y | | |
| | 50 80 | c | 25 Y53 00 | 10YR58 00 | C | | 25 Y62 00 | Y | 0 | 0 | | 0 | | M | | | Y | Y | |
| 12 | 0 30 | mcl | 75YR46 00 | | | | | | 0 | 0 | HR | 10 | | | | | | | |
| | 30 40 | hcl | 75YR44 00 | | | | | | 0 | 0 | HR | 10 | | M | | | | | Imp ma lstone |
| 13 | 0 25 | mcl | 75YR46 00 | | | | | | 0 | 0 | HR | 2 | | | | | | | |
| | 25 55 | hcl | 75YR46 44 | | | | | | 0 | 0 | HR | 2 | | M | | | | | |
| | 55 65 | scl | 10YR58 00 | | | | | | 0 | 0 | HR | 15 | | M | | | | | Imp ma l tone |
| 14 | 0 25 | mcl | 75YR46 00 | | | | | | 0 | 0 | HR | 2 | | | | | | | |
| | 25 45 | hcl | 75YR44 00 | | | | | | 0 | 0 | HR | 20 | | M | | | | | |
| | 45 100 | c | 75YR44 00 | 00MN00 00 | C | | | | 0 | 0 | HR | 5 | | M | | | | | Imp ma lstone |
| 15 | 0 35 | mcl | 75YR46 00 | | | | | | 0 | 0 | HR | 2 | | | | | | | |
| | 35 75 | hcl | 10YR46 00 | | | | | | 0 | 0 | HR | 5 | | M | | | | | |
| | 75 120 | hcl | 10YR46 00 | | | | | | 0 | 0 | HR | 10 | | M | | | | | |
| 16 | 0 30 | mcl | 75YR46 00 | | | | | | 0 | 0 | HR | 10 | | | | | | | |
| | 30 65 | hcl | 75YR44 00 | | | | | | 0 | 0 | HR | 10 | | M | | | | | Imp ma lstone |
| 17 | 0 35 | mcl | 75YR46 00 | | | | | | 0 | 0 | HR | 2 | | | | | | | |
| | 35 75 | hcl | 75YR44 00 | | | | | | 0 | 0 | HR | 2 | | M | | | | | |
| | 75 120 | c | 75YR44 00 | 75YR58 00 | C | | | S | 0 | 0 | HR | 2 | | M | | | | | |
| 18 | 0 27 | mcl | 10YR44 00 | | | | | | 3 | 0 | HR | 10 | | | | | | | |
| | 27 50 | hcl | 75YR46 00 | | | | | | 0 | 0 | HR | 15 | | M | | | | | Imp ma lstone |
| 19 | 0 30 | mcl | 75YR46 00 | | | | | | 0 | 0 | HR | 2 | | | | | | | |
| | 30 120 | hcl | 75YR46 00 | | | | | | 0 | 0 | HR | 3 | | M | | | | | |
| 20 | 0 28 | mcl | 75YR46 00 | | | | | | 0 | 0 | HR | 2 | | | | | | | |
| | 28 120 | hcl | 75YR46 00 | | | | | | 0 | 0 | HR | 5 | | M | | | | | |
| 21 | 0 32 | hcl | 75YR46 00 | | | | | | 0 | 0 | HR | 5 | | | | | | | |
| | 32 40 | hcl | 75YR44 00 | | | | | | 0 | 0 | HR | 10 | | M | | | | | |
| | 40 50 | | 75YR44 00 | 00MN00 00 | C | | | | 0 | 0 | HR | 15 | | M | | | | | Imp ma lstone |
| 22 | 0 30 | mcl | 75YR46 00 | | | | | | 0 | 0 | HR | 3 | | | | | | | |
| | 30 45 | hcl | 75YR46 00 | | | | | | 0 | 0 | HR | 7 | | M | | | | | Imp ma lstone |
| 23 | 0 25 | mcl | 75YR46 00 | | | | | | 0 | 0 | HR | 10 | | | | | | | |
| | 25 42 | hcl | 75YR46 00 | | F | | 00MN00 00 | | 0 | 0 | HR | 15 | | M | | | | | Imp marlsto e |
| 24 | 0 35 | mcl | 75YR46 00 | | | | | | 0 | 0 | HR | 2 | | | | | | | |
| | 35 95 | hcl | 75YR44 00 | 00MN00 00 | C | | | | 0 | 0 | HR | 2 | | M | | | | | Imp ma lstone |

| SAMPLE | DEPTH | TEXTURE | COLOUR | MOTTLES COL | ABUN | CONT | PED COL | GLEY | STONES 2 | 6 LITH | TOT | STRUCT/ CONSIST | SUBS STR | POR | IMP | SPL | CALC | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 25 | 0 29 | mcl | 75YR46 00 | | | | | | 0 | 0 HR | 3 | | | | | | | |
| | 29 82 | hcl | 75YR44 00 | | | | | | 0 | 0 HR | 10 | | M | | | | | Imp ma lstone |
| 26 | 0 35 | mcl | 75YR46 00 | | | | | | 0 | 0 HR | 3 | | | | | | | |
| | 35 60 | hcl | 75YR44 00 | | | | | | 0 | 0 HR | 5 | | M | | | | | |
| | 60 100 | zc | 25 Y54 00 | 10YR56 00 | C | | | Y | 0 | 0 HR | 10 | | P | | Y | | | |
| 27 | 0 28 | hcl | 75YR46 00 | | | | | | 0 | 0 HR | 2 | | | | | | | |
| | 28 55 | hcl | 75YR56 00 | | | | | | 0 | 0 HR | 5 | | M | | | | | Imp ma l tone |
| 28 | 0 30 | mcl | 10YR44 00 | | | | | | 4 | 0 HR | 10 | | | | | | | Imp marlstone |
| 29 | 0 28 | hcl | 75YR44 00 | | | | | | 0 | 0 HR | 2 | | | | | | | |
| | 28 120 | c | 75YR46 00 | | | | | | 0 | 0 HR | 10 | | M | | | | | |
| 30 | 0 28 | hcl | 75YR44 00 | | | | | | 0 | 0 HR | 2 | | | | | | | |
| | 28 65 | hcl | 75YR46 00 | | | | | | 0 | 0 HR | 10 | | M | | | | | |
| | 65 120 | c | 10YR56 00 | | | | | | 0 | 0 HR | 10 | | M | | | | | |
| 31 | 0 32 | mcl | 75YR44 00 | | | | | | 0 | 0 HR | 2 | | | | | | | |
| | 32 75 | hcl | 75YR46 00 | | | | | | 0 | 0 HR | 5 | | M | | | | | |
| | 75 120 | scl | 10YR56 00 | | | | | | 0 | 0 HR | 5 | | M | | | | | |
| 32 | 0 32 | mcl | 75YR46 00 | | | | | | 0 | 0 HR | 1 | | | | | | | |
| | 32 70 | hcl | 75YR46 56 | | | | | | 0 | 0 HR | 2 | | M | | | | | |
| | 70 120 | c | 75YR56 00 | | | | | | 0 | 0 HR | 10 | | M | | | | | |
| 33 | 0 30 | hcl | 75YR46 00 | | | | | | 0 | 0 HR | 2 | | | | | | | |
| | 30 50 | hcl | 75YR44 00 | | | | | | 0 | 0 HR | 10 | | M | | | | | |
| | 50 80 | c | 75YR44 00 | | | | | | 0 | 0 HR | 10 | | M | | | | | |
| | 80 120 | | 25 Y54 00 | 10YR56 00 | C | | | S | 0 | 0 HR | 2 | | P | | Y | | | |
| 34 | 0 27 | mcl | 10YR44 00 | | | | | | 0 | 0 HR | 2 | | | | | | | |
| | 27 40 | hcl | 10YR46 00 | | | | | | 0 | 0 HR | 15 | | M | | | | | Imp ma lstone |
| 35 | 0 30 | hcl | 75YR44 00 | | | | | | 6 | 0 HR | 10 | | | | | | | |
| | 30 40 | c | 75YR46 00 | | | | | | 0 | 0 HR | 10 | | M | | | | | Imp ma l tone |
| 36 | 0 30 | hcl | 75YR44 00 | | | | | | 0 | 0 HR | 5 | | | | | | | |
| | 30 65 | c | 75YR46 00 | | | | | | 0 | 0 HR | 10 | | M | | | | | |
| | 65 72 | hcl | 10YR56 00 | | | | | | 0 | 0 HR | 15 | | M | | | | | Imp ma lstone |
| 37 | 0 30 | hcl | 75YR44 00 | | | | | | 3 | 0 HR | 5 | | | | | | | |
| | 30 45 | c | 75YR46 00 | | | | | | 0 | 0 HR | 10 | | M | | | | | Imp ma lstone |
| 38 | 0 25 | mcl | 75YR46 00 | | | | | | 0 | 0 HR | 2 | | | | | | | |
| | 25 40 | hcl | 75YR44 00 | | | | | | 0 | 0 HR | 5 | | M | | | | | |
| | 40 65 | hcl | 75YR44 00 | | | | | | 0 | 0 HR | 15 | | M | | | | | |
| | 65 90 | c | 75YR44 00 | | | | | | 0 | 0 HR | 5 | | M | | | | | |
| | 90 120 | c | 25 Y63 00 | 10YR58 00 | C | | | Y | 0 | 0 HR | 2 | | M | | Y | | | |

BANBURY LOCAL PLAN - EASINGTON AREA

AUGER BORING SCHEDULE

1 Plough flat not stony on surface

| | | |
|---|---|---|
| 0 27 | MCL | gritty 10YR 4/2 non calc |
| 27-75 | MC | matrix 10YR 5/3 → 5/2<br>mottled and gleyed 10YR 5/6 and 10YR 7/2<br>becoming more gleyed with depth |
| 75 100 | HC | dominantly grey with OM<br>Gleyed<br>becoming greyer with depth |
| 100+ | HC | becoming Fe enriched Gleyed as above |

WC IV Grade 3b (wetness)

2 Ploughed flat not stony on surface

| | | |
|---|---|---|
| 0-33 | MCL | 10YR 4/2 non-calc |
| 33-38 | H/MCL | 10YR 5/4 sl stony and gritty Not gleyed |
| 38 60 | MC | becoming gleyed<br>Matrix 10YR 5/3 with CDOGM |
| 60 80 | MC | Gleying increasing with depth dominantly grey and ochreous |
| 80-110 | MC | dominantly grey - N6 and N5 with OM |

WC IV Grade 3b (wetness)

3 Ploughed flat not stony on surface

| | | |
|---|---|---|
| 0 30 | MCL | 10YR 4/2 non-calc not stony |
| 30 60 | M/HCL | 10YR 4/3 few Mn concs<br>Not mottled or gleyed occ ironstone frags |
| 60 70 | MC | 10YR 6/1 grey matrix with 7 5YR 5/8 OM<br>Mottled and gleyed |
| 70-100+ | MC | becoming dominantly bluish grey with OM N5 → N6 |

WC II Grade 2 (wetness)

4 Plough flat not stony on surface

| | | |
|---|---|---|
| 0 27 | HCL | 10YR 4/3 non calc |
| 27 48 | HCL | 10YR 5/4 sl gritty<br>few frags of ironstone and marlstone (calc) |
| 48-56 | HCL | 10YR 5/3 matrix mottled and gleyed |
| 56-82 | MC | starting to become less gleyed from 75<br>10YR 5/3 matrix many Fe concs gritty |

(80 82 thin band of marlstone brashy)

| | | |
|---|---|---|
| 82 | MC | orange/brown clay mixed with brashy marlstone |
| 82+ | Impenetrable | brashy marlstone within clay matrix |

Poss going into blue Lias clay below brashy horizon

WC II/III Grade 3a/b (wetness)

5 Ploughed flat not stony on surface

| | | |
|---|---|---|
| 0 27 | HCL | 10YR 4/3 non calc sl gritty |
| 27 65 | HCL/MC | 10YR 5/4 Gritty few Fe concs Not gleyed<br>Fe concs becoming more common from 40 cm |
| 65 80 | HCL | becoming more reddish 10YR 4/3<br>fewer Fe concs |
| 80 90 | MC | becoming gleyed 10YR 5/2 and 10YR 4/3<br>v gritty with calc brash c 5%<br>few ironstone frags and Fe concs |
| 90 100 | MC | becoming more yellowish<br>gritty and brashy few ironstone frags and calc marlstone brash<br>Gleyed |
| 100+ | MC | bluish grey abrupt change Gleyed |

WC I Grade 2 (topsoil texture)

6 Ploughed flat not stony on surface

| | | |
|---|---|---|
| 0 32 | HCL | 10YR 4/3 non calc |
| 32 38 | HCL | 10YR 4/4 non calc gritty |
| 38 50 | HCL | 10YR 4/6 with 10YR 5/6 orange Fe concs<br>Not gleyed v gritty with Fe frags<br>few greenish mottles possibly sl gleyed<br>c 5% ironstone frags |
| 50 60 | HCL | becoming sl reddish 7 5YR 4/4 |
| 60 100 | MC | 7 5YR 4/4 with ironstone frags<br>Not gleyed non calc<br>c 10% ironstone frags |

WC I Grade 2 (wetness)

7 Ploughed flat no surface stones

| | | |
|---|---|---|
| 0 30 | MCL | 10YR 4/3 non calc not stony |
| 30 42 | HCL | 10YR 4/4 few ironstone frags and Mn concs |
| 42 50 | HCL | v gritty with c 10% iron concs<br>becoming redder - 7 5YR 4/4<br>few marlstone frags |
| 50 65 | MC | 7 5YR 4/4 not mottled or gleyed<br>c 10% marlstone brash within soil matrix |
| 65 75 | MC | becoming gleyed<br>greenish grey matrix 2 5Y 4/4 |
| 75 90 | MC | becoming predominantly grey with depth<br>5Y 4/2 matrix gleyed |
| 90 110 | MC | yellowish grey matrix with CDOM gleyed |
| 110 | MC | As above but becoming brashy calc marlstone |

WC II Grade 2 (wetness)

8 Forage crop flat

| | | |
|---|---|---|
| 0 25 | HCL | 10YR 5/4 v sl calc c 5% stones >6 cm |
| 25 30 | MC | 10YR 6/3 c 20% calc marlstone >2 cm |
| 30 | Impenetrable | 50 calcareous marlstone within soil matrix |

WC I Grade 3b (drought)

9 Ploughed level few surface stones

| | | |
|---|---|---|
| 0 38 | HCL | 7 5YR 5/4 |
| 38-45 | MC | mottled and gleyed ?<br>7 5YR 5/4 5Y 5/3 and 10YR 6/8 |
| 45 75 | MC | dominantly grey 5Y 5/3 gleyed |
| 75 105 | MC | 2 5YR 6/4 matrix gleyed<br>few marlstone frags |
| 105+ | Impenetrable - marlstone rubble within soil matrix | |

WC III Grade 3b (wetness)

10 Ploughed level few surface stones

| | | |
|---|---|---|
| 0 27 | HCL | 10YR 5/4 |
| 27 35 | HCL | 7 5YR 5/4 matrix (brown)<br>10YR 7/8 and 2 5Y 6/4 mottles gleyed ? |
| 35-100 | MC | 5Y 5/3 greenish grey matrix gleyed |
| 100 | Impenetrable | marlstone brash in soil matrix |

WC IV Grade 3b (drought)

11 Ploughed level few surface stones

| | | |
|---|---|---|
| 0 23 | HCL/MC | 10YR 5/4 |
| 23 30 | MC | 5Y 7/4 grey matrix with 7 5YR 5/4 and 7 5YR 5/8<br>mottles |
| 30 50 | MC | greenish grey clay gleyed<br>N6 with 7 5YR 5/4 mottles |
| 50 85 | HC | 2 5YR 6/4 matrix with CDOM gleyed<br>few marlstone frags |
| 85 | Impenetrable | marlstone brash |

WC IV Grade 3b (wetness)

12 Ploughed level few surface stones

| | | |
|---|---|---|
| 0 35 | HCL | 7 5YR 5/4 |
| 35 50 | HCL | possibly mottled and gleyed possibly mottling<br>caused by weathering ironstone<br>7 5YR 5/4 matrix<br>with 10YR 6/8 OM and 2 5Y 5/2 grey mottles |
| 50 65 | MC | Gleyed with 2 5Y 6/4 greenish grey matrix<br>7 5Y 5/4 OM and marlstone frags |
| 65 105 | HC | bluish grey clay gleyed N6<br>few frags of brashy marlstone |
| 105 | Impenetrable | brashy marlstone within clay matrix |

WC III Grade 3b (wetness)

13 Almost flat v few surface stones <5%

| | | |
|---|---|---|
| 0 32 | HCL | 10YR 4/4 non calc not stony |
| 32-38 | HCL | 10YR 5/4 (sl paler than topsoil) non-calc |
| 38-80 | MC | Gleyed and mottled with occ marlstone frags 10YR 6/4 matrix with 10YR 6/2 and 10YR 7/8 mottles becoming gleyed and more mottled with depth esp below 60 |
| 80-90 | MC | becoming sl reddish with few Fe frags pale matrix 10YR 6/2 with 7 5YR 4/4 mottles |
| 90+ | Impenetrable | brashy marlstone in soil matrix |

WC IV Grade 3b (wetness)

14 Ploughed flat sl stony on surface c 2% marlstone >6 cm

| | | |
|---|---|---|
| 0-28 | 10YR 4/4 MCL | sl gritty occ marlstone frags |
| 28 65 | HCL | 10YR 4/4 c 5% brashy marlstone frags marlstone frags increasing with depth |
| 65 70 | MC | As above with ironstone frags increasing |
| 70 75 | MC | becoming sl greyer and greenish gleyed |
| 75 90 | M/HC | greenish grey and bluish grey clay Gleyed few marlstone frags |
| 90 | Impenetrable | brashy marlstone |

WC II Grade 2 (wetness)

15 Ploughed no surface stones almost flat

| | | |
|---|---|---|
| 0 32 | MCL | 7 5YR 4/4 non calc not stony |
| 32 45 | MCL | becoming sl paler with occ marlstone and ironstone frags Not mottled or gleyed |
| 45-55 | HCL | 7 5YR 4/4 sl gritty with few ironstone frags |
| 55 65 | HCL | As above sl gritty Not mottled or gleyed |
| 65 80 | MC | 7 5YR 4/4 few Mn concs and ironstone frags Not mottled or gleyed |
| 80-90 | MC | becoming more brashy with depth calc |
| 90 100 | MC | Greenish grey clay gleyed |

WC I Grade 1

16 Ploughed occ marlstone frags on surface v v gentle falls W

| | | |
|---|---|---|
| 0 30 | MCL | 7 5Y 4/4 not stony non calc |
| 30-40 | HCL | 7 5YR 4/6 → 5/6 Not mottled or gleyed |
| 40 70 | HCL | 7 5YR 4/6 → 5/6 v gritty common Fe concs and occ marlstone frags |
| 70 80 | MC | becoming greyer - 10YR 5/2 matrix mottled and gleyed with CDOM |
| 80 100+ | MC | abrupt change to greenish grey clay with CFOM gleyed |

WC II Grade 2 (wetness)

17 Ploughed few small marlstones on surface top of sl rise

| | | |
|---|---|---|
| 0 27 | HCL | 10YR 5/4 gritty non calc |
| 27 32 | MC | becoming gleyed 5 GY 5/1 10YR 5/8 and 7 5YR 4/4 mottles v gritty with c 30% marlstone frags calc |
| 32 45 | MC | marlstone rubble c 30% in clay matrix N5 and N6 gleyed |
| 45 55 | MC | becoming less brashy c 10% marlstone N6 |
| 55-70 | MC | becoming reddish with Fe concs 10% marlstone |
| 70-80 | MC | greyer - N5 and N6 mottled and gleyed |
| 80 | Impenetrable | marlstone |

WC IV Grade 3b (wetness)

18 Plough OSR stony on surface (marlstone) v gentle falls S gently undulating

| | | |
|---|---|---|
| 0 30 | MCL | 10YR 4/3 sl stony → c 2 % >2 cm occ large marlstone frags |
| 30 70 | HCL | 10YR 5/4 Not mottled<br>few marlstone frags and Fe concs<br>becoming sl gritty from c 50<br>Ironstone frags increasing with depth |
| 70-85 | HCL | 10YR 4/4 becoming sl redder with frags of pinkish weathered ironstone |
| 85 100+ | MCL | 7 5YR 4/4 Not mottled<br>few ironstone frags |

WC I Grade 1

18a About 30 m from boring 18
V stony on surface

| | |
|---|---|
| TOPSOIL | c 20 stones >6 cm 20- >2 cm c 5- <2 cm → 45 |
| 0 30 | total<br>v hard calc marlstone |
| SUBSOIL 30+ | c 50 60- brashy marlstone in soil matrix |

Grade 3b (topsoil stones)

19 Ploughed level

| | | |
|---|---|---|
| 0 35 | HCL | 10YR 5/4 |
| 35 45 | MC | 7 5YR 5/4 few Mn concs and Fe concs<br>Not gleyed |
| 45 90 | MC | greenish grey clay 2 5Y 6/4 matrix with 2 5Y 6/2 and 7 5YR 6/8 mottles<br>Gleyed and mottled |
| 90 | Impenetrable | marlstone |

WC III Grade 3a (wetness)

20 Ploughed level

| | | |
|---|---|---|
| 0-32 | HCL | 10YR 5/4 |
| 32-38 | MC | 10YR 5/4 few frags of weathered marlstone giving ochreous mottles Not gleyed |
| 38 62 | MC | mottled and gleyed<br>10YR 6/4 matrix with 10YR 7/8 and 2 5 Y 6/4 mottles |
| 62 | Impenetrable | marlstone |

WC IV Grade 3b (wetness)

21 Plough flat (old ridge and furrow)

| | | |
|---|---|---|
| 0 32 | MCL | 10YR 4/4 non-calc not stony |
| 32 60 | HCL | becoming redder 7 5YR 4/4<br>sl gritty few weathered marlstone frags<br>few ironstone frags |
| 60-65 | MC | becoming paler |
| 65 75 | MC | 7 5YR 5/4 few marlstone frags poss sl gleyed |
| 75 110+ | MC | greenish and bluish grey clay Lias clay<br>FFOM gleyed<br>few marlstone frags sl calc |

WC II Grade 2 (wetness)

22 Ploughed flat (old ridge and furrow)

| | | |
|---|---|---|
| 0-28 | MCL | 10YR 4/3 non calc not stony |
| 28-50 | MCL | 10YR 4/4 few ironstone frags<br>non calc not stony |
| 50 60 | HCL | 10YR 4/4 sl gritty few Fe concs and marlstone frags |
| 60 68 | HCL | 10YR 4/4 with few ochreous mottles |
| 68 75 | MC | becoming sl gleyed 10YR 4/3 matrix<br>common Fe concs - 10YR 5/8 |
| 75-100+ | MC | Gleyed 10YR 5/3 matrix with CDOM<br>few frags calc marlstone and few Fe concs<br>marlstone frags increasing with depth |

WC II Grade 2 (wetness)

23 Ploughed level

| | | |
|---|---|---|
| 0 25 | HCL | 10YR 5/4 |
| 25 55 | HCL | 7 5YR 5/4 with few ironstone frags<br>few Fe concs (weathering of marlstone) |
| 55 60 | MC | gleyed 10YR 6/4 matrix with 10YR 6/2 and 6/8 mottles |
| 60 65 | MC | grey 2 5Y 6/2 with few marlstone frags<br>gleyed |
| 65 | Impenetrable | marlstone |

WC II/III Grade 3a/b (wetness)

24 Ploughed level

| | | |
|---|---|---|
| 0-28 | MCL | 10YR 5/4 |
| 28-41 | MC | 10YR 4/4 Not gleyed but marlstone frags giving ochreous colours |
| 41 90 | MC | Mottled and gleyed 10YR 6/4 matrix with 10YR 6/2 and 10YR 6/8 mottles becoming brashy at c 85+ |
| 90+ | Impenetrable | brashy marlstone |

WC III Grade 3a (wetness)

25 Ploughed almost flat (ridge and furrow)

| | | |
|---|---|---|
| 0-32 | MCL | 10YR 3/4 not stony non-calc |
| 32 50 | HCL | 10YR 3/4 few ironstone frags and Fe concs weathering marlstone producing ochreous mottling Not gleyed sl gritty |
| 50-60 | HCL | 10YR 3/4 few Fe concs marlstone frags |
| 60-65 | MC | more brashy not gleyed as above |
| 65 70 | MC | becoming gleyed with 10YR 5/3 matrix 10YR 5/6 mottles and occ marlstone frags |
| 70 90 | MC | becoming greenish and bluish grey mottled and gleyed |
| 90 | MC | Blue Lias clay with CFOM gleyed |

WC II Grade 2 (wetness)

26 Plough v gentle falls N/almost flat not stony on surface

| | | |
|---|---|---|
| 0 32 | HCL | 10YR 4/3 not stony non-calc |
| 32-45 | HCL | 10YR 4/3 (sl paler than topsoil) sl gritty Fe/Mn concs |
| 45 50 | HCL/MC | 10YR 4/3 brown matrix not gleyed few ochreous mottles and Fe concs |
| 50 65 | HCL/MC | v gritty with common Fe concs Not gleyed |
| 65 70 | | As above with few marlstone frags |
| 70 100+ | MC | 10YR 4/4 matrix with common Fe concs few marlstone frags increasing with depth v gritty |

WC I Grade 2 (topsoil texture)

27 Ploughed occ marlstone frags on surface v sl falls S

| | | |
|---|---|---|
| 0-29 | MCL | 10YR 4/3 sl gritty v sl calc |
| 29 38 | HCL | few ironstone frags and Mn concs 10YR 4/4 sl gritty |
| 38-50 | HCL | few marlstone frags increasing with depth 10YR 4/4 |
| 50-52 | | v brashy c 30% marlstone |
| 52 85 | MC | yellowish brown clay 2 5Y 6/4 matrix gleyed with mottles 7 5YR 4/6 and 2 5Y 6/2 c 30% marlstone brash |
| 85 100 | MC | becoming more distinctly mottled and greyer |
| 100 | MC | bluish grey Lias clay |

WC III Grade 3a (wetness)

28 Ploughed level v few surface stones

| | | |
|---|---|---|
| 0-30 | MCL | 10YR 4/3 |
| 30 40 | HCL | 10YR 4/4 |
| 40-60 | MC | mottled and gleyed 10YR 5/3 matrix with 7 5YR 4/4 and 10YR 6/8 mottles sl gritty few ironstone frags and occ Mn concs |
| 60 75 | MC | becoming more bluish grey and gleyed occ marlstone frags |
| 75-110+ | MC | 2 5Y 6/4 matrix mottled and gleyed |

WC III Grade 3a (wetness)

29 Ploughed almost flat (old ridge and furrow) not stony on surface

| | | |
|---|---|---|
| 0-30 | HCL | 7 5YR 4/4 non-calc not stony |
| 30-40 | HCL | 7 5YR 4/4 few ironstone frags sl gritty |
| 40-60 | HCL/MC | becoming redder 7 5YR 4/6 few ironstone frags gritty Not mottled or gleyed becoming brashy (marlstone) from c 55 cm |
| 60 70 | MC | yellowish brown 10YR 5/3 matrix 10YR 5/8 mottles brashy |
| 70 80 | MC | mottled and gleyed 2 5 Y 5/2 brashy |
| 80 100 | MC | bluish and greenish grey clay |
| 100-110+ | MC | becoming yellowish brown |

WC II Grade 3a (wetness)

30 Ploughed almost flat (old ridge and furrow) not stony

| | | |
|---|---|---|
| 0 32 | HCL | 10YR 4/3 non-calc not stony |
| 32 50 | HCL | 10YR 4/4 few Fe concs and ironstone frags few marlstone frags |
| 50 70 | MC | yellowish brown clay mottled and gleyed 10YR 5/3 matrix with 10YR 6/8 CFOM brashy with c 2% marlstone throughout |
| 70-80 | MC | becoming more brashy mottled and gleyed |
| 80+ | Impenetrable - marlstone | |

WC III Grade 3b (wetness)

31 Ploughed level (old ridge and furrow)

| | | |
|---|---|---|
| 0 28 | HCL | 10YR 5/4 common ironstone frags |
| 28 57 | MC | 10YR 5/4 matrix with 10YR 6/6 and 6/2 mottles mottled and gleyed |
| 57-65 | MC | mottled and gleyed grey clay 10YR 6/4 matrix |
| 65 80 | MC | mottled and gleyed with common Fe concs |
| 80 110+ | MC | becoming more reddish with Fe concs as above |

WC IV Grade 3b (wetness)

32 Plough almost flat occ marlstone frags on surface

| | | |
|---|---|---|
| 0 32 | HCL | 10YR 4/3 not stony v sl calc |
| 32 38 | HCL/MC | 10YR 4/3 few ironstone frags gritty |
| 38 50 | MC | common ironstone frags and occ marlstone frags gritty not mottled or gleyed |
| 50 85 | MC | bluish grey clay 5Y 4/1 gleyed (Blue Lias clay) |
| 85-87 | MC | yellowish brown gleyed clay 10YR 5/3 with CFOM |
| 87+ | Impenetrable | marlstone brash |

WC III Grade 3b (wetness)

33 As above

| | | |
|---|---|---|
| 0-33 | HCL | 10YR 4/4 non-calc not stony |
| 33-45 | HCL | 10YR 4/4 common Fe concs and small marlstone frags gritty |
| 45-50 | MC | bluish grey clay 5Y 4/1 gleyed |
| 50-100+ | MC | variable in colour greenish bluish and yellowish brown 2 5Y 5/4 matrix with few Fe frags occ marlstone frags/brash |

WC III Grade 3b (wetness)

34 Cereal stubble gently undulating sl falls S and E

| | | |
|---|---|---|
| 0 28 | HCL | 10YR 4/3 → 7 5YR 4/4 not stony and non-calc |
| 28 35 | HCL/MC | 7 5YR 4/4 gritty common ironstone frags and Fe concs |
| 35-50 | MC | becoming more brashy c 20% marlstone becoming greyer and mottled gleyed 7 5YR 4/2 matrix occ Fe concs |
| 50+ | Impenetrable - marlstone brash within soil matrix | |

WC IV Grade 3b (wetness)

35 Cereal stubble sl falls east c 10% <2 cm marlstone on surface

| | | |
|---|---|---|
| 0-32 | MZCL | 7 4YR 4/4 non calc sl stony c 5% <2 cm sl gritty |
| 32-45 | MCL | 7 5YR 4/4 with few ochreous Fe concs - 10YR 5/8 few marlstone frags v Fe enriched and gritty becoming predominantly ochreous with depth → Fe enrichment |
| 45 55 | MSCL | As above v Fe enriched and gritty dominantly 10YR 5/6 and 5/8 |
| 55+ | Impenetrable - marlstone | |

WC I Grade 2 (drought)

36 Almost flat/sl falls N S and E cereal stubble

| | | |
|---|---|---|
| 0 35 | MZCL | 7 5YR 5/4 few ironstone frags |
| 35 50 | MCL | 7 5YR 5/4 c 30% iron concs v Fe enriched |
| 50 68 | MCL | 7 5YR 5/4 v Fe enriched as above Not gleyed |
| 68-80 | MC | 7 5YR 5/4 Fe enrichment as above Not gleyed |
| 80-85 | MC | marlstone brash |
| 85 | Impenetrable | marlstone |

WC I Grade 1

37 Cereal stubble abundant small (<2 cm) marlstone on surface

| | | |
|---|---|---|
| 0 30 | MZCL | 7 5YR 5/4 c 10% marlstone <2 cm |
| 30-38 | MCL | 7 5YR 5/4 v Fe enriched c 20% Fe concs |
| 38 115 | ZC | becoming greyer 10YR 5/4 v distinctly mottled with Fe concs (10%) 10YR 6/8 and 5/2 mottles |
| 115+ | Impenetrable | marlstone |

WC IV Grade 3b (wetness)

38 Bottom of v sl valley gentle falls S and E c 2 3% marlstone >2 cm

| | | |
|---|---|---|
| 0-30 | MZCL | 7 5YR 5/4 c 2-3% marlstone >2 cm |
| 30 35 | MZCL | 7 5YR 5/4 soft brashy marlstone |
| 35 | Impenetrable | - marlstone |

WC I Grade 3b (drought)

39 Sl falls SE/almost flat few surface stones

| | | |
|---|---|---|
| 0 25 | MZCL | 7 5YR 4/4 non-calc |
| 25 48 | HCL | 7 5YR 4/4 with few ochreous Fe concs 10YR 5/8 gritty |
| 48 68 | HCL | 7 5YR 3/4 with Fe concs as above Not mottled or gleyed |
| 68-90 | MC | 10YR 4/3 matrix with 10YR 5/6 Fe concs becoming sl paler not mottled or gleyed |
| 90 | MSCL | 10YR 4/3 matrix becoming sl paler not gleyed |

WC I Grade 1

40 Plough v gentle falls S c 5% marlstone frags >2 cm on surface

| | | |
|---|---|---|
| 0 27 | MCL | 7 5YR 4/4 sl gritty |
| 27 65 | MCL | 7 5YR 4/4 matrix with common Fe concs Not gleyed weathered marlstone becoming more Fe enriched with depth |
| 65 80 | HCL | As above common Fe concs within brown matrix |
| 80 | Impenetrable | marlstone |

WC I Grade 1

41 Plough v sl falls S

| | | |
|---|---|---|
| 0-25 | MCL | 10YR 4/3 common ironstone frags |
| 25-70 | HCL | 7 5YR 5/4 common Fe concs<br>few Mn concs |
| 70-110+ | HCL | 10YR 5/4 few ochreous mottles associated with weathered marlstone not gleying common Fe concs |

WC I Grade 1

42 Top of sl ridge falling W ploughed occ areas of brashy marlstone on surface

| | | |
|---|---|---|
| 0 25 | MCL | 7 5YR 4/4 few stones c 3% >2 cm non-calc |
| 25 30 | MCL | paler and more brashy sl calc<br>Fe enriched sl gritty |
| 30+ | Impenetrable | brashy calc marlstone |

WC I Grade 3b (drought)

43 Forage crop sl stony on surface gently undulating v gentle falls W

| | | |
|---|---|---|
| 0 30 | MCL | 7 5YR 4/4 c 1% marlstone >2 cm |
| 30 42 | MCL | 7 5YR 4/4 with common Fe concs<br>Not gleyed gritty |
| 42 50 | MCL | 7 5YR 5/8 v Fe enriched<br>predominantly orange matrix<br>becoming brashy calc marlstone |
| 50+ | Impenetrable | marlstone |

WC I Grade 3a (drought)

PIT DETAILS

PIT AT BORING 3

| | | |
|---|---|---|
| TOPSOIL<br>0-33 | MCL | 10YR 4/3 |
| SUBSOIL<br>33-56 | HCL | 10YR 4/3 occ marlstone frags<br>moderately well dev co SAB<br>firm consistence >0 5% biopores<br>Not gleyed not slowly permeable<br>AVERAGE structure |
| 56 63 | MC | well dev co AB tending to prismatic<br><0 5% biopores firm consistence<br>mottled gleyed and slowly permeable<br>5Y 6/1 matrix with MDOM<br>dominantly grey and ochreous<br>POOR structure |
| 63 78 | MC<br>(Blue<br>Lias clay) | well developed v co prismatic firm consistence<br><0 5% biopores POOR 5Y 6/1 matrix with MDOM<br>gleyed slowly permeable |
| 78+ | HC | v well dev v co prismatic firm<br><0 5% biopores POOR structure<br>dominantly bluish grey N5 with CFOM<br>gleyed and slowly permeable |

PIT AT BORING 39

| | | |
|---|---|---|
| TOPSOIL<br>0 30 | MZCL | gritty |
| SUBSOIL<br>30-60 | MZCL | gritty v dry and compacted<br>c 15-20% marlstone frags <2 cm<br>weathering of marlstone producing many orange FE concs/mottles<br>Not gleying brown matrix 7 5YR 4/4<br>weakly dev fine SAB (some medium and occ coarse)<br>friable consistence >0 5% biopores GOOD structure |
| 60 80 | MCL | moderately well dev co AB<br>firm consistence >0 5% biopores<br>c 2 5% marlstone frags<br>5YR 4/3 matrix Not mottled or gleyed<br>AVERAGE structure |
| 80 100 | HCL | becoming sl paler not mottled or gleyed<br>moderately well dev medium SAB<br>firm consistence >0 5% biopores<br>GOOD structure |