**A1**
**Proposed Keston Park Hotel and Country Club,**
**Golf Course Proposal**
**London Borough of Bromley**
**Agricultural Land Classification**
**Semi detailed Survey**
**ALC Map and Report**
**January 1997**

**Resource Planning Team**
**Guildford Statutory Group**
**ADAS Reading**

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**MAFF Reference** **EL 27/01515**
**LUPU Commission** **02733**

# AGRICULTURAL LAND CLASSIFICATION REPORT
# SEMI DETAILED SURVEY

## PROPOSED KESTON PARK HOTEL AND COUNTRY CLUB
## GOLF COURSE PROPOSAL
## LONDON BOROUGH OF BROMLEY

## INTRODUCTION

1 This report presents the findings of a semi detailed Agricultural Land Classification (ALC) survey of 86 5 hectares of land to the south of Farnborough in the London Borough of Bromley The survey was carried out during November 1996

2 The survey was commissioned by the Ministry of Agriculture Fisheries and Food (MAFF) from its Land Use Planning Unit in Reading in response to a survey previously carried out by Reading Agricultural Consultants (RAC) in connection with proposals for a golf course hotel and country club on this land Access to the boring and pit data collected by RAC was available to ADAS prior to this survey The results of this ADAS survey supersede any previous MAFF ALC information for this land

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 at this site was mostly in Set aside The remaining agricultural areas were either permanent grass arable derelict orchard or a derelict pick your own fruit enterprise The areas mapped as Other Land include semi natural deciduous woodland evergreen wind breaks and an area of dumped soil towards the south west of the site In addition hard development which is also mapped as Other Land includes a substantial dwelling with significant grounds towards the north east of the site farm buildings around Viners Farm to the east of the site and a site works office run by Thames Water adjacent to the reservoirs towards the centre of the site

## SUMMARY

5 The findings of the survey are shown on the enclosed ALC map The map has been drawn at a scale of 1 15 000 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

7 The fieldwork was conducted at an average density of approximately 1 boring per 1 75 hectares of agricultural land A total of 48 borings and five soil pits were described

Table 1 Area of grades and other land

| Grade/Other land | Area (hectares) | / site area | / surveyed area |
|---|---|---|---|
| 2 | 15 7 | 18 2 | 23 6 |
| 3a | 9 9 | 11 4 | 14 9 |
| 3b | 37 1 | 42 9 | 55 9 |
| 4 | 3 7 | 4 3 | 5 6 |
| Other Land | 20 1 | 23 2 | |
| Total surveyed area | 66 4 | | 100 0 |
| Total site area | 86 5 | 100 0 | |

8 The agricultural land at this site has been classified in the range Grade 2 (very good quality) to Grade 4 (poor quality) with substantial areas of Subgrade 3a (good quality) and Subgrade 3b (moderate quality) land Limitations to land quality include soil wetness soil droughtiness slope and land disturbance

9 The land mapped as Grade 2 is principally limited by soil droughtiness The soils on the site were found to be of two types Towards the south of the site they comprise slightly stony clay loams and sandy clay loams Towards the north and east of the site the soils comprise slightly stony sandy loams and loamy sands In the local climate soils of this nature are limited by soil droughtiness as available water to plants is slightly limited

10 The areas mapped as Subgrade 3a (good quality) are limited by both soil wetness and soil droughtiness Towards the east of the site the soils commonly comprise sandy loam topsoils overlying gleyed and slowly permeable clays at shallow depths in the profile Slowly permeable horizons cause drainage to be impeded such that land utilisation is restricted In the local climate the depth of these slowly permeable horizons the light topsoil texture and the degree of soil wetness is sufficient to place this land in Subgrade 3a Towards the south of the site the area mapped as Subgrade 3a is limited by soil droughtiness In this area solid chalk occurs at shallow to moderate depths beneath silty clay loam upper horizons Chalk causes plant rooting to be restricted causing water availability to plants to be restricted to the extent that in the local climate Subgrade 3a is appropriate

11 The areas mapped as Subgrade 3b (moderate quality) are principally limited by soil wetness soil droughtiness and slope The majority of these areas are limited by soil wetness slowly permeable clay subsoils occur at shallow depths in the profile beneath clay loam topsoils These slowly permeable horizons cause drainage to be impeded such that land utilisation is restricted In the local climate the depth of these slowly permeable horizons the medium topsoil texture and the degree of soil wetness is sufficient to place these areas in Subgrade 3b The small area of Subgrade 3b mapped towards the south west of the site is principally limited by soil droughtiness In this area slightly stony clay loams overlie sandy loams and loamy sands which become impenetrable due to flints at moderate depths In the local climate soils of this nature are assigned to Subgrade 3b on the basis of soil droughtiness as a result of a likely deficiency in plant water availability In addition, parts of the Subgrade 3b mapping unit have been downgraded where gradients were measured in excess of 7 This

causes a restriction in land potential as most farm machinery cannot be efficiently or safely operated on such gradients

12 The area mapped as Grade 4 (poor quality) is a disturbed area This area was not assessed in great detail The soil resource was found to extend to approximately 40cm and exhibited clear evidence of wetness and compaction within this depth These factors significantly restrict the range of crops and level of yields possible Therefore this area was considered to be mainly suited to grass with occasional arable crops (eg cereals and forage crops) the yields of which may be variable

## FACTORS INFLUENCING ALC GRADE

### Climate

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

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

Table 2 Climatic and altitude data

| Factor | Units | Values | | |
|---|---|---|---|---|
| Grid reference | N/A | TQ 432 635 | TQ 434 644 | TQ 432 635 |
| Altitude | m, AOD | 100 | 120 | 140 |
| Accumulated Temperature | day°C | 1397 | 1374 | 1397 |
| Average Annual Rainfall | mm | 738 | 742 | 738 |
| Field Capacity Days | days | 153 | 153 | 153 |
| Moisture Deficit Wheat | mm | 103 | 101 | 103 |
| Moisture Deficit Potatoes | mm | 95 | 92 | 95 |

15 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

16 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

17 The combination of rainfall and temperature at this site mean that there is no overall climatic limitation Other local climatic factors such as exposure and frost risk are also believed not to affect the site The site is climatically Grade 1

**Site**

18 The site lies at altitudes in the range 100 140 m AOD The land across the site gently undulates the lowest lying land is towards the south and the highest towards the west To the north and south east summits occur at 125m and 130m respectively these lie either side of a dry valley running from west to east across the site To the west and south of Broom Bank (TQ 429 639) slopes in excess of 7° were measured this is sufficient to be significant in terms of agricultural land quality these areas are limited to a best grade of Subgrade 3b

**Geology and soils**

19 The published geological information for the site (BGS 1971) shows the north of the site to be underlain by Blackheath beds Moving south the majority of the site is mapped as Woolwich Beds A narrow band of Thanet Beds is mapped to the south of the Woolwich Beds which corresponds with the steeper slopes on the site near Broom Bank as mentioned above (para 18) Towards the south of the site Upper Chalk is mapped with a narrow band of undivided and floodplain river terrace gravels to the extreme south of the site on the lowest lying land

20 The most detailed published soils information for the site (SSEW 1983 and 1984) shows the site to comprise soils of the Fyfield 4 and Frilsham associations Fyfield 4 soils are mapped to the north of the site and are described as Deep well drained often stoneless coarse loamy and sandy soils Some fine loamy soils with slowly permeable subsoils and slight seasonal waterlogging and some slowly permeable seasonally waterlogged fine loamy over clayey soils Risk of water erosion (SSEW 1983) Soils of this broad type were found across the site approximately where Blackheath Woolwich and Thanet Beds are shown on the geology map Frilsham association soils are described as Well drained mainly fine loamy soils over chalk some calcareous Shallow calcareous fine loamy and fine silty soils in places (SSEW 1983) Soils of this broad type were found approximately where Upper Chalk and river terrace gravels are shown on the geology map

**Agricultural Land Classification**

21 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

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

*Grade 2*

23 Land of very good quality has been mapped in a total of three separate mapping units across the site The principal limitation is soil droughtiness although soil wetness is equally limiting in a number of areas

24 Within this grade on this site there are two separate soil types The most common occurs towards the east and south of the site and is characterised by the soil pit 3P (see Appendix III) The profiles in these areas commonly comprise a very slightly stony (up to 5% v/v total flints including up to 2% >2cm) medium clay loam occasionally medium silty clay

loam topsoil This passes to a similarly stony occasionally gleyed medium or heavy clay loam sandy clay loam or rarely medium silty clay loam upper subsoil The lower subsoil horizons are similar in texture commonly gleyed and stoneless to very slightly stony (up to 5% v/v total flints) Occasionally the lower subsoil was impenetrable due to a single large flint or flint stones between 65 and 75cm depth Over the majority of these areas the combination of soil textures stone content and moderate subsoil structural condition means that they are slightly restricted in terms of soil droughtiness Soil droughtiness affects plant growth and development especially in drier years In addition the presence of gleying in the profile indicates that either groundwater levels are commonly relatively shallow during wetter periods or that an impedance to drainage is present below the depth of augering as is likely here The depth to gleying (<40cm) over some of this land indicates that Wetness Class II is appropriate and Grade 2 is applied on the basis of a soil wetness limitation given the local climate and the moderate workability of the topsoil However the majority of the observations here are placed in Wetness Class I by virtue of either being gleyed at depths in excess of 40cm or not being gleyed within 120cm Occasional observations in these areas were of slightly better quality but these were scattered and therefore are not mapped separately

25 Soil wetness restricts land utilisation by reducing the number of days when the soil is in a suitable condition for cultivation trafficking by machinery or grazing by livestock as well as adversely affecting crop growth and development

26 The second less common soil type in the Grade 2 mapping units occurs towards the north and south east of the site The principal limitation is soil droughtiness Soils in these areas are characterised by the pit observation 5P (see Appendix III) They commonly comprise a slightly stony (up to 12% v/v total flints including up to 4% >2cm) occasionally gleyed fine or medium sandy loam occasionally loamy fine sand topsoil This passes to a very slightly stony (up to 5% v/v total flints) occasionally gleyed medium sandy loam or loamy medium or fine sand The lower subsoils in this area are commonly stoneless gleyed and comprise loamy fine or medium sands occasionally fine sand and fine sandy loam to depth The combination of soil textures stone content and moderate to good subsoil structural condition means that these areas are slightly restricted in terms of soil droughtiness Soil droughtiness affects plant growth and development especially in drier years

*Subgrade 3a*

27 Land of good quality has been mapped in a total of two mapping units across the site These are located towards the east and south of the site Principal limitation to land quality in these areas includes both soil wetness and soil droughtiness

28 Within this Subgrade on this site two distinct soil types were identified The most common occurs towards the east of the site where the principal limitation is soil wetness Soils in this area commonly comprise a slightly stony (up to 12% v/v total flints including up to 3%>2cm) medium sandy loam sandy clay loam or medium clay loam topsoil which passes to a commonly gleyed slightly to moderately stony (up to 16% v/v total flints) narrow medium sandy loam sandy clay loam or heavy clay loam upper subsoil horizon The lower subsoil horizons which occur from between 38 and 60cm to depth comprise a gleyed and slowly permeable slightly stony (up to 15% v/v total flints) clay A slowly permeable horizon causes a drainage impedance which, given the local climate leads these observations to be

placed in Wetness Classes III and IV (see Appendix II) Where the topsoils are lighter (medium sandy loam) and more workable the depth of the slowly permeable clay indicates that Wetness Class IV is appropriate and Subgrade 3a is applied given the local climate Where the topsoils are heavier ( medium clay loam and sandy clay loam) the slowly permeable clay horizon is deeper and Wetness Class III has been appropriately applied which given the local climate leads to Subgrade 3a also as the topsoil is less workable in wet conditions The effects of soil wetness in terms of land utilisation are detailed above (para 25)

29 The second less common soil type in this Subgrade occurs towards the south of the site and is principally limited by soil droughtiness It is characterised by the soil pit 2P (see Appendix III) Soils in this area commonly comprise a slightly stony (up to 10% v/v total flints including up to 6% >2cm and up to 5% chalk fragments in addition) calcareous medium silty clay loam topsoil This commonly passes to a narrow upper subsoil horizon of calcareous medium silty clay loam which contains approximately 50% chalk fragments and up to 5% flints by volume This horizon was not always present These soils pass to solid chalk from between 28 and 40cm Solid chalk and flints in the profile have the effect of restricting plant rooting which restricts water availability to plants In the pit observation roots were observed to extend to a maximum of 75cm in the chalk Given the local climate and the rooting restriction imposed by the chalk substrate these profiles are appropriately placed in Subgrade 3a on the basis of a soil droughtiness limitation Soil droughtiness affects plant growth and development especially in drier years

*Subgrade 3b*

30 Land of moderate quality has been mapped over the majority of the agricultural land at this site in a total of two mapping units Principal limitations to land quality include soil wetness soil droughtiness and slope

31 The majority of the area mapped as Subgrade 3b is limited by soil wetness Soils in this area are characterised by the pit observation, 1P (see Appendix III) Soils commonly comprise either a sandy clay loam medium clay loam heavy clay loam or clay topsoil which contains up to 15% flints by volume of which up to 8% are >2cm It was commonly gleyed especially where clay or heavy clay loam textures were encountered This overlies slowly permeable poorly structured clay subsoils The presence of a slowly permeable layer indicates a drainage impedance in these soils In the local climate the depth of the slowly permeable horizon means that Wetness Class IV is appropriate and Subgrade 3b given the moderate workability of the topsoils on the basis of a soil wetness limitation The effects of soil wetness in terms of land utilisation are detailed above (para 25)

32 In the small discrete area shown as Subgrade 3b around Mill Hill (TQ 438 640) to the east of the site soil droughtiness is the principal limitation to land quality In this area slightly stony (10% v/v total flints 3%>2cm) heavy clay loam topsoils overlie clay which becomes moderately stony (c 30% v/v total flints) from 40cm and impenetrable to the soil auger at 45cm Given the local climate these soils are appropriately placed in Subgrade 3b as the combination of soil texture and stone content are sufficient to reduce water availability to plants to a significant degree Significant soil droughtiness will affect plant growth and yield in this area in most years The boundaries of this area were defined by the topography of the surrounding landscape

33 To the west and south of Broom Bank (TQ 429 639) gradient is the principal limitation to land quality In these areas gradient was measured at between 7 and 11 This causes a restriction in potential land utilisation as most farm machinery cannot be efficiently or safely operated on such gradients

*Grade 4*

34 Land of poor quality has been mapped to the west of the site where the soils have been disturbed The soils in this area were found to comprise a slightly stony (c 5% v/v total flints) gleyed medium clay loam topsoil overlying a narrow similarly stony gleyed medium or heavy clay loam upper subsoil This passes to a narrow (5 10cm) similarly stony gleyed clay horizon which overlies the infill material from approximately 30 40 cm The latter was impenetrable to the soil auger The soil wetness exhibited by the soil horizons that could be examined in combination with compaction perceived during the survey work has led to this area being classified as of Grade 4 quality The soil wetness and compaction significantly restrict the range of crops and level of yields possible Therefore this area was considered to be mainly suited to grass with occasional arable crops (eg cereals and forage crops) the yields of which may be variable

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## SOURCES OF REFERENCE

British Geological Survey (1971) *Sheet 271 Dartford Drift Edition 1 50 000 Scale* 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

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

Soil Survey of England and Wales (1983) *Soils of South East England 1 250 000 Scale* SSEW Harpenden

Soil Survey of England and Wales (1984) *Soils of South East England Bulletin No 15* SSEW Harpenden

## APPENDIX I

## DESCRIPTIONS 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 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 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 which restrict 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 appropriate 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 HOLWOOD PARK HOTEL/CLUB Pit Number 1P

Grid Reference TQ43746438 Average Annual Rainfall 738 mm
Accumulated Temperature 1397 degree days
Field Capacity Level 153 days
Land Use Set aside
Slope and Aspect degrees

| HORIZON | TEXTURE | COLOUR | STONES 2 | TOT STONE | LITH | MOTTLES | STRUCTURE | CONSIST | SUBSTRUCTURE | CALC |
|---|---|---|---|---|---|---|---|---|---|---|
| 0 25 | HCL | 10YR42 43 | 1 | 3 | HR | | | | | |
| 25 39 | C | 25Y 51 00 | 0 | 3 | HR | M | WKCAB | FM | P | |
| 39 55 | C | 05Y 51 00 | 0 | 1 | HR | M | MDCAB | FM | P | |

Wetness Grade 3B Wetness Class IV
Gley g 25 cm
SPL 25 cm

Drought Grade 3B APW 079mm MBW 24 mm
APP 082mm MBP 11 mm

FINAL ALC GRADE 3B
MAIN LIMITATION Wetness

SOIL PIT DESCRIPTION

Site Name HOLWOOD PARK HOTEL/CLUB Pit No be 2P

Grid Reference TQ43106350 Average Annual Rainfall 738 mm
Accumulated Temperature 1397 degrees days
Field Capacity Level 153 days
Land Use Set aside
Slope and Aspect 2 degrees S

| HORIZON | TEXTURE | COLOUR | STONES 2 | TOT STONE | LITH | MOTTLES | STRUCTURE | CONSIST | SUBSTRUCTURE | CALC |
|---|---|---|---|---|---|---|---|---|---|---|
| 0 28 | MZCL | 10YR42 00 | 6 | 10 | HR | | | | | Y |
| 28 75 | CH | 10YR81 00 | 0 | 3 | HR | | | | P | Y |

Wetness Grade 1 Wetness Class I
Gleying cm
SPL cm

Drought Grade 3A APW 085mm MBW 18 mm
APP 088mm MBP 7 mm

FINAL ALC GRADE 3A
MAIN LIMITATION Drought

SOIL PIT DESCRIPTION

S t Name HOLWOOD PARK HOTEL/CLUB P t N mbe 3P

Grid Referenc TQ42806380 A ag A al Rai f ll 738 mm
Accumul ted Tempe at re 1397 degree days
F eld Capac ty Le el 153 days
L nd Use Permane t Grass
Slope a d Aspect 5 degrees E

| HORIZON | TEXTURE | COLOUR | STONES 2 | TOT STONE | LITH | MOTTLES | STRUCTURE | CONSIST | SUBSTRUCTURE | CALC |
|---|---|---|---|---|---|---|---|---|---|---|
| 0 27 | MCL | 10YR42 00 | 1 | 5 | HR | | | | | |
| 27 48 | MCL | 10YR54 00 | 0 | 5 | HR | | MDCSAB | FR | M | |
| 48 110 | MCL | 10YR54 00 | 0 | 3 | HR | C | MDCSAB | FR | M | |
| 110 120 | HCL | 10YR54 00 | 0 | 3 | HR | C | | | M | |

Wetness Grade 1 Wetness Class I
Gley ng 48 cm
SPL cm

Drought G ade 1 APW 149mm MBW 46 mm
APP 113mm MBP 18 mm

FINAL ALC GRADE 1
MAIN LIMITATION

SOIL PIT DESCRIPTION

S te Name HOLWOOD PARK HOTEL/CLUB P t N mbe 4P

G d R ference TQ43606420 A e ge A l Ra fall 738 mm
Acc mul ted Tempe t e 1397 deg ee days
F eld Capac ty Le el 153 d ys
Land Use Set as de
Slope nd Aspect 4 deg ees N

| HORIZON | TEXTURE | COLOUR | STONES 2 | TOT STONE | LITH | MOTTLES | STRUCTURE | CONSIST | SUBSTRUCTURE | CALC |
|---|---|---|---|---|---|---|---|---|---|---|
| 0 30 | MSL | 10YR41 42 | 3 | 12 | HR | | | | | |
| 30 40 | SCL | 10YR54 53 | 4 | 16 | HR | C | MDCSAB | FR | M | |
| 40 70 | C | 25Y 61 62 | 0 | 15 | HR | M | WKCAB | FM | P | |
| 70 120 | C | 05Y 41 00 | 0 | 3 | HR | M | MDCAB | FM | P | |

Wetne s G ade 3A Wet ess Cl ss IV
Gl y g 30 cm
SPL 40 cm

Drought G ad 2 APW 116mm MBW 13 mm
APP 092mm MBP 3 mm

FINAL ALC GRADE 3A
MAIN LIMITATION W t

SOIL PIT DESCRIPTION

Site Name HOLWOOD PARK HOTEL/CLUB P t N mbe 5P

G id Refe ence TQ43706410 A e ge A l R i f ll 738 mm
Acc mulated Temperat 1397 degree d y
F eld Capacity Le el 153 days
Land Use Set aside
Slope and Aspect 2 deg ees N

| HORIZON | TEXTURE | COLOUR | STONES 2 | TOT STONE | LITH | MOTTLES | STRUCTURE | CONSIST | SUBSTRUCTURE | CALC |
|---|---|---|---|---|---|---|---|---|---|---|
| 0 28 | MSL | 10YR42 00 | 3 | 8 | HR | | | | | |
| 28 48 | MSL | 10YR43 00 | 0 | 5 | HR | | MDCAB | FR | G | |
| 48 83 | LMS | 10YR63 00 | 0 | 0 | | C | MDCAB | FR | G | |
| 83 120 | LMS | 10YR63 62 | 0 | 0 | | M | MDCAB | FR | G | |

Wetness G ade 1 Wetness Class I
Gley g 48 cm
SPL cm

Drought G ade 2 APW 129mm MBW 26 mm
APP 098mm MBP 3 mm

FINAL ALC GRADE 2
MAIN LIMITATION D oughtiness

| 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 | TQ43156454 | SAS | NW | 3 | 55 | | 1 | 1 | 165 | 62 | 106 | 11 | 1 | | | | TS | 2 | LMS TOPSOIL |
| 1P | TQ43746438 | SAS | | | 25 | 25 | 4 | 3B | 079 | 24 | 082 | 11 | 3B | | | | WE | 3B | PIT 55 |
| 2 | TQ43306457 | SAS | N | 1 | 30 | | 2 | 1 | 167 | 64 | 106 | 11 | 1 | | | | | 1 | |
| 2P | TQ43106350 | SAS | S | 2 | | | 1 | 1 | 085 | 18 | 088 | 7 | 3A | | | | DR | 3A | PIT 80 ROOTS75 |
| 3 | TQ43206450 | SAS | N | 1 | 28 | 28 | 4 | 3B | | 0 | | 0 | | | | | WS | 3B | WET & TOP ST |
| 3P | TQ42806380 | PGR | E | 5 | 48 | | 1 | 1 | 149 | 46 | 113 | 18 | 1 | | | | | 1 | |
| 4 | TQ43306450 | SAS | SW | 2 | 38 | 75 | 2 | 1 | 116 | 13 | 086 | 9 | 2 | | | | DR | 2 | |
| 4P | TQ43606420 | SAS | N | 4 | 30 | 40 | 4 | 3A | 116 | 13 | 092 | 3 | 2 | | | | WE | 3A | PIT 90 AUG 120 |
| 5 | TQ43406450 | SAS | SW | 2 | 30 | 60 | 3 | 3A | | 0 | | 0 | | | | | WE | 3A | |
| 5P | TQ43706410 | SAS | N | 2 | 48 | | 1 | 1 | 129 | 26 | 098 | 3 | 2 | | | | DR | 2 | PIT 95 AUG 120 |
| 6 | TQ43206440 | SAS | S | 1 | 30 | 30 | 4 | 3B | | 0 | | 0 | | | | | WE | 3B | |
| 7 | TQ43406440 | SAS | | | 30 | 30 | 4 | 3B | | 0 | | 0 | | | | | WE | 3B | |
| 8 | TQ43806440 | SAS | NW | 1 | 30 | 30 | 4 | 3B | 126 | 23 | 103 | 8 | 2 | | | | WE | 3B | |
| 9 | TQ43006430 | PGR | NE | 1 | 28 | 28 | 4 | 3B | | 0 | | 0 | | | | | WE | 3B | |
| 10 | TQ43126433 | SAS | | | 0 | 30 | 4 | 3B | | 0 | | 0 | | | | | WE | 3B | |
| 11 | TQ43316429 | SAS | N | 1 | 0 | 28 | 4 | 3B | | 0 | | 0 | | | | | WE | 3B | |
| 12 | TQ43706430 | SAS | NE | 1 | 25 | 25 | 4 | 3B | | 0 | | 0 | | | | | WE | 3B | |
| 13 | TQ43806430 | SAS | NW | 1 | 30 | | 2 | 2 | 154 | 51 | 115 | 20 | 1 | | | | WE | 2 | |
| 14 | TQ42736426 | PGR | E | 1 | 25 | 25 | 4 | 3B | | 0 | | 0 | | | | | WE | 3B | |
| 15 | TQ43206420 | SAS | N | 1 | 0 | 20 | 4 | 3B | | 0 | | 0 | | | | | WE | 3B | RUSHES QGDE4 |
| 16 | TQ43406420 | SAS | N | 1 | 25 | 25 | 4 | 3B | | 0 | | 0 | | | | | WE | 3B | |
| 17 | TQ43606420 | SAS | N | 3 | 26 | 40 | 4 | 3A | | 0 | | 0 | | | | | WE | 3A | |
| 18 | TQ43806420 | SAS | N | 3 | 30 | 30 | 4 | 3B | | 0 | | 0 | | | | | WE | 3B | |
| 19 | TQ43906420 | SAS | | | | | 1 | 1 | 106 | 3 | 112 | 17 | 3A | | | | DR | 2 | IMP 75 |
| 20 | TQ43056405 | PGR | NW | 2 | 25 | 25 | 4 | 3B | | 0 | | 0 | | | | | WE | 3B | |
| 21 | TQ43306410 | SAS | N | 3 | 0 | 40 | 4 | 3B | 119 | 16 | 097 | 2 | 2 | | | Q | WE | 3B | |
| 22 | TQ43506410 | SAS | NW | 3 | 38 | 38 | 4 | 3A | | 0 | | 0 | | | | | WE | 3A | |
| 23 | TQ43706410 | SAS | SE | 1 | 85 | | 1 | 1 | 118 | 15 | 087 | 8 | 2 | | | | DR | 2 | |
| 24 | TQ43906410 | SAS | N | 5 | 75 | | 1 | 1 | 150 | 47 | 112 | 17 | 1 | | | | | 1 | |
| 25 | TQ42706400 | PGR | NE | 1 | 22 | 22 | 4 | 3B | | 0 | | 0 | | | | | WE | 3B | |
| 26 | TQ42816397 | PGR | NE | 1 | 25 | 35 | 4 | 3B | | 0 | | 0 | | | | | WE | 3B | |
| 27 | TQ42946401 | PGR | E | 3 | 25 | 35 | 4 | 3B | | 0 | | 0 | | | | | WE | 3B | |
| 28 | TQ43086397 | PGR | W | 3 | 25 | 25 | 4 | 3B | | 0 | | 0 | | | | | WE | 3B | |
| 29 | TQ43306395 | SAS | | | 30 | 30 | 4 | 3B | | 0 | | 0 | | | | | WE | 3B | |
| 30 | TQ43406400 | SAS | NW | 1 | 0 | 85 | 2 | 1 | 115 | 12 | 086 | 9 | 2 | | | | DR | 2 | |
| 31 | TQ43576401 | SAS | | | 30 | 48 | 3 | 3A | | 0 | | 0 | | | | | WE | 3A | |
| 32 | TQ43856400 | SAS | | | 30 | 30 | 4 | 3B | 066 | 37 | 066 | 29 | 3B | | | | WD | 3B | IMP FLINTS 45 |
| 33 | TQ42676392 | PGR | NE | 1 | 25 | 45 | 3 | 3A | | 0 | | 0 | | | | | WE | 3A | |
| 34 | TQ43106389 | PGR | E | 5 | 28 | | 2 | 2 | 152 | 49 | 112 | 17 | 1 | | | | WE | 2 | |
| 35 | TQ42706380 | PGR | SE | 4 | 35 | | 2 | 2 | 091 | 12 | 096 | 1 | 3A | | | | DR | 3A | IMP 60 Q GDE 2 |
| 36 | TQ42806380 | PGR | E | 3 | 55 | | 1 | 1 | 101 | 2 | 110 | 15 | 3A | | | | DR | 2 | IMP FLINTS 65 |
| 37 | TQ42906380 | PGR | E | 2 | | | 1 | 1 | 115 | 12 | 123 | 28 | 2 | | | | DR | 2 | IMP 75 Q GDE 1 |

| SAMPLE NO | GRID REF | USE | ASPECT | GRDNT | GLEY | SPL | WETNESS CLASS | WETNESS GRADE | WHEAT AP | WHEAT MB | POTS AP | POTS MB | M REL DRT | FLOOD | EROSN EXP | FROST DIST | CHEM LIMIT | ALC | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 38 | TQ43106380 | PGR | S | 4 | 28 | | 2 | 2 | 150 | 47 | 110 | 15 | 1 | | | | WE | 2 | |
| 39 | TQ42606370 | SAS | | | | | 1 | 1 | 064 | 39 | 064 | 31 | 3B | | | Y | DB | 4 | Q GDE 3B |
| 40 | TQ42806370 | SAS | S | 2 | 15 | | 2 | 2 | 074 | 29 | 076 | 19 | 3B | | | | DR | 3B | IMP FLINTS 60 |
| 41 | TQ42906366 | ARA | S | 2 | | | 1 | 1 | 119 | 16 | 116 | 21 | 2 | | | | DR | 2 | IMP FLINTS 85 |
| 42 | TQ42976370 | ARA | | | | | 1 | 1 | 082 | 21 | 082 | 13 | 3B | | | | DR | 3B | IMP 50 QGDE 3A |
| 43 | TQ43106367 | SAS | S | 4 | | | 1 | 1 | 091 | 12 | 097 | 2 | 3A | | | | DR | 3A | IMP 42 HARD CH |
| 44 | TQ42506360 | SAS | | | | | 1 | 1 | 073 | 30 | 073 | 22 | 3B | | | Y | DB | 4 | Q GDE 3B |
| 45 | TQ43006360 | ARA | S | 3 | | | 1 | 1 | 102 | 1 | 113 | 18 | 3A | | | | DR | 3A | IMP FLINTS 68 |
| 46 | TQ43206360 | SAS | S | 3 | | | 1 | 1 | 093 | 10 | 095 | 0 | 3A | | | | DR | 3A | |
| 47 | TQ43106350 | SAS | S | 4 | | | 1 | 1 | 065 | 38 | 065 | 30 | 3B | | | | DR | 3B | IMP FLINTS 45 |
| 48 | TQ43216347 | SAS | | | | | 1 | 1 | 095 | 8 | 101 | 6 | 3A | | | | DR | 3A | IMP FLINTS 60 |

| SAMPLE | DEPTH | TEXTURE | COLOUR | MOTTLES COL | MOTTLES ABUN | MOTTLES CONT | PED COL | GLEY | STONES 2 | STONES 6 | STONES LITH | STONES TOT | STRUCT/ CONSIST | SUBS STR | SUBS POR | SUBS IMP | SUBS SPL | SUBS CALC | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0 28 | 1fs | 10YR31 41 | | | | | | 3 | 0 | HR | 10 | | | | | | | |
| | 28 55 | 1fs | 25Y 61 71 | | | | | | 0 | 0 | HR | 5 | | G | | | | | BORDER FS |
| | 55 120 | 1fs | 25Y 62 00 | 10YR68 00 | C | | | Y | 0 | 0 | HR | 3 | | G | | | | | |
| 1P | 0 25 | hcl | 10YR42 43 | | | | | | 1 | 0 | HR | 3 | | | | | | | |
| | 25 39 | c | 25Y 51 00 | 10YR56 00 | M | | | Y | 0 | 0 | HR | 3 | WKCAB | FM P | Y | | Y | | 3% CHALK FRAGS |
| | 39 55 | c | 05Y 51 00 | 10YR58 00 | M | | | Y | 0 | 0 | HR | 1 | MDCAB | FM P | Y | | Y | | |
| 2 | 0 30 | fsl | 10YR42 00 | | | | | | 5 | 0 | HR | 10 | | | | | | | BORDER MSL |
| | 30 50 | 1fs | 10YR53 52 | 10YR56 00 | C | | | Y | 0 | 0 | HR | 3 | | G | | | | | |
| | 50 70 | fs | 25Y 61 62 | 10YR56 58 | C | | | Y | 0 | 0 | | 0 | | G | | | | | BORDER LFS |
| | 70 120 | fsl | 25Y 71 00 | 10YR68 00 | C | | | Y | 0 | 0 | | 0 | | M | | | | | |
| 2P | 0 28 | mzcl | 10YR42 00 | | | | | | 6 | 3 | HR | 10 | | | | | | Y | 5% CHALK FRAGS |
| | 28 75 | ch | 10YR81 00 | | | | | | 0 | 0 | HR | 3 | | P | | | | Y | 65 75 ROOTS FEW/FIN |
| 3 | 0 28 | mzcl | 10YR31 00 | | | | | | 17 | 2 | HR | 25 | | | | | | | POSS ORGANIC |
| | 28 50 | c | 25Y 51 61 | 75YR58 00 | M | | | Y | 0 | 0 | HR | 20 | | P | | | Y | | IMP STONES 50 |
| 3P | 0 27 | mcl | 10YR42 00 | | | | | | 1 | 0 | HR | 5 | | | | | | | SLIGHTLY SANDY |
| | 27 48 | mcl | 10YR54 00 | | | | | | 0 | 0 | HR | 5 | MDCSAB | FR M | | | | | SLIGHTLY SANDY |
| | 48 110 | mcl | 10YR54 00 | 10YR66 58 | C | | | S | 0 | 0 | HR | 3 | MDCSAB | FR M | | | | | SLIGHTLY SANDY |
| | 110 120 | hcl | 10YR54 00 | 10YR66 58 | C | | | Y | 0 | 0 | HR | 3 | | M | | | | | SLIGHTLY SANDY |
| 4 | 0 30 | m 1 | 10YR41 00 | | | | | | 5 | 0 | HR | 15 | | | | | | | BORDER FSL |
| | 30 38 | msl | 10YR44 54 | | | | | | 0 | 0 | HR | 5 | | M | | | | | |
| | 38 75 | lms | 10YR54 53 | 10YR56 00 | C | | | Y | 0 | 0 | | 0 | | G | | | | | |
| | 75 120 | | 25Y 61 00 | 10YR68 00 | M | | | Y | 0 | 0 | | 0 | | P | | | Y | | |
| 4P | 0 30 | msl | 10YR41 42 | | | | | | 3 | 0 | HR | 12 | | | | | | | |
| | 30 40 | 1 | 10YR54 53 | 10YR56 00 | C | | | Y | 4 | 0 | HR | 16 | MDCSAB | FR M | | | | | |
| | 40 70 | c | 25Y 61 62 | 75YR68 00 | M | 00MN00 | 00 | Y | 0 | 0 | HR | 15 | WKCAB | FM P | Y | | Y | | |
| | 70 120 | c | 05Y 41 00 | 75YR58 00 | M | 05Y 41 | 00 | Y | 0 | 0 | HR | 3 | MDCAB | FM P | Y | | Y | | |
| 5 | 0 30 | mcl | 10YR42 00 | | | | | | 3 | 0 | HR | 8 | | | | | | | BORDER HCL |
| | 30 60 | hcl | 10YR52 53 | 10YR58 00 | C | | | Y | 0 | 0 | | 0 | | M | | | | | |
| | 60 90 | c | 25Y 71 00 | 10YR68 00 | M | | | Y | 0 | 0 | | 0 | | P | | | Y | | |
| 5P | 0 28 | msl | 10YR42 00 | | | | | | 3 | 0 | HR | 8 | | | | | | | |
| | 28 48 | msl | 10YR43 00 | | | | | | 0 | 0 | HR | 5 | MDCAB | FR G | | | | | |
| | 48 83 | lms | 10YR63 00 | 10YR56 00 | C | | | Y | 0 | 0 | | 0 | MDCAB | FR G | | | | | |
| | 83 120 | lms | 10YR63 62 | 75YR58 00 | M | | | Y | 0 | 0 | | 0 | MDCAB | FR G | | | | | |
| 6 | 0 30 | hcl | 10YR43 42 | | | | | | 0 | 0 | | 0 | | | | | | | |
| | 30 70 | c | 25Y 61 00 | 10YR68 00 | M | | | Y | 0 | 0 | | 0 | | P | | | Y | | |
| 7 | 0 30 | c | 10YR43 00 | | | | | | 0 | 0 | HR | 3 | | | | | | | BORDER HCL |
| | 30 70 | c | 05Y 21 00 | 75YR58 00 | M | | | Y | 0 | 0 | | 0 | | P | | | 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 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 8 | 0 30 | hcl | 10YR42 00 | | | | | | 1 | 0 | HR | 5 | | | | | | | |
| | 30 70 | c | 25Y 51 53 | 10YR56 00 | M | | | Y | 0 | 0 | CH | 5 | | P | | Y | | | 5% FLINTS |
| | 70 120 | c | 05Y 51 00 | 05YR56 00 | M | | | Y | 0 | 0 | | 0 | | P | | Y | | | |
| 9 | 0 28 | hcl | 10YR43 00 | | | | | | 0 | 0 | HR | 2 | | | | | | | BORDER CLAY |
| | 28 55 | c | 25Y 51 52 | 10YR68 00 | M | | 00MN00 00 | Y | 0 | 0 | HR | 2 | | P | | Y | | | |
| | 55 70 | c | 25Y 61 00 | 10YR66 00 | M | | | Y | 0 | 0 | CH | 15 | | P | | Y | | | |
| 10 | 0 30 | c | 25Y 42 00 | 10YR58 00 | C | | | Y | 0 | 0 | CH | 1 | | | | | | | |
| | 30 60 | c | 10YR52 00 | 10YR58 00 | C | | | Y | 0 | 0 | CH | 1 | | P | | Y | | | |
| 11 | 0 28 | c | 25Y 42 00 | 10YR68 00 | C | | | Y | 0 | 0 | CH | 1 | | | | | | | |
| | 28 60 | c | 25Y 62 00 | 10YR58 00 | C | | | Y | 0 | 0 | CH | 1 | | P | | Y | | | |
| 12 | 0 25 | mcl | 10YR43 00 | | | | | | 0 | 0 | HR | 3 | | | | | | | |
| | 25-50 | c | 25Y 63 64 | 10YR58 00 | M | | | Y | 0 | 0 | HR | 2 | | P | | Y | | | 2% CHALK |
| | 50 70 | c | 25Y 61 00 | 10YR66 00 | C | | | Y | 0 | 0 | | 0 | | P | | Y | | | SLIGHTLY SANDY |
| | 70 80 | hcl | 25Y 71 00 | 10YR68 00 | C | | | Y | 0 | 0 | | 0 | | M | | Y | | | SLIGHTLY SANDY |
| | 80 120 | c | 05Y 51 00 | 10YR58 00 | C | | | Y | 0 | 0 | | 0 | | P | | Y | | | |
| 13 | 0 30 | mcl | 10YR42 00 | | | | | | 0 | 0 | HR | 2 | | | | | | | BORDER SCL |
| | 30 60 | mcl | 10YR53 51 | 10YR66 00 | C | | | Y | 0 | 0 | HR | 2 | | M | | | | | BORDER SCL |
| | 60 75 | scl | 25Y 61 63 | 10YR66 00 | C | | | Y | 0 | 0 | HR | 2 | | M | | | | | |
| | 75 120 | scl | 25Y 63 62 | 10YR68 00 | M | | | Y | 0 | 0 | | 0 | | M | | | | | BORDER HCL |
| 14 | 0 25 | hcl | 10YR42 43 | | | | | | 8 | 0 | HR | 15 | | | | | | | |
| | 25 70 | c | 25Y 61 62 | 10YR68 00 | M | | | Y | 0 | 0 | HR | 10 | | P | | Y | | | |
| 15 | 0 20 | | 25Y 42 00 | 10YR58 00 | C | | | Y | 0 | 0 | CH | 1 | | | | | | | BORDER HCL |
| | 20 60 | | 25Y 51 52 | 75YR58 00 | C | | | Y | 0 | 0 | CH | 1 | | P | | Y | | | |
| 16 | 0 25 | c | 25Y 52 00 | | | | | | 0 | 0 | CH | 1 | | | | | | | |
| | 25 38 | c | 25Y 53 62 | 10YR66 00 | C | | | Y | 0 | 0 | CH | 1 | | P | | Y | | | |
| | 38 70 | c | 25Y 62 00 | 10YR58 00 | C | | | Y | 0 | 0 | CH | 1 | | P | | Y | | | |
| 17 | 0 26 | msl | 10YR41 42 | | | | | | 3 | 0 | HR | 10 | | | | | | | 4P LOCATION |
| | 26 40 | scl | 10YR53 54 | 10YR46 00 | C | | | Y | 0 | 0 | HR | 10 | | M | | | | | |
| | 40 65 | c | 25Y 51 61 | 10YR58 00 | M | | | Y | 0 | 0 | HR | 10 | | P | | Y | | | SLIGHTLY SANDY |
| | 65 120 | c | 05Y 41 00 | 75YR68 00 | M | | | Y | 0 | 0 | | 0 | | P | | Y | | | |
| 18 | 0 30 | mcl | 10YR42 00 | | | | | | 5 | 0 | HR | 15 | | | | | | | |
| | 30 55 | c | 25Y 53 00 | 75YR68 00 | M | | | Y | 0 | 0 | HR | 5 | | P | | Y | | | BORDER SC |
| | 55 100 | sc | 25Y 53 00 | 75YR68 00 | C | | | Y | 0 | 0 | HR | 5 | | P | | Y | | | |
| 19 | 0 30 | mcl | 10YR42 00 | | | | | | 1 | 0 | HR | 5 | | | | | | | BORDER FSZL |
| | 30 65 | mcl | 10YR44 54 | | | | | | 0 | 0 | HR | 5 | | M | | | | | BORDER FSZL |
| | 65 75 | mcl | 10YR54 00 | | | | | | 0 | 0 | CH | 5 | | M | | | Y | | 5% FLINTS IMP 75 |

| SAMPLE | DEPTH | TEXTURE | COLOUR | MOTTLES COL | MOTTLES ABUN | MOTTLES CONT | PED COL | PED GLEY | STONES 2 | STONES 6 | STONES LITH | STONES TOT | STRUCT/ CONSIST | SUBS STR | SUBS POR | SUBS IMP | SUBS SPL | SUBS CALC | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 20 | 0 25 | hcl | 10YR42 00 | | | | | | 0 | 0 | HR | 5 | | | | | | | |
| | 25 70 | c | 25Y 61 62 | 75YR68 00 | M | | | Y | 0 | 0 | | 0 | | P | | Y | | | |
| 21 | 0 30 | scl | 25Y 53 00 | 10YR68 00 | C | | | Y | 0 | 0 | HR | 3 | | | | | | | POSS DISTURBED |
| | 30 40 | lms | 25Y 72 00 | 75YR58 00 | C | | | Y | 0 | 0 | | 0 | | G | | | | | |
| | 40 58 | c | 75YR52 00 | 10YR68 00 | C | | 00MN00 00 | Y | 0 | 0 | | 0 | | P | | Y | | | |
| | 58 90 | c | 25Y 63 61 | 10YR66 00 | M | | 00MN00 00 | Y | 0 | 0 | HR | 5 | | P | | Y | | | SLIGHTLY SANDY |
| | 90 120 | c | 75YR42 00 | 10YR58 00 | M | | 00MN00 00 | Y | 0 | 0 | HR | 5 | | P | | Y | | | |
| 22 | 0 30 | msl | 10YR41 42 | | | | | | 5 | 0 | HR | 10 | | | | | | | |
| | 30 38 | msl | 10YR44 54 | | | | | | 0 | 0 | HR | 5 | | M | | | | | BORDER SCL |
| | 38 100 | c | 25Y 63 00 | 10YR68 00 | M | | | Y | 0 | 0 | | 0 | | P | | Y | | | BORDER SC |
| 23 | 0 30 | msl | 10YR42 32 | | | | | | 1 | 0 | HR | 5 | | | | | | | 5P LOCATION |
| | 30 50 | lms | 10YR54 00 | | | | | | 0 | 0 | HR | 2 | | G | | | | | BORDER MSL |
| | 50 85 | lms | 10YR63 00 | | | | | | 0 | 0 | | 0 | | G | | | | | BORDER LFS |
| | 85 120 | lms | 25Y 63 00 | 75YR58 00 | C | | | Y | 0 | 0 | | 0 | | G | | | | | BORDER LFS |
| 24 | 0 30 | mcl | 10YR42 00 | | | | | | 1 | 0 | HR | 5 | | | | | | | SLIGHTLY SANDY |
| | 30 75 | hcl | 10YR53 00 | | | | | | 0 | 0 | HR | 5 | | M | | | | | SLIGHTLY SANDY |
| | 75 85 | hcl | 10YR63 00 | 10YR66 00 | C | | 00MN00 00 | Y | 0 | 0 | | 0 | | M | | | | | SLIGHTLY SANDY |
| | 85 120 | hcl | 10YR63 62 | 10YR66 00 | C | | 00MN00 00 | Y | 0 | 0 | HR | 1 | | M | | | | | BORDER MCL |
| 25 | 0 22 | hcl | 10YR42 00 | | | | | | 0 | 0 | HR | 3 | | | | | | | |
| | 22 70 | c | 25Y 61 62 | 75YR68 00 | M | | | Y | 0 | 0 | | 0 | | P | | Y | | | |
| 26 | 0 25 | hcl | 10YR42 00 | | | | | | 3 | 0 | HR | 10 | | | | | | | |
| | 25 35 | hcl | 10YR42 00 | 10YR46 00 | C | | | Y | 0 | 0 | HR | 5 | | M | | | | | BORDER CLAY |
| | 35 70 | c | 25Y 61 62 | 75YR68 00 | M | | | Y | 0 | 0 | HR | 5 | | P | | Y | | | |
| 27 | 0 25 | hcl | 10YR42 00 | | | | | | 3 | 0 | HR | 10 | | | | | | | BORDER CLAY |
| | 25 35 | c | 25Y 42 00 | 10YR46 00 | C | | | Y | 0 | 0 | HR | 25 | | M | | | | | |
| | 35 70 | c | 25Y 51 61 | 75YR58 68 | M | | | Y | 0 | 0 | | 0 | | P | | Y | | | |
| 28 | 0 25 | mcl | 10YR41 00 | | | | | | 0 | 0 | HR | 3 | | | | | | | |
| | 25 70 | c | 25Y 41 51 | 75YR58 00 | M | | | Y | 0 | 0 | CH | 5 | | P | | Y | | | SLIGHTLY SANDY |
| 29 | 0 30 | scl | 10YR41 00 | | | | | | 4 | 0 | HR | 12 | | | | | | | |
| | 30 60 | | 25Y 71 00 | 75YR58 00 | M | | 00MN00 00 | Y | 0 | 0 | HR | 2 | | P | | Y | | | SLIGHTLY SANDY |
| | 60 75 | c | 05Y 63 00 | 10YR58 00 | M | | | Y | 0 | 0 | HR | 5 | | P | | Y | | | SLIGHTLY SANDY |
| 30 | 0 35 | msl | 10YR52 53 | 75YR68 00 | C | | | Y | 4 | 0 | HR | 12 | | | | | | | BORDER LMS |
| | 35 85 | lms | 10YR63 00 | 10YR58 00 | C | | | Y | 0 | 0 | HR | 2 | | G | | | | | |
| | 85 120 | c | 05Y 62 00 | 75YR68 00 | M | | | Y | 0 | 0 | HR | 5 | | P | | Y | | | SLIGHTLY SANDY |
| 31 | 0 30 | scl | 10YR41 00 | 10YR58 00 | F | | | | 2 | 0 | HR | 10 | | | | | | | BORDER MCL |
| | 30 48 | hcl | 25Y 53 00 | 10YR58 00 | C | | | Y | 0 | 0 | HR | 5 | | M | | | | | |
| | 48 68 | c | 25Y 63 00 | 75YR58 68 | M | | | Y | 0 | 0 | HR | 2 | | P | | Y | | | |
| | 68 80 | c | 25Y 53 00 | 75YR58 00 | M | | | Y | 0 | 0 | HR | 5 | | P | | 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 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 32 | 0 30 | hcl | 25Y 43 00 | | | | | | 3 | 0 | HR | 10 | | | | | | | |
| | 30 40 | c | 10YR62 00 | 10YR68 00 | M | | | Y | 0 | 0 | HR | 2 | | P | | | | | |
| | 40 45 | c | 10YR62 00 | 10YR68 00 | M | | | Y | 0 | 0 | HR | 30 | | P | | | | | IMP FLINTS 45 |
| 33 | 0 25 | mcl | 10YR41 42 | | | | | | 0 | 0 | HR | 3 | | | | | | | BORDER MZCL |
| | 25 45 | hcl | 25Y 52 53 | 10YR58 00 | M | | | Y | 0 | 0 | HR | 3 | | M | | | | | BORDER CLAY |
| | 45 80 | c | 25Y 61 00 | 75YR68 00 | M | | | Y | 0 | 0 | | 0 | | P | | | Y | | |
| 34 | 0 28 | mcl | 10YR42 00 | 10YR46 00 | F | | | | 0 | 0 | HR | 3 | | | | | | | SLIGHTLY SANDY |
| | 28 40 | scl | 10YR53 52 | 10YR58 00 | C | | | Y | 0 | 0 | HR | 2 | | M | | | | | FINE SAND |
| | 40 60 | scl | 10YR52 00 | 10YR56 00 | C | | | Y | 0 | 0 | | 0 | | M | | | | | BORDER FSL |
| | 60 120 | scl | 25Y 53 00 | 10YR56 00 | M | | | Y | 0 | 0 | | 0 | | M | | | | | HEAVY SCL |
| 35 | 0 35 | mcl | 10YR42 00 | | | | | | 0 | 0 | HR | 5 | | | | | | | |
| | 35 60 | mcl | 10YR53 00 | 10YR58 00 | C | | | Y | 0 | 0 | HR | 10 | | M | | | | | IMP FLINTS 60 |
| 36 | 0 28 | mz l | 10YR42 00 | | | | | | 0 | 0 | HR | 2 | | | | | | | 3P LOCATION |
| | 28 55 | mzcl | 10YR54 00 | | | | | | 0 | 0 | HR | 2 | | M | | | | | |
| | 55 65 | mzcl | 10YR53 52 | 10YR56 00 | C | | | Y | 0 | 0 | HR | 25 | | M | | | | | IMP STONES 65 |
| 37 | 0 30 | mzcl | 10YR42 00 | | | | | | 0 | 0 | HR | 2 | | | | | | | |
| | 30 55 | mzcl | 10YR54 00 | | | | | | 0 | 0 | | 0 | | M | | | | Y | |
| | 55 75 | mzcl | 10YR64 00 | | | | | | 0 | 0 | CH | 5 | | M | | | | Y | IMP FLINTS 75 |
| 38 | 0 28 | mcl | 10YR42 00 | | | | | | 0 | 0 | HR | 2 | | | | | | | SLIGHTLY SANDY |
| | 28 60 | scl | 25Y 53 51 | 10YR58 00 | C | | | Y | 0 | 0 | | 0 | | M | | | | | BORDER MCL |
| | 60 120 | cl | 25Y 61 00 | 10YR68 00 | M | | | Y | 0 | 0 | | 0 | | M | | | | | FINE SCL |
| 39 | 0 18 | mcl | 10YR41 00 | 10YR58 00 | C | | | | 0 | 0 | HR | 5 | | | | | | | DISTURBED |
| | 18 25 | mcl | 25Y 62 72 | 75YR56 00 | M | | | | 0 | 0 | HR | 5 | | M | | | | | REMNANT MOTTLING? |
| | 25 30 | c | 25Y 62 00 | 10YR58 00 | M | | | | 0 | 0 | HR | 5 | | P | | | | | |
| | 30 45 | mcl | 10YR41 00 | 10YR58 00 | C | | | | 0 | 0 | HR | 10 | | P | | | | | IMP 45 INFILL |
| 40 | 0 15 | mcl | 10YR41 00 | | | | | | 0 | 0 | HR | 2 | | | | | | | NR DIST AREA |
| | 15 30 | msl | 25Y 53 00 | 10YR58 00 | C | | | Y | 0 | 0 | | 0 | | M | | | | | |
| | 30 60 | lms | 25Y 53 62 | | | | | Y | 0 | 0 | HR | 5 | | G | | | | | IMP FLINTS 60 |
| 41 | 0 30 | mcl | 10YR42 00 | | | | | | 1 | 0 | HR | 3 | | | | | | | |
| | 30 65 | hcl | 10YR54 00 | | | | | | 0 | 0 | HR | 1 | | M | | | | | |
| | 65 85 | hcl | 10YR54 00 | 10YR58 00 | F | | | | 0 | 0 | HR | 1 | | M | | | | | IMP FLINT 85 |
| 42 | 0 28 | mcl | 25Y 42 00 | | | | | | 1 | 0 | HR | 5 | | | | | | | |
| | 28 50 | mcl | 10YR42 00 | | | | | | 0 | 0 | HR | 5 | | M | | | | | IMP FLINTS 50 |
| 43 | 0 35 | mz l | 10YR42 00 | | | | | | 0 | 0 | HR | 5 | | | | | | Y | 5% CHALK |
| | 35 40 | mz l | 10YR53 43 | | | | | | 0 | 0 | CH | 50 | | M | | | | Y | 5% FLINTS |
| | 40 70 | ch | 10YR81 00 | | | | | | 0 | 0 | HR | 5 | | P | | | | Y | IMP 42 HARD CHALK |

| SAMPLE | DEPTH | TEXTURE | COLOUR | -MOTTLES COL | ABUN | CONT | PED COL | GLEY | STONES 2 | 6 | LITH | TOT | STRUCT/ CONSIST | SUBS STR | POR | IMP | SPL | CALC | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 44 | 0 25 | mcl | 10YR41 00 | 10YR58 00 | C | | | | 0 | 0 | HR | 5 | | | | | | | DISTURBED |
| | 25-30 | hcl | 25Y 62 72 | 75YR58 00 | M | | | | 0 | 0 | HR | 5 | | M | | | | | REMNANT MOTTLING? |
| | 30 40 | c | 25Y 72 00 | 75YR68 00 | M | | | | 0 | 0 | HR | 5 | | P | | | | | |
| | 40 50 | hcl | 25Y 62 00 | 25YR68 00 | M | | | | 0 | 0 | HR | 20 | | P | | | | | IMP 50 INFILL |
| 45 | 0 35 | mcl | 25Y 42 00 | | | | | | 2 | 0 | HR | 4 | | | | | | | |
| | 35 50 | hcl | 10YR42 00 | | | | | | 0 | 0 | HR | 1 | | M | | | | | |
| | 50 68 | hcl | 10YR43 44 | | | | | | 0 | 0 | HR | 1 | | M | | | | | IMP FLINTS 68 |
| 46 | 0 30 | mzcl | 10YR42 00 | | | | | | 0 | 0 | HR | 5 | | | | | Y | | 2% CHALK |
| | 30 40 | mzcl | 10YR53 43 | | | | | | 0 | 0 | CH | 50 | | M | | | Y | | 5% FLINTS |
| | 40 75 | ch | 10YR81 00 | | | | | | 0 | 0 | HR | 5 | | P | | | Y | | SOFT CHALK |
| 47 | 0 28 | mzcl | 10YR42 00 | | | | | | 4 | 0 | HR | 6 | | | | | Y | | 5% CHALK 2P LOC |
| | 28 45 | ch | 10YR81 00 | | | | | | 0 | 0 | HR | 5 | | P | | | Y | | IMP FLINT 45 |
| 48 | 0 35 | mzcl | 10YR42 00 | | | | | | 0 | 0 | HR | 5 | | | | | Y | | 2% CHALK |
| | 35-50 | mzcl | 10YR54 00 | | | | | | 0 | 0 | HR | 8 | | M | | | Y | | +2% CHALK |
| | 50 60 | mzcl | 10YR44 00 | | | | | | 0 | 0 | HR | 10 | | M | | | Y | | IMP FLINTS 60 |