

**A66 Northern Trans-Pennine Project
TR010062**

**3.4 Environmental Statement
Appendix 9.5 Agricultural Land
Classification (ALC) Factual Soil
Survey Report (Rev 2) (Clean)**

APFP Regulations 5(2)(a)

Planning Act 2008

**Infrastructure Planning (Applications: Prescribed Forms and
Procedure) Regulations 2009**

Volume 3

24 January 2023

Infrastructure Planning

Planning Act 2008

**The Infrastructure Planning
(Applications: Prescribed
Forms and Procedure)
Regulations 2009**

A66 Northern Trans-Pennine Project
Development Consent Order 202x

**3.4 ENVIRONMENTAL STATEMENT
APPENDIX 9.5 AGRICULTURAL LAND CLASSIFICATION
(ALC) FACTUAL SOIL SURVEY REPORT**

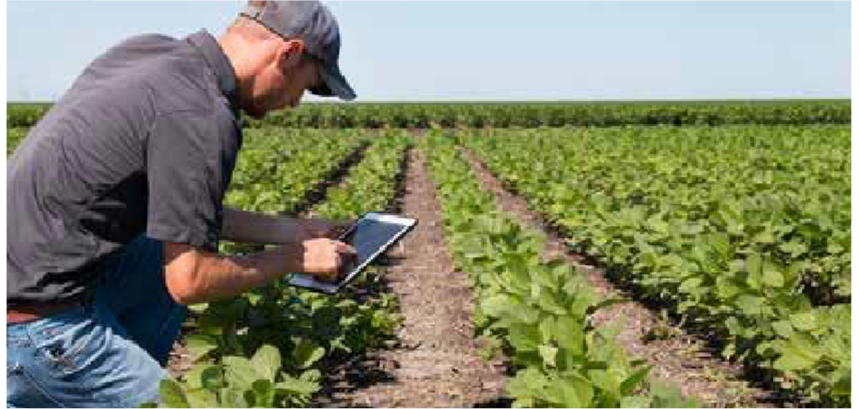
Regulation Number:	Regulation 5(2)(a)
Planning Inspectorate Scheme Reference	TR010062
Application Document Reference	3.4
Author:	A66 Northern Trans-Pennine Project Team, National Highways

Version	Date	Status of Version
Rev 1	13 June 2022	DCO Application
Rev 2	24 January 2023	Deadline 3

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9.5 Agricultural Land Classification Report



A66 Northern Trans-Pennine

Environmental Statement - Agricultural Land Classification

Date: December 2022



ADAS GENERAL NOTES

Project No.: 1010891

Title: A66 Northern Trans-Pennine -. Environmental Statement
Agricultural Land Classification

Client: National Highways

Date:

Office: December 2022

Status: Final

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Date:

December 2022

Date:

December 2022

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Where field investigations have been carried out, these have been restricted to a level of detail required to achieve the stated objectives of the work.

This work has been undertaken in accordance with the quality management system of RSK ADAS Ltd.

Executive Summary

ADAS was instructed by Amey in consultation with Structural Soils Ltd to undertake an Agricultural Land Classification (ALC) survey on the land take for seven proposed road improvement schemes to the A66 between the M6 Junction 40 in the west to Carkin Moor in the east. The survey work was carried out in February and March 2022. Summaries of the survey results for each scheme are given below.

M6 Junction 40 to Kemplay Bank

Well drained sandy and loamy soils were found across the scheme. Climate limited land quality to respectively subgrade 3a in the west and grade 2 in the east of the scheme. The areas (percentages) recorded of grade 2, grade 3a and urban land were respectively 10.3ha (21%), 2.6ha (5%), 1.8ha (3%) and 29.9ha (61%) with 4.4ha (9%) not surveyed. Considered as a percentage of the agricultural land surveyed for this scheme grade 2 and subgrade 3a land represented respectively 80% and 20% of this area.

Penrith to Temple Sowerby

The soils across this scheme are predominantly well drained sandy soils except for occasional locations where the drainage is imperfect due to a higher clay content. The land across the scheme is predominantly grade 2 due to an overall climatic limitation with occasional locations downgraded to subgrade 3a because of a soil wetness or droughtiness limitation. The areas (percentages) recorded of grade 2, subgrade 3a, non-agricultural and urban land were respectively 65.3ha (62%), 6.8ha (6%), 2.1ha (2%) and 21.2ha (20%) with 10.8ha (10%) not surveyed. Considered as a percentage of the agricultural land surveyed for this scheme grade 2 and subgrade 3a land represented respectively 91% and 9% of this area.

Temple Sowerby to Appleby

The soils across this scheme vary from predominantly well drained sandy soils in the west to imperfectly or poorly drained loamy and clayey soils in the centre and east of the scheme. Climate limits land to respectively grade 2 and subgrade 3a on the western and eastern parts of the scheme. Land is predominantly grade 2 on the western side with the sandy soils and subgrade 3b on the eastern side with clayey soils and a mix of grade 2, subgrades 3a and subgrade 3b in the centre. The areas (percentages) recorded of grade 2, subgrade 3a, subgrade 3b, non-agricultural and urban land were respectively 72.7ha (34%), 46.2ha (22%), 45.9ha (22%), 0.5ha (<1%), 7.5ha (3%) and 30.9ha (15%) with 9.7ha (5%) not surveyed. Considered as a percentage of the agricultural land surveyed for this scheme grade 2, subgrade 3a, subgrade 3b and grade 4 land represented respectively 44%, 28%, 28% and <1% of this area.

Appleby to Brough

The soils across this scheme were found to be very variable ranging from sandy to clayey resulting in drainage status's of well drained, imperfectly drained and poorly drained. Climate limited grade to subgrade 3a in the west and centre and subgrade 3b towards the east of the scheme. Depending on the degree of wetness limitation, land along the scheme is classified as subgrade 3a, subgrade 3b and grade 4 because of wetness. Gradient limits land to grade 4 in some areas and flooding/very poor drainage limits land to grade 5 in a few locations. The areas (percentages) recorded of subgrade 3a, subgrade 3b, grade 4, grade 5, non-agricultural and urban land were respectively 43.9ha (24%), 65ha (36%), 21.6ha (12%), 5.8ha (3%), 13.5ha (8%) and 20.9 ha (12%) with 11.4ha (6%) not surveyed. Considered as a percentage of the agricultural land surveyed for this scheme subgrade 3a, subgrade 3b, grade 4 and grade 5 land represented respectively 32%, 48%, 16% and <1% of this area.

Bowes Bypass

An overall climatic limitation limited the land to subgrade 3b quality across this scheme. The soils are loamy over clayey so soil wetness is also a limitation. The areas (percentages) recorded of subgrade 3b and urban land were respectively 37.5ha (64%) and 21.3ha (36%). Considered as a percentage of the agricultural land surveyed for this scheme subgrade 3b represented 100% of this area.

Cross Lanes to Rokeby

Only a limited number of locations were surveyed across this scheme and all but one of the surveyed locations were at the west of the scheme. The soils for the locations surveyed are loamy over clayey with poor drainage. Wetness limited the land to subgrade 3b. The areas (percentages) recorded of subgrade 3b and urban land were respectively 6.9ha (11%) and 17.1ha (27%) with 40.3ha (63%) not surveyed. Considered as a percentage of the agricultural land surveyed for this scheme subgrade 3b represented 100% of this area.

Stephen Bank to Carkin Moor

Typically soils along this scheme are loamy or clayey topsoils over clayey subsoils with imperfect or poor drainage. Soil wetness limited land to subgrade 3a, subgrade 3b or grade 4 quality. The areas (percentages) recorded of subgrade 3a, subgrade 3b, grade 4, non-agricultural and urban land were respectively 7.8ha (8%), 39.9ha (42%), 22.8ha (24%), 3.4ha (4%) and 18.9ha (20%) with 1.2ha (1%) not surveyed. Considered as a percentage of the agricultural land surveyed for this scheme subgrade 3a, subgrade 3b and grade 4 represented respectively 11%, 57% and 32% of this area.

Summary

The agricultural land land quality varied from predominantly grade 2 (very good) west from the centre of the Temple Sowerby to Appleby scheme and predominantly subgrade 3b (moderate quality) east of the centre of this scheme. Across all schemes the areas (percentages) recorded of grade 2, subgrade 3a, subgrade 3b, grade 4, grade 5, non-agricultural and urban land were respectively 148.3 (19%), 107.2ha (14%), 193.0ha (25%), 44.9ha (6%), 5.8ha (1%), 27.8ha (4%) and 159.1ha (21%) with 77.8ha (10%) not surveyed. Climate precluded any land from being classified as grade 1 (excellent). The land recorded as urban is predominantly existing roads. Considered as a percentage of the agricultural land surveyed for all the schemes grade 2, subgrade 3a, subgrade 3b, grade 4 and grade 5 land represented respectively 30%, 21%, 39%, 9% and 1% of this area.

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Introduction

1.1 Background

The Project comprises the improvement of the A66 between the M6 at Penrith and the A1(M) at Scotch Corner, comprising of the following eight individual schemes:

- M6 Junction 40 to Kemplay Bank Penrith to Temple Sowerby Temple Sowerby to Appleby Appleby to Brough
- Bowes Bypass
- Cross Lanes to Rokeby Stephen Bank to Carkin Moor
- A1(M) Junction 53 Scotch Corner.

ADAS were instructed by Amey in consultation with Structural Soils Ltd to undertake an agricultural land classification survey. This report provides information on the soils and agricultural quality of the seven schemes of the A66 Northern Trans-Pennine upgrade project requiring land take. The report is based on a soil survey of the land undertaken during February and March 2022.

The ALC was devised and introduced in the 1960s and Technical Report 11 (MAFF, 1966) outlined the national system, which forms the basis for advice given by the then Ministry of Agriculture, Fisheries and Food (MAFF) and Welsh Office Agriculture Department (WOAD) on land use planning matters. Following a review of the system, criteria for the sub-division of Grade 3 into Subgrade 3a (good quality agricultural land) and Subgrade 3b (moderate quality agricultural land) were published in Technical Report 11/1 (MAFF, 1976). The classification is well established and understood in the planning system and provides an appropriate framework for determining the physical quality of the land at national, regional and local levels as most recently described in the second edition of the Natural England Technical Information Note TIN049 (December 2012).

The report is divided into a number of sections with brief overarching descriptions of the surface and underlying solid geology as well as the likely soil types present using the National Soils Map, a classification showing geographic soil associations identified by both the most frequently occurring soil series and by combinations of ancillary series.

The 'Geology and Soils' desk study has previously identified and characterised the schemes in terms of the likely soil associations present. This report draws from that study to include a brief reference to any existing information which is then followed by details of the field soil survey work carried out including a brief description of the soils in each scheme. This then allows allocation to the relevant grades.

1.2 Site Environment

The A66 Northern Trans-Pennine upgrade project entails the realignment or widening of eight sections of the A66 between Penrith and Scotch Corner. This report describes the soil and land quality ascertained by field soil survey work carried out during February and March 2022.

1.3 Agricultural Use

The land affected by the project is predominantly cropped with grass with small areas of arable cropping. The schemes are described from the west to east. The

western schemes are at lower altitudes with consequent better climate. The agricultural land on these schemes tends to have greater versatility and any areas of cropping are in the western schemes. Those schemes towards the centre and east of the project tend towards higher altitude land with consequent wetter and cooler climate which favours grass production only and at times borders moorland (Appleby to Brough). Heavier soils impact drainage and alongside microrelief and slope tend to reduce cropping versatility and possibilities of growing a wider variety of crops.

1.4 Geology

The 1:50,000 scale BGS¹ geology maps of the area show that the sites are underlain by Stainmore Formation in the west of the project, the M6 Junction 40 to Kemplay Bank scheme, and in the Bowes Bypass scheme as far east as the junction with the A67. This Carboniferous deposit consists of sandstones, siltstones and mudstones and is overlain by a Glacial Till in which the soils have formed.

The Penrith Sandstone deposit lies to the east of Kemplay Bank roundabout in M6 Junction 40 to Kemplay Bank scheme as well as throughout the Penrith to Temple Sowerby, Temple Sowerby to Appleby and Appleby to Brough schemes. These Permian deposits consist of sedimentary and wind blow sands; they are overlain by Glacial Till with some glaciofluvial sands and gravels on the sides of valleys and Alluvium on valley floors.

The Yordale Group limestones occur in Bowes Bypass scheme to the east of Bowes as bands of Great Limestone, Alston Formation Limestone and Four Fathoms Limestone and throughout the Cross Lanes to Rokeby and Stephen Bank to Carkin Moor schemes as Great Limestone and Alston Formation Sandstone. This group consists of limestones, sandstones and mudstones deposited in the Carboniferous Period; they occur at the surface in the west of Cross Lanes to Rokeby scheme and are underlain by Glacial Till in the east. In Stephen Bank to Carkin Moor scheme the solid geology is predominantly covered by Glacial Till but there are isolated pockets where the solid geology occurs at the surface.

1.5 Soils

The published soils information is from the national soils map² published at 1:250,000 scale. The information indicates the western schemes of the project as having soils that are light to medium textured and well to moderately well drained. This potentially high quality land includes the following soil associations:

Newbiggin: typically a well-drained medium textured soil formed in reddish drift overlying limestone. The soils are typically medium clay loam over a clay loam subsoil; they are well drained and fall into WC 1 or 2; Newbiggin occurs in association with Salwick a similar textured but less well drained soil. The medium soil textures hold a good supply of water and the soils are not generally prone to drought. In this part of the country these soils are typically mapped as ALC Grade 3a. They occur throughout M6 Junction 40 to Kemplay Bank scheme.

Wick 1: typically a well-drained light textured soil formed in glaciofluvial and river terrace deposits. The soils are typically medium sandy loam over a medium sandy

¹ <http://mapapps.bgs.ac.uk/geologyofbritain/home.html>

² *Soil Survey of England and Wales; 1983. Soils and their use in Northern England.* Soil Survey of England and Wales; Harpenden.

loam subsoil; they are well drained and fall into WC 1; Wick 1 occurs in association with Arrow a similar textured soil affected by groundwater and with Newport a more sandy soil which is also well drained. The light loam soil textures hold an adequate supply of water and the soils are only slightly prone to drought. In this part of the country these soils are typically mapped as ALC Grade 2 and 3a. They occur throughout the west of the Junction 40 to Kemplay Bank scheme and Cross Lanes to Rokeby schemes and also in parts of Penrith to Temple Sowerby, Temple Sowerby to Appleby, Appleby to Brough and Stephen Bank to Carkin Moor schemes.

Newport 1: typically a well drained light textured soil formed in glaciofluvial drift deposits. The soils are typically loamy medium sand or over loamy sand or sand subsoil; they are well drained and fall into WC 1; Newport 1 occurs in association with Wick (see above) and similar textured soils affected by groundwater e.g. Blackwood. The light sandy soil textures make the soils prone to drought unless they are affected by groundwater but in this cool and wet part of the country these soils are typically mapped as ALC Grade 2 and 3a. They occur throughout Penrith to Temple Sowerby scheme.

Crannymoor: typically a well drained sandy textured soil formed in glaciofluvial drift. The soils are typically medium sand over a sand subsoil and are very acidic; they are well drained and fall into WC 1; Crannymoor occurs in association with Newport (see above) and similar textured soils affected by groundwater e.g. Blackwood. The light sandy soil textures make the soils prone to drought unless they are affected by groundwater but in this cool and wet part of the country drought is not an overriding limitation. However their elevated position is likely to limit their land quality to Grade 3a at best. They occur only at the western end of Appleby to Brough scheme.

In the centre and eastern schemes some of the soils are heavier textured. This potentially lower quality land includes the following soil associations:

Clifton: typically a medium to heavy textured soil, with a slowly permeable subsoil, formed in Glacial Till. The soils typically have a medium textured topsoil over clayey subsoil; typically they are poorly drained and fall into WC 4; Clifton occurs in association with Salwick a similar textured but imperfectly drained soil. The soils hold a good supply of water and are not generally prone to drought. A detailed survey undertaken at the western end of Temple Sowerby to Appleby scheme indicate that they are of a higher quality than is typical, being mapped predominantly as Grade 3a.

Brickfield 2: typically a medium textured soil, with a slowly permeable subsoil, formed in Glacial Till. The soils typically have a medium textured topsoil over medium textured subsoil; typically they are imperfectly to poorly drained and fall into WC 4 or WC 3 if under drained; Brickfield 2 occurs in association with Nercwys and East Keswick soils which are of a similar texture but better drained, typically falling into WC 3 and 1 respectively. The soils hold a good supply of water and are not generally prone to drought. They are likely to be mapped as Grade 3b due to a wetness limitation. They occur over the eastern part of Stephen Bank to Carkin Moor scheme.

Brickfield 3: typically a medium textured soil, with a slowly permeable subsoil, formed in Glacial Till. The soils typically have a medium textured topsoil over clayey subsoil; typically they are poorly drained and fall into WC 4; Brickfield 3 occurs in association with Dunkswick and Hallsworth soils which are of a similar or heavier texture. The soils hold a good supply of water and are not generally prone to drought. In this cool and wet part of the country wetness is an overriding limitation and the soils are likely to be Grade 3b or 4. They occur over the western half of Bowes Bypass scheme.

Dunkeswick: typically a medium textured soil, with a slowly permeable subsoil, formed in Glacial Till. The soils typically have a medium textured topsoil over clayey subsoil; typically they are poorly drained and fall into WC 4; Dunkeswick occurs in association with Brickfield and Hallsworth soils which are of a similar or heavier texture. The soils hold a good supply of water and are not generally prone to drought. In this cool and wet part of the country wetness is an overriding limitation and the soils are likely to be Grade 3b or 4. They occur over the eastern half of Bowes Bypass scheme.

1.6 Geology and Soils on a Scheme Basis

M6 Junction 40 to Kemplay Bank: Deposits of Glacial Till which were laid down in ice age conditions cover most of the site with glaciofluvial sands and gravels on the southern boundary of the scheme area. These superficial deposits overlie Carboniferous deposits of Stainmore Formation mudstones and sandstones in the west and Permian deposits of Penrith Sandstone Formation in the east. The resulting soils which are mapped as Newbiggin Association in the extreme west and Wick 1 Association over the majority of the site, typically have well drained fine loamy to coarse loamy soils with some rock or gravel at depth. They are typically well to moderately well drained and in this part of the country fall into Wetness Class (WC) 1 or 2 and so into ALC Grade 3a.

Penrith to Temple Sowerby: Deposits of Glacial Till with Alluvium in valleys were laid down in ice age conditions, overlie Penrith Sandstone Formation, Permian wind-blown sands. The resulting soils are mapped as Newport 1 Association. They are typically well drained deep sandy and coarse loamy soils and in this part of the country fall predominantly into WC 1 (ALC Grade 2) but contain 10% of subordinate soils (i.e. Blackwood) which, where drained fall into WC 1 and where undrained fall into WC 3 and 4 (ALC Grade 3a/b). In the north western corner of the scheme areas of Wick 1 Association are mapped. They typically have deep well drained coarse loamy soils and are well to moderately well drained and in this part of the country fall into WC 1 or 2 and so into ALC Grade 2.

Temple Sowerby to Appleby: Deposits of Glacial Till with Alluvium in valleys were laid down in ice age conditions, overlie Penrith Sandstone Formation, Permian wind-blown sands, close to boundary with Eden Shale Mudstone which was laid down in the Permian. The resulting soils are mapped mainly as Clifton Association. They are typically slowly permeable clayey soils and in this part of the country fall into WC 4 (ALC Grade 3b or Grade 4) but contain 30% of subordinate soils (i.e. Salwick and Quarndon), which are better drained and fall into WC 2 and 3 and so ALC Grade 2 and 3a. In the central areas of the scheme Enborne and Wick 1 Association are mapped. Enborne Association are typically slowly permeable clayey soils in valleys, and in this part of the country fall into WC 3 and 4 (ALC Grade 3a/b or 4). Wick 1 Association typically have deep well drained coarse loamy soils and are well to moderately well drained and in this part of the country fall into WC 1 or 2 and so into ALC Grade 2.

Appleby to Brough: Deposits of Glacial Till with Alluvium in the valleys and River Terrace in the south east were laid down in ice age conditions, overlie Permian deposits of Penrith Sandstone.

The soils are mapped as Wick 1 Association across the majority of the scheme. They typically have deep well drained coarse loamy soils and are well to moderately well drained and in this part of the country fall into WC 1 or 2 and so into ALC Grade 3a for the western and central areas of the scheme and Grade 3b for the eastern end of the scheme. A small area to the west is mapped as Crannymore. These soils are well

drained sandy soils and can be affected by groundwater. They typically fall into WC 1 (ALC Grade 3a) when they are drained and the regional watertable has been lowered and WC 4 (ALC Grade 3b) if undrained. To the east of the scheme a small area of Clifton Association is mapped close to Langrigg. These soils are typically slowly permeable clayey soils which fall into WC 4 (ALC Grade 3b or 4) but contain 30% of subordinate soils (i.e. Salwick and Quarndon) which are better drained and fall into WC 2 and 3 (ALC Grade 3b or 4).

Bowes Bypass: Deposits of Glacial Till which were laid down in ice age conditions, overlie Carboniferous deposits of Stainmore Formation mudstones, siltstones and sandstones in the west, and Four Fathom Limestone Member in the east.

The resulting soils to the west are mapped as Brickfield 3 they typically consist of slowly permeable seasonally waterlogged fine loamy over clayey soils and in this part of the country are likely to fall into WC 4 and so into ALC Grade 3b or 4. The soils to the east of the area are mapped as Dunkeswick. They typically consist of slowly permeable seasonally logged fine loamy over clayey soils and are likely to fall into WC 4 and into ALC Grade 3b or 4.

Cross Lanes to Rokeby: Deposits of Glacial Till which were laid down in ice age conditions, overlie Carboniferous deposits of Great Limestone Member with Alston Formation sandstone on southern boundary.

The soils are mapped as Wick 1 Association. They typically have deep well drained coarse loamy soils and are well to moderately well drained and in this part of the country fall into WC 1 or 2 and so into ALC Grade 3a for the majority of the area, ALC Grade 2 in the far east of the scheme and ALC Grade 3b in the far west of the scheme.

Stephen Bank to Carkin Moor: Deposits of Glacial Till which were laid down in ice age conditions, overlie Carboniferous deposits of Yordale Group Limestones including Four Fathom Limestone in the west, Alston Formation limestones, mudstones and sandstones in the centre of the scheme and Alston Formation sandstones in the east.

Across the majority of the area to the west the soils are mapped as Wick 1 Association. They typically have deep well drained coarse loamy soils and are well to moderately well drained and in this part of the country fall into WC 1 or 2 and so into ALC Grade 2. To the far east of Stephen Bank to Carkin Moor (dualling and junctions, bypass) the soils are mapped as Brickfield 2 Association. These soils typically consist of slowly permeable, seasonally waterlogged fine loamy soils and largely fall into WC 4 when undrained (ALC Grade 3b or 4) and WC 3 with artificial drainage (ALC Grade 3a/b).

1.7 Previous Agricultural Land Classification

The Provisional ALC maps do not subdivide Grade 3 land in Subgrade 3a (good) and Subgrade 3b (moderate) quality agricultural land. This division was introduced in 1988.

M6 Junction 40 to Kemplay Bank: The Provisional ALC maps show predominantly urban land uses over much of the site with areas of Grade 3 in the east and to the south of the road. There are no detailed post 1988 ALC surveys undertaken within the study area.

Penrith to Temple Sowerby: The Provisional ALC maps show the Penrith to Temple Sowerby area as urban land over roads surrounded by areas of Grade 2 with small areas of Grade 3 around Swine Gill Plantation and at the eastern end of the scheme. A detailed post 1988 classification of the eastern end of the scheme found an area of

Grade 3a with some Grade 2 and a small area of Grade 3b. This indicates that some of the land mapped as Grade 3 on the Provisional ALC maps is likely to be Best and Most Versatile Land (BMV) land.

Temple Sowerby to Appleby: The Provisional ALC maps show the Temple Sowerby to Appleby area as urban land over roads surrounded by areas of Grade 2 in west and centre of the scheme, with Grade 3 in east and on the proposed bypass to the north of Kirkby Thore. Post 1988 surveys have been undertaken at the western end of the scheme indicating that the majority of the land in this area is Grade 3a with some Grade 2; and to the south of the proposed route, on the eastern outskirts of Kirkby Thore where a mix of Grade 2, 3a and 3b have been mapped.

Appleby to Brough: The Provisional ALC maps show the area as urban land over roads surrounded by areas of Grade 3 with some very small pockets of Grade 4 to the west. There are no detailed post 1988 ALC surveys undertaken within the study area.

Bowes Bypass: The Provisional ALC maps show the area as urban land over roads surrounded by areas of Grade 4. There are no detailed post 1988 ALC surveys undertaken within the study area.

Cross Lanes to Rokeby: The Provisional ALC maps show the area as urban land over roads surrounded by areas of Grade 3. There are no detailed post 1988 surveys undertaken within the study area.

Stephen Bank to Carkin Moor: The Provisional ALC maps show the area as urban land over roads surrounded by areas of Grade 3. There are no detailed post 1988 ALC surveys undertaken within the study area.

2 Methodology

A detailed soil survey was carried out from 7th February to 15th March 2022. The survey was based generally on observations at 100m intervals along the proposed road corridor or on a 100m grid for larger blocks of land, such as road junctions or areas of temporary land take, for example areas for use as compounds during construction. The approximate sampling density was one observation per hectare.

During the survey, soils were examined via a combination of auger borings and soil description pits to a maximum depth of 1.2m. Soils were described using hand texturing to determine the soil type. Texture class is determined by the relative proportions of sand, silt and clay particles and the amount of organic matter in a soil horizon and may be assessed in the field by hand texturing or measured in a laboratory by particle-size distribution analysis.

Soil texture is key in determining the available water capacity of a soil profile.

Soil wetness is assessed in the field by identifying the depth to any slowly permeable soil horizon, which is defined in terms of soil texture, structure and gleying and relating this to the texture of the top 25cm.

A soil wetness limitation exists where the soil water regime adversely affects plant growth or imposes restrictions on cultivations or grazing by livestock. For ALC purposes the soil wetness assessment takes account of: i) the climatic regime ii) the soil water regime and iii) the texture of the top 25cm of the soil.

The influence of climate on soil wetness is assessed by reference to median field capacity days (FCD), the number of days water is likely to drain from the soil profile in a typical year. FCD ranges are specified within which similar soils are expected to have similar degrees of wetness limitation. The spatial distribution of FCD has been mapped at a scale of 1:1 million by the SSLRC (Jones and Thomasson, 1985) and there is also a gridpoint dataset.

Following the initial survey using auger borings every 100m, the land can be mapped according to grade with each grade further characterised by excavation of a soil profile pit in a representative area of the soil type/grade. Soil samples are also taken at this stage on a 'horizon' basis and submitted for sand, silt and clay as well as organic matter content to confirm the soil texture.

The detailed data from both the auger borings and soil pits is then used to map the areas. A log of the details of each observation point and an ALC map showing the distribution of grades across the schemes is given in a separate appendix for each scheme attached to this report.

The Appendices pertaining to each scheme are as follows:-

- 1 M6 Junction 40 to Kemplay Bank
- 2 Penrith to Temple Sowerby
- 3 Temple Sowerby to Appleby
- 4 Appleby to Brough
- 5 Bowes Bypass
- 6 Cross Lanes to Rokeby
- 7 Stephen Bank to Carkin Moor

3 Soils

Details of the auger borings on a scheme basis are provided in Appendix 1 to 7. Brief generic descriptions of the soils found by the field survey for each scheme are given below together with an example detailed soil profile description for a pit, if dug, in the scheme.

3.1 M6 Junction 40 to Kemplay Bank

To the west of the M6 Junction soils with 30-40cm brown or dark brown medium clay loam topsoil over similarly coloured mainly medium or heavy clay loam subsoil sometimes moderately stony below 40-70cm were found. The soils are well drained showing no greyish or pale colours or ochreous mottling.

In the centre of this scheme soils with 25-35cm brown or dark brown sandy clay loam topsoil over similarly coloured sandy clay loam subsoil sometimes moderately stony below 28-60cm were found. The soils are well drained showing no greyish or pale colours or ochreous mottling.

On the east of the scheme soils with variable topsoil as well as variable subsoil texture were found. The topsoil textures identified were dark brown medium sandy loam, coarse sandy loam, sandy clay loam or medium clay loam topsoil over dark brown or brown medium sandy loam, medium clay loam or sandy clay loam upper subsoil over similarly coloured loamy sand, medium sand, coarse sand or coarse sandy loam subsoil. The soils are well drained showing no greyish or pale colours or ochreous mottling except for some ochreous mottling evident in one profile.

Profile Pit Description: Near auger boring 28 (east Penrith) pit to establish subsoil stone content. Wetness Class I, ALC Grade 3a (limitation topsoil stone content >6cm)

Grid Reference: 352900 529300

Crop: Grass

Depth (cm) Description

0-25	Dark brown coarse sandy loam (7.5YR3/3); total hard rounded stone 9% (visual estimate) >2cm 9% >6cm 6%; friable; weakly developed medium subangular blocky; >0.5% biopores >0.5mm diameter; common roots.
25-40	Reddish brown (5YR4/3) coarse sandy loam; 10% hard rounded stones (visual estimate); very friable; weakly developed granular and loose structure; >0.5% biopores >0.5mm diameter; common roots.
40-100	Reddish brown (5YR4/3) coarse sandy loam; total stone 20%; few roots 20-30cm; stopped due to stone.

3.2 Penrith to Temple Sowerby

The soils predominantly have medium sandy loam and occasionally loamy sand or sandy clay loam topsoils which are dark brown in colour and 20-40cm deep. The subsoil texture is predominantly medium sand or medium loamy sand (particularly the upper subsoil). The subsoil colour is predominantly brown and subsoil depth extended to 120cm plus deep. Because of their sandy texture the soils are well drained. The exception is when top and subsoil are sandy clay loam in texture and drainage is imperfect. The topsoil and subsoil are occasionally very slightly stone with occasionally the lower subsoil being moderately stony.

Profile Pit Description: Near auger boring 40 (east of Brougham) to establish soil characteristics below 70cm. Wetness Class I, ALC Grade 2 (limitation climate). The profile would also be limited to Grade 2 by droughtiness (Moisture Balance for winter wheat 13mm and for potatoes 11mm).

Grid Reference: 354600 528700

Crop: Grass

Depth (cm) Description

0-30	Dark brown (7.5YR3/3) medium sandy loam; total hard rounded stone 10% (visual estimate) >2cm 10% >6cm 6%; weakly developed medium/fine subangular blocky; >0.5% biopores >0.5mm diameter; many roots.
30-43	Brown (7.5YR4/4) loamy medium sand; weakly developed fine subangular blocky; few roots.
43-70	Strong brown (7.5YR4/6) coarse sand; total stone 20% hardstones; loose structure
70-110	Strong brown (7.5YR4/6) medium sand; loose structure.

3.3 Temple Sowerby to Appleby

The soils vary across this section with soils in the western half generally being lighter in texture than those in the eastern half. A typical lighter soil has a brown medium sandy loam topsoil 30-43cm deep over upper and lower subsoils extending to 120cm plus depth which have variable textures of brown medium sand, medium sandy loam, sandy clay loam and sandy clay. The topsoil tends to be very slightly stony and the lower subsoil moderately stony. The soils are mostly well drained.

Profile Pit Description: Near auger boring 210 Wetness Class I, Grade 2 (limitation climate)

Grid Reference: 363650 526100

Crop: Fallow after cereal

Depth (cm) Description

0-45	Dark brown (7.5YR3/3) medium sandy loam; total stone content 0-25cm 5% (visual estimate) >2cm 5% >6cm 1%; weakly developed fine subangular blocky; friable; common roots.
45-70	Dark Brown (7.5YR3/3) loamy medium sand; total stone content 20%; occasional large stone below 60cm; weakly developed fine granular; friable; few roots.
70-100	Dark brown (7.5YR3/2) loamy medium sand; total stone content 20%; weakly developed fine subangular block.

Profile Pit Description: Near auger boring 213 Wetness Class III, Grade 3a (limitation wetness)

Grid Reference: 363700 526300

Crop: Fallow

Depth (cm) Description

0-40	Dark brown (7.5YR2.5/3) medium sandy loam; stoneless; weakly developed fine subangular blocky; friable; few roots.
40-55	Reddish Brown (5YR4/4) medium sandy loam; fine subangular blocky; friable.
55-60	Dark reddish brown (5YR3/4) sandy clay loam; total stone content 10%; large stones present at 60cm 20%; weakly developed medium subangular blocky; porosity >0.5%.

Profile Pit Description: Near auger boring 249 Wetness Class III, Grade 3a

Grid Reference: 364500 526100

Crop: Ley

Depth (cm) Description



0-25	Very dark brown (7.5YR2.5/2) sandy clay loam; weakly developed fine subangular blocky; friable
25-40	Very dark brown (7.5YR2.5/2) sandy clay loam; weakly developed fine subangular blocky; friable.
40-50	Reddish brown (5YR4/3) clay with common (10YR5/6) mottles; 10% small stones; firm; weakly developed coarse angular blocky; few fine roots.
50-55	Reddish brown (5YR4/3) clay with many (10YR5/6) mottles; 10% small stones; pale (5Y6/3) ped faces; weakly developed coarse angular blocky; porosity <0.5% biopores >0.5mm; dolerite boulders present at 50cm with clay between the boulders (rootable soil); water seeping into pit at 50cm

A typical heavier soil in the east of the scheme has a grey brown medium clay loam or sandy clay loam topsoil varying in depth from 20-35cm. The upper subsoil is typically grey brown or dark brown sandy clay loam with ochreous mottles extending to variable depth over mainly pale brown or pale reddish brown heavy clay loam or occasionally clay, sandy clay or sandy loam lower subsoil extending to 100cm plus. These soils are either imperfectly or poorly drained.


3.4 Appleby to Brough

The survey found the soils in this scheme to be very variable and it is not possible to give any meaningful generic description of a soil profile in the scheme. The soils vary from well drained to poorly drained. The sandy textures and colours vary in well drained profiles across the scheme as do the clayey textures and colours in imperfectly and poorly drained profiles.

Location:	Appleby to Brough, near auger boring 383
OS Grid Reference:	NY 72547 17451
Land Use:	Permanent Grass (very patchy ground cover)
Aspect:	7-11° slope, south, south west facing
AOD:	145 m
Soil type:	Sandy topsoil overlying a moderately freely draining light and medium textured subsoil (Wetness Class II).
Land Quality:	Limited to ALC Subgrade 3b by slope

Soil Profile	Depth (cm)	Description
	0-30	Dark brown (10YR 3/3) loamy medium sand with few, (1-5%), small and medium rounded sandstones and dolerite erratics; slightly moist; moderately developed surface layer (5-10cm) with fine sub-angular blocky structure, below 10cm weakly developed medium and coarse angular blocky, (mechanical cultivation affected); moderate packing density; friable above 10cm, slightly firm below; common fine fissures above 10cm, rare below, few fine and medium pores; abundant fine fibrous roots becoming common below 10cm; common medium earthworms; clear, wavy boundary.
	30-100	Yellowish red (5YR 4/6) loamy medium sand, probably transitioning to sandy clay loam with depth; many, large and very large sub-rounded dolerite boulders; moist, wet below 75cm; weak, medium and coarse angular blocky structure, moderate packing density, slightly friable; few fine fissures, common fine and rare medium pores; rare fine fibrous roots; rare large earthworms and channels. Sub-surface water channel at 75cm
		
<p>Large dolerite boulders in subsoil -></p>		

Location:	Appleby to Brough, between auger borings 456 and 458
OS Grid Reference:	NY 75365 15778
Land Use:	Permanent Grass
Aspect:	Near flat, (exposed stream embankment)
AOD:	145 m
Soil type:	Slightly stony medium silt/sandy loam topsoil over a slowly permeable heavy clay loam subsoil.
Land Quality:	ALC Subgrade 3b, (Wetness Class IV plus possible groundwater effect)

Soil Profile	Depth (cm)	Description
	0-30	Very dark brown (10YR 2/2) sandy silt loam with few, (1-5%), small rounded quartz sandstone gravels; very moist, (recent rain); moderately developed fine and medium sub-angular blocky structure; low packing density; friable; common fine fissures, common fine and medium pores; common fine and medium fibrous roots; common small and medium earthworms; clear, wavy boundary.
	30-55	Reddish yellow (5YR 6/6) medium sandy loam with few, medium and large sub-rounded sandstones; few, fine faint, yellowish brown (10YR 6/8) mottles; moist; weak, medium and coarse angular blocky structure, moderate packing density, slightly friable; common fine and rare medium fissures, few fine and medium pores; rare fine fibrous roots; rare large earthworms and channels, gradual, irregular boundary.
	55-80+	Yellowish brown (10YR 5/4), heavy clay loam with common medium and large hard and soft weathered sandstones; many, coarse, distinct yellowish brown (10YR 5/8) and light yellowish brown (10YR6/4) mottles with common blackish iron and manganese concretions; moist; weakly developed coarse angular blocky and blocky structure; high packing density; firm, <u>slowly permeable</u> ; rare fine and medium fissures, rare fine and medium pores, very rare fine fibrous roots, rare large earthworms.

3.5 Bowes Bypass

The soils on this scheme have dark or very dark greyish brown medium clay loam, silty clay loam or sandy clay loam, sometimes organic, topsoil varying from 15-30cm deep over brown heavy or medium clay loam upper subsoil with ochreous mottles to 38-50cm depth over greyish brown or grey heavy clay loam or clay lower subsoil with ochreous mottles to 100cm plus depth. The soils are imperfectly or poorly drained.


3.6 Cross Lanes to Rokeby

The limited amount of surveying on this scheme was at the west end with one location towards the east end. The surveyed locations had dark grey or greyish brown medium clay loam or silty clay loam topsoil with a few ochreous mottles which are 24-30cm over yellow brown or light brown medium clay loam upper soil with ochreous, light grey and yellow mottles down to 32-50cm deep over very dark grey heavy clay loam or clay lower subsoil with ochreous and yellow mottles to 100cm plus depth. The soils are poorly drained.


3.7 Stephen Bank to Carkin Moor

The soils on this scheme typically have very dark or dark grey brown medium or heavy clay loam topsoil to 28-30cm depth over light grey and yellow heavy clay loam or clay subsoil with ochreous, grey and yellow mottles to 100cm plus depth. The soils are poorly drained.

Location:	Stephen Bank to Carkin Moor, near to boring 614
OS Grid Reference:	NZ 14100 09600
Land Use:	Permanent Grass
Aspect:	1-3° easterly
AOD:	163 m
Soil type:	Slightly stony medium sandy loam topsoil over moderately stony, sandy clay loam, imperfectly drained subsoil.
Land Quality:	ALC Grade 3a, (Wetness Class III)

Soil Profile	Depth (cm)	Description
	0-27	Dark greyish brown (10YR 3/2) slightly organic medium clay loam with few, (1-5%), small and medium rounded sandstones; moist; moderately developed small and medium sub-angular blocky structure; low packing density; friable; common fine and rare medium fissures, common fine pores; common fine fibrous and rare fleshy roots; common small and medium and rare large earthworms with common channels; clear, smooth boundary.
	27-60	Dark yellowish brown (10YR 4/6) medium sandy loam with common, (6-15%), medium and few large angular sandstones; few, fine faint, yellowish brown (10YR 6/8) mottles; moist; weak, medium and coarse angular blocky structure, moderate packing density, friable; few fine fissures, few fine pores; few, fine fibrous roots; rare medium and large earthworms and channels, gradual, irregular boundary.
	60-100	Yellowish brown (10YR 5/6), sandy clay loam with common medium and large weathered sandstones, locally abundant, (36-70%): many, fine, distinct light brownish grey (10YR 6/2) and brownish yellow (10YR6/8) mottles with common iron and manganese concretions; moist; weakly developed medium and coarse angular blocky and prismatic structure; moderate packing density; friable, potentially seasonally <u>slowly permeable</u> ; rare fine fissures, rare fine pores, rare fine fibrous roots, very rare large earthworms and earthworm channels.

Location:	Stephen Bank to Carkin Moor, near to boring 644
OS Grid Reference:	NZ 15407 08812
Land Use:	Winter Cereal
Aspect:	1-3° easterly
AOD:	143m
Soil type:	Slightly stony medium clay loam topsoil over moderately stony, heavy clay loam, weakly structured and poorly drained subsoil.
Land Quality:	ALC Grade 3b, (Wetness Class IV)

Soil Profile	Depth (cm)	Description
	0-30	Dark greyish brown (10YR 4/2) medium clay loam with few, (1-5%), small and medium rounded sandstones; moist; weakly developed medium and coarse sub-angular blocky structure; moderate packing density; plastic at the surface where wet, slightly friable below; few fine fissures, rare fine and medium pores; few fine fibrous roots; rare medium earthworms and channels; abrupt, smooth boundary.
	30-42	Gray (10YR 6/1) heavy clay loam with few, medium and large angular sandstones; abundant, distinct, yellow (10YR 7/8) and yellowish brown (10YR 5/8) mottles; slightly moist; moderate, medium and coarse angular blocky structure and slightly prismatic, high packing density, very firm; rare fine and medium fissures, few fine pores; few, becoming rare, fine fibrous roots particularly in fissures and earthworm channels; rare large earthworms and channels, clear, irregular boundary.
	42-100	Very dark grey (2.5Y 3/1), heavy clay loam or clay with common medium and large sandstones with few small shale and coal fragments: abundant, distinct grey (10YR 6/1) and yellowish brown (10YR5/8) mottles; moist; weakly developed very coarse angular blocky and prismatic structure; high packing density; firm, <u>slowly permeable</u> ; few fine and rare medium fissures, rare fine pores, rare fine fibrous roots, very rare large earthworms.

4 Agricultural Land Classification

4.1 The Agricultural Land Classification System

The land was classified using the system outlined in the Ministry of Agriculture, Fisheries and Food (MAFF, now Defra) publication: 'Agricultural Land Classification of England and Wales - Revised guidelines and criteria for grading the quality of agricultural land' (October 1988). A more recent reference to the classification system was made in a second edition of the Natural England Technical Information Note TIN049 (Dec 2012).

The Agricultural Land Classification (ALC) system provides a framework for classifying land according to the extent to which its physical or chemical characteristics impose long-term limitations on agricultural use. The limitations can operate in one or more of four principal ways. They may affect:

1. The range of crops which can be grown
2. The level of yield
3. The consistency of yield
4. The cost of obtaining the crop

The classification system gives considerable weight to flexibility of cropping, whether actual or potential. The ability of some land to produce consistently high yields of a somewhat narrower range of crops is also taken into account.

The principal physical factors influencing agricultural production are climate, site (including relief) and soil. By assessing these factors, it is possible to assign land into one of five land classification grades, Grade 1 land being the highest quality and Grade 5 the lowest quality land. Grade 3 is subdivided into Grades 3a and 3b, to identify good quality agricultural land from moderate quality land.

The ALC classifications, with reasons, for the schemes are given in separate sections for each scheme.

4.2 Climate

The agricultural climate is an important factor in assessing the agricultural quality of land, and the agricultural climate of this site has been calculated using the Climatological Data for Agricultural Land Classification³.

The climatic data used in the ALC classification of each scheme is given in the sections below for each scheme. Along the A66 route from the M6 Junction 40 to Carkin Moor climate limited the ALC grade at best to Grade 2 with some parts of the route limited to Subgrade 3a or 3b by climate.

4.3 Agricultural Land Classification for the Schemes

The results of the soil survey described in section 3 were used in conjunction with the agro-climatic data given in the sections for each scheme below to classify the land according to the revised guidelines for Agricultural Land Classification issued in 1988 by the Ministry of Agriculture, Fisheries and Food (now Defra)⁴.

³ Meteorological Office, (1989). *Climatological Data for Agricultural Land Classification*.

⁴ MAFF, (1988). *Agricultural Land Classification for England and Wales: Revised Guidelines and Criteria for Grading the Quality of Agricultural Land*.

Along the route the field survey identified agricultural land of Grade 2, Subgrade 3a, Subgrade 3b, Grade 4 and Grade 5 quality. The principal limitation to agricultural use of the land is climate, soil wetness and in limited areas gradient.

4.4 M6 Junction 40 to Kemplay Bank

Agroclimatic data

Grid reference	Altitude (m)	Average Annual Rainfall (mm)	January to June Accumulated Temperature (day °C)	Field Capacity Days (mm)	Moisture Deficit Wheat (mm)	Moisture Deficit Potatoes (mm)	Climatic grade
NY 510 289	150	920	1,223	225	67	47	3a
NY 518 289	130	877	1,246	220	73	54	2
NY 526 293	120	862	1,257	218	76	58	2

The field survey identified land of Grade 2 and Subgrade 3a with some urban and non-agricultural land. Six out of 29 locations could not be surveyed due to access being denied.

4.4.1 Grade 2

The land surveyed (10.3ha) between the M6 Junction 40 and Kemplay Bank was classified as Grade 2. The soils are well drained and medium or sandy textured but limited to Grade 2 by a climatic limitation.

4.4.2 Grade 3a

The land surveyed (2.6ha) to the west of the M6 Junction 40 was classified as Subgrade 3a due to a climatic limitation.

4.5 Penrith to Temple Sowerby

Agroclimatic data

Grid reference	Altitude (m)	Average Annual Rainfall (mm)	January to June Accumulated Temperature (day °C)	Field Capacity Days (mm)	Moisture Deficit Wheat (mm)	Moisture Deficit Potatoes (mm)	Climatic grade
NY542290	110	853	1,268	216	78	62	2
NY591286	120	820	1,255	210	81	64	2

There is an overall climatic limitation limiting the land to at best Grade 2. Eighteen of 130 locations could not be surveyed due to access being denied. After the soil survey was completed nine of the not surveyed locations (138, 142, 143, 145, 147, 150, 151, 152 and 153) plus one other location (136) were designated as out of scope due to a boundary change.

4.5.1 Grade 2

This was the predominant grade across this scheme with 65.3ha being classified as Grade 2. The land with this grade has deep well drained sandy soils. At locations where the subsoil had loamy sand and sand horizons droughtiness limited the grade to 2 as well as the overall climatic limitation (eg see data in 3.2 for pit near location 40).

4.5.2 **Grade 3a**

Occasional locations across this scheme were classified as Subgrade 3a. This was due to imperfect drainage (Wetness Class III) due to a sandy clay loam subsoil resulting in a slowly permeable layer or a droughtiness limitation at some locations where the subsoil texture was sand immediately beneath a loamy sand topsoil. The total area classified as Subgrade 3a was 6.8ha.

4.6 Temple Sowerby to Appleby

Agroclimatic data

Grid reference	Altitude (m)	Average Annual Rainfall (mm)	January to June Accumulated Temperature (day °C)	Field Capacity Days (mm)	Moisture Deficit Wheat (mm)	Moisture Deficit Potatoes (mm)	Climatic grade
NY 616 264 west / 1	120	847	1256	214	80	62	2
NY 677 215 east / 2	150	891	1223	218	71	52	3a
NY 658 229 central/ 3	140	898	1234	220	74	55	2 on 3a boundary

Land to east of NY658229 is generally too cool and wet to be classified higher than Grade 3a. In the west of the scheme the field survey identified the land as predominantly Grade 2 with limited areas of Subgrades 3a and 3b. In the centre of the scheme the field survey identified the land as a mix of Grade 2 and Subgrades 3a and 3b. In the east of the scheme the field survey identified land of Subgrade 3b quality

4.6.1 **Grade 2**

This was the predominant grade across the west of this scheme. In the centre of the scheme west of NY658229 Grade 2 land occurs in roughly in equal proportion with Subgrade 3a/b land. The Grade 2 land has deep well drained sandy soils covering 72.7ha in total.

4.6.2 **Grade 3a**

If climate is not the reason for limiting the land to Subgrade 3a (in the east of the scheme) it is imperfect drainage caused by a sandy clay loam upper subsoil over lying a clay lower subsoil leading to a slowly permeable layer (Wetness III when slowly permeable layer starts below 58cm with 214 Field Capacity Days). The area classified as Subgrade 3a was 46.2ha.

4.6.3 **Grade 3b**

This is the predominant grade across the east of the scheme. The soils are poorly drained (Wetness Class 4) as a result of clayey subsoils causing the soils to be slowly permeable (Wetness IV when slowly permeable layer starts above 59cm with 218 Field Capacity Days). The area classified as subgrade 3b was 45.9ha.

4.7 Appleby to Brough

Agroclimatic data

Grid reference	Altitude (m)	Average Annual Rainfall (mm)	January to June Accumulated Temperature (day °C)	Field Capacity Days (mm)	Moisture Deficit Wheat (mm)	Moisture Deficit Potatoes (mm)	Climatic grade
NY 718 181 west/1	150	908	1223	220	70	51	3a
NY 787 149 east/2	170	1076	1201	246	61	38	3b
NY 757 156 central/3	150	917	1224	222	67	48	3a

The field survey identified land of Subgrade 3a and 3b, Grade 4 and Grade 5 quality. Climate limited the grade to Subgrade 3a at the west and centre of the scheme and to 3b at the east of the scheme. Twelve out of 159 locations were not surveyed due to access being denied.

4.7.1 **Grade 3a**

There are 43.9ha of this subgrade which covers the second largest part of the scheme. It is present throughout and is graded in this way due to climate and imperfect drainage (Wetness Class III) soils with non-calcareous medium or coarse sandy clay loam topsoils over sandy loam, sandy clay loam or heavy clay loam subsoils. The principal limitations to agriculture are climate and soil wetness due to a slowly permeable layer starting below c60cm but above 80cm.

4.7.2 **Grade 3b**

There are 65.0ha of this subgrade which covers the largest part of the scheme. It is present throughout and is graded in this way due to slope in the west and imperfect or poor drainage (Wetness Class III and IV) soils with non-calcareous medium or coarse sandy clay loam topsoils over sandy clay loam or heavy clay loam subsoils. The principal limitations to agriculture are soil wetness due to a slowly permeable layer starting above c60cm and/or high groundwater and slope to the west of the scheme.

4.7.3 **Grade 4**

There are 21.6ha of this grade occurring in patches throughout the scheme due to slope in the west and imperfect or poor drainage (Wetness Class III and IV) soils with non-calcareous heavy clay loam topsoil over clay subsoil. The principal limitations to agriculture are soil wetness due to a slowly permeable layer starting above c60cm and/or high groundwater and slope in the west of the scheme.

4.7.4 **Grade 5**

This grade is restricted to a small number of small patches mainly towards the centre of the scheme covering about 5.8ha. The Grade 5 allocation is due to possible flood risk and/or very poorly drained (Wetness Class 5) soils with non-calcareous clay topsoil over clay subsoil. The principal limitation to agriculture is soil wetness.

4.8 Bowes Bypass

Agroclimatic data

Grid reference	Altitude (m)	Average Annual Rainfall (mm)	January to June Accumulated Temperature (day °C)	Field Capacity Days (mm)	Moisture Deficit Wheat (mm)	Moisture Deficit Potatoes (mm)	Climatic grade
NY986135 West/1	280	928	1,071	227	57	32	3b
NZ014136 East/2	265	901	1,087	223	60	36	3b

The field survey identified land of Subgrade 3b quality. Observations were made at 16 locations.

4.8.1 Grade 3b

There are 37.4ha of this subgrade covering the whole of the scheme. It is graded in this way due to climate and imperfect drainage or poor drainage (Wetness Class III or IV). The soils have non-calcareous medium clay loam, medium silty clay loam or sandy clay loam topsoil over heavy clay loam and clay subsoil. The principal limitations to agriculture are climate and soil wetness due to a slowly permeable layer starting within c61cm (Wetness Class IV) or starting below c61cm but within 80cm depth (Wetness Class III)

4.9 Cross Lanes to Rokeby

Agroclimatic data

Grid reference	Altitude (m)	Average Annual Rainfall (mm)	January to June Accumulated Temperature (day °C)	Field Capacity Days (mm)	Moisture Deficit Wheat (mm)	Moisture Deficit Potatoes (mm)	Climatic grade
NZ 049 138 West/1	210	851	1149	215	68	48	3b
NZ 081 136 East/2	150	812	1217	208	79	62	2
NZ 065 137 Central/3	190	846	1172	214	72	52	3a

The locations surveyed identified land of Subgrade 3b quality. Fifty two out of 61 locations could not be surveyed due to access being denied. Of the 9 locations surveyed 8 were at the west end of the scheme.

4.9.1 Grade 3b

The limited area of this scheme surveyed identified 6.9ha of this subgrade. It is graded in this way due to climate and imperfect or poor drainage (Wetness Class III or IV). The soils had non-calcareous medium clay loam or silty clay loam topsoil over heavy clay loam and clay subsoil. The principal limitation to agriculture is soil wetness due to a slowly permeable layer starting within c58cm (Wetness Class IV) or starting below c58cm but within 80cm depth (Wetness Class III)

4.10 Stephen Bank to Carkin Moor

Agroclimatic data

Grid reference	Altitude (m)	Average Annual Rainfall (mm)	January to June Accumulated Temperature (day °C)	Field Capacity Days (mm)	Moisture Deficit Wheat (mm)	Moisture Deficit Potatoes (mm)	Climatic grade
NZ 123 106 West/1	140	805	1,229	206	84	67	2
NZ 165 080 East/2	150	770	1,218	197	84	68	2

The field survey identified land of predominantly Subgrade 3b and Grade 4 with a very limited area of Subgrade 3a quality. Three out of 85 locations were not surveyed.

4.10.1 Grade 3a

There are 7.8ha of this subgrade which covers a small part of the scheme. This grade is allocated due to imperfectly drained (Wetness Class III) soils with non-calcareous medium clay loam topsoils over variable sandy, medium or heavy clay loam subsoils. The principal limitation to agriculture is soil wetness due to a slowly permeable layer starting below c54cm but within 80cm.

4.10.2 Grade 3b

There are 39.9ha of this subgrade which covers the largest part of the scheme. It is present throughout and is graded as such due to poor drainage (Wetness IV) soils with non-calcareous medium clay loam topsoils over medium or heavy clay loam subsoils which maybe sandy in places. The principal limitation to agriculture is soil wetness due to a slowly permeable layer starting above c54cm.

4.10.3 Grade 4

There are a number of areas totalling to 22.8ha of this grade tending towards the centre of the scheme. The areas allocated this grade have poorly drained (Wetness Class IV) soils with non-calcareous heavy clay loam topsoil over heavy clay loam or clay subsoil. The principal limitation to agriculture is soil wetness due to a slowly permeable layer starting above c54cm.

4.11 Summary

ALC, Non-agricultural, Urban and Not-surveyed Areas by Scheme (Area (ha) and %)

A summary of the land areas. Agricultural land has been classified according to Grades 2-5. Grade 1 is excluded due to a climate limitation.

The % in brackets is the proportion of agricultural land surveyed.

Scheme	Grade 2		Subgrade 3a		Subgrade 3b		Grade 4		Grade 5		Non-agricultural		Urban		Not surveyed	
	ha	%	ha	%	ha	%	ha	%	ha	%	ha	%	ha	%	ha	%
M6 Junction 40 to Kemplay Bank	10.32	21.2 (79.9)	2.59	5.3 (20.1)							1.8	3.2	29.87	61.3	4.43	9.1
Penrith to Temple Sowerby	65.28	61.5 (90.6)	6.78	6.4 (9.4)							2.14	2.0	21.18	19.9	10.83	10.2
Temple Sowerby to Appleby	72.72	34.2 (44.0)	46.17	21.7 (27.9)	45.93	21.6 (27.8)	0.46	0.2 (<0.1)			7.50	3.3	30.87	14.5	9.68	4.6
Appleby to Brough			43.86	24.0 (32.2)	64.96	35.6 (47.7)	21.63	11.9 (15.9)	5.84	3.2 (<0.1)	13.50	7.6	20.91	11.5	11.35	6.2
Bowes Bypass					37.4	63.6 (100)							21.3	36.4		
Cross Lanes to Rokeby					6.85	10.7 (100)							17.08	26.6	40.29	62.7
Stephen Bank to Carkin Moor			7.84	8.3 (11.1)	39.88	42.4 (56.6)	22.79	24.2 (32.3)			3.35	3.6	18.93	20.1	1.22	1.3
Total All Schemes	148.3	19.4 (29.7)	107.2	14.0 (21.5)	193.0	25.3 (38.7)	44.9	5.9 (9.0)	5.8	0.8 (1.2)	27.8	3.6	159.1	20.8	77.8	10.2

Scheme	Grade 2		Subgrade 3a		Subgrade 3b		Grade 4		Grade 5		Non-agricultural		Urban		Not surveyed	
	ha	%	ha	%	ha	%	ha	%	ha	%	ha	%	ha	%	ha	%
M6 Junction 40 to Kemplay Bank	11.24	20.5 (78.7)	3.04	5.5 (21.3)							1.84	3.3	31.05	56.6	7.75	14.1
Penrith to Temple Sowerby	86.75	63.5 (89.9)	9.76	7.1 (10.1)							3.25	2.4	21.67	15.9	15.23	11.1
Temple Sowerby to Appleby	75.78	30.9 (41.5)	47.66	19.5 (26.1)	58.76	24.0 (32.1)	0.46	0.2 (0.3)			7.54	3.1	31.95	13.1	22.7	9.3
Appleby to Brough			63.86	29.1 (38.5)	67.37	30.7 (40.7)	28.46	13.0 (17.2)	5.97	2.7 (3.6)	18.24	8.2	21.11	9.6	14.7	6.7
Bowes Bypass					37.52	63.8 (100)					0.0		21.31	36.2	0.00	0.0

Cross Lanes to Rekeby					7.20	8.4 (100)						0.0	17.82	20.9	60.27	70.7
Stephen Bank to Garkin Moor			8.04	6.7 (9.0)	56.90	47.4 (63.4)	24.81	20.7 (27.6)				6.6	21.50	17.9	2.12	1.8
Total All Schemes	173.8	18.9 (29.3)	132.4	14.4 (22.3)	227.8	24.7 (38.4)	53.7	5.8 (9.1)	6.0	0.7 (1.0)	37.42	4.1	166.42	18.1	122.78	13.3

Appendix 1: M6 Junction 40 to Kemplay Bank - Auger boring descriptions and ALC map

Auger Boring Descriptions

BORING NUMBER	DEPTH (cm)	Texture	Soil Colour	MOTTLES		STONES				DEPTH TO GLEYING (cm)	DEPTH TO SPL (cm)	WETNESS CLASS	ALC	COMMENTS
			Munsell	Munsell	Ab.	Total	>2cm	>6cm	Type					
1	35	mcl	7.5YR3/4									3a	skirsgill points 1-5 overall climatic limitation 3a FCD 225 stone at 70cm	
	70	mcl	5YR3/4											
	120	mcl	5YR3/4			20			hr					
2	40	mcl	5YR3/4									3a	augered to 90cm	
	90	mcl	5YR4/4											
	120	mcl	5YR4/4											
3	30	scl	5YR5/4									3a	topsoil sample	
	40	mcl	5YR4/4											
	85	hcl	5YR3/4											
	120	c	5YR3/4											
4	30	mcl	5YR3/4									3a		
	40	hcl	5YR4/4											
	120	hcl	5YR4/4			15			hr					
5	30	scl	7.5YR3/4									3a	augered to 70cm	
	50	mcl	7.5YR3/3			5			hr					
	70	msl	7.5YR4/4			5			hr					
	120	msl	7.5YR4/4			20			hr					
6	28	mcl	10YR3/3									Urban	difficult to auger 28cm. In hotel grounds (FCD 225) Climatic limitation 3a	
11	30	scl	10YR3/3			3	3		hr			2	augered to 50cm stone (FCD 220) soil mounds close Climatic limitation nearby Grade 2	
	40	mcl	10YR3/3			3			hr					
	50	mcl	7.5YR3/3			15			hr					
	120	mcl							hr					
12	30	scl	7.5YR2.5/3									2	horses- stone stopped auger at 40cm	
	40	mcl	7.5YR3/3											
	120	mcl	7.5YR3/3			20			hr					
13	30	scl	7.5YR2.5/3									2	bank feature slope to south 12 degrees- Grade 4	
	38	scl	7.5YR5/3											
	120	scl	7.5YR5/3			20			hr					
14	30	scl	7.5YR2.5/3									2	horse	
	40	scl	7.5YR3/3											
	60	scl	5YR3/3											
	120	scl	5YR3/3			20			hr					
15	35	scl	7.5YR2.5/3									2	stone at 45cm	
	40	scl	7.5YR2.5/3											
	45	scl	7.5YR3/3											
	120	scl	7.5YR3/3			20			hr					
16	28	msl	7.5YR2.5/3									2	droughtiness checked (MB=Grade 1)	

BORING NUMBER	DEPTH (cm)	Texture	Soil Colour	MOTTLES		STONES				DEPTH TO GLEYING (cm)	DEPTH TO SPL (cm)	WETNESS CLASS	ALC	COMMENTS
			Munsell	Munsell	Ab.	Total	>2cm	>6cm	Type					
	120	msl	7.5YR2.5/3			20			hr					
17	38	scl	10YR4/2										NA	School playing field FCD 218 NEARBY NY526293
	40	scl	7.5YR4/3								I			
	50	scl	7.5YR4/3			15			hr					
	120	scl				15			hr					
18	25	scl	7.5YR3/3										2	stone at 25cm difficult to auger
	120	scl	7.5YR3/3			20			hr		I			
19	20	msl	7.5YR3/2										2	Droughtiness check MBw 64 MBp 42 FCD 218 nearby NY526293 climate limitation grade 2
	40	msl	7.5YR3/2			5					I			
	120	msl				15								
20	20	msl	7.5YR3/3			5			hr				2	
	60	scl	7.5YR3/3			5			hr		I			
	120	scl				15			hr					
23	38	msl	7.5YR3/3			5			hr	38	III	3a	Gravel at 40cm	
	40	msl	5YR3/3			5			hr					
	120	lms				15			hr					
24	38	scl	7.5YR3/3										2	difficult to auger 60cm stone
	60	scl	5YR4/3								I			
	75	lms				15			hr					
	100	ms												
25	38	mcl	5YR4/3	7.5YR5/6	c								3a	augered to 90cm gravelly at 90cm table 13 used
	75	scl	7.5YR5/3	7.5YR5/6	c						II			
	80	lms	5YR5/3	7.5YR5/6	c									
	120	ms												
26	40	scl	10YR3/3										2	augered to 40cm stone
	75	lms				15			hr		I			
	120	cs												
27	30	mcl	7.5YR3/3										2	auger stopped at 50cm stone
	50	mcl	7.5YR3/3								I			
	120													
28	30	csl	7.5YR2.5/3			5			hr				2	augered to 40cm stone MBw =66 MBp =44
	40	csl	5YR4/4			15			hr		I			
	120	csl				15								
29	35	msl	7.5YR3/3			2			hr				3a	River area flood risk auger stopped at 70cm
	40	scl	7.5YR4/3								I			
	60	csl	7.5YR4/4											
	120	cs	7.5YR4/4											

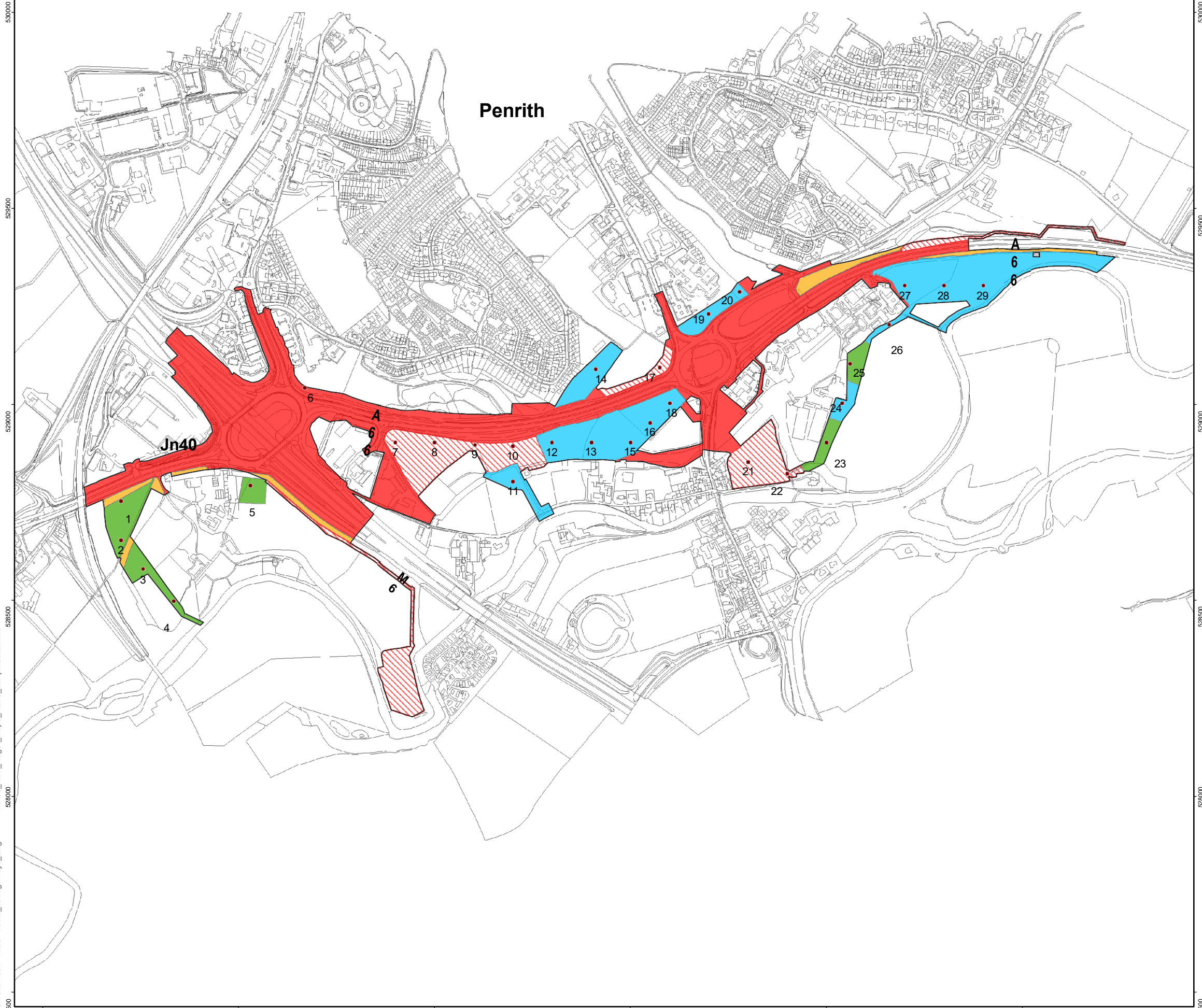
BORING-NUMBER	NGR	LAND-USE	DEPTH (cm)	Texture	Soil Colour	MOTTLES		STONES				DEPTH TO GLEYING (cm)	DEPTH TO SPL (cm)	WETNESS CLASS	ALC	COMMENTS
					Munsell	Munsell	Ab.	Total	>2cm	>6cm	Type					
4	350700 528750	LEY	35	mel	7.5YR3/4									↓	3a	skiregill points 1-5 overall climatic limitation 3a FCD 225 stone at 70cm
			70	mel	5YR3/4											
			120	mcl	5YR3/4			20			hr					

2	350700-528650	LEY	40 90 120	mel mel mel	5YR3/4 5YR4/4 5YR4/4									↓	3a	augered to 90cm
3	350756-528576	PGR	30 40 85 120	sel mel hel e	5YR5/4 5YR4/4 5YR3/4 5YR3/4										3a	topsoil sample
4	350834-528494	PGR	30 40 120	mel hel hel	5YR3/4 5YR4/4 5YR4/4			15			hr			↓	3a	
5	351030-528700	PGR	30 50 70 120	sel mel mel mel	7.5YR3/4 7.5YR3/3 7.5YR4/4 7.5YR4/4			5 5 20			hr hr hr			↓	3a	augered to 70cm
6	351160-529039	Urban	28	mel	10YR3/3										Urban	difficult to auger 28cm. In hotel grounds (FCD 225) Climatic limitation-3a
14	351700-528800	PGR	30 40 50 120	sel mel mel mel	10YR3/3 10YR3/3 7.5YR3/3			3 3 15	3		hr hr hr hr			↓	2	augered to 50cm stone (FCD 220)- soil mounds close Climatic limitation- nearby-Grade 2
12	351800-528900	PGR	30 40 120	sel mel mel	7.5YR2.5/3 7.5YR3/3 7.5YR3/3			20			hr			↓	2	horses - stone stopped auger at 40cm
13	351900-528900	PGR	30 38 120	sel sel sel	7.5YR2.5/3 7.5YR5/3 7.5YR5/3			20			hr			↓	2	bank feature slope to south 12- degrees -Grade 4

BORING-NUMBER	NGR	LAND-USE	DEPTH (cm)	Texture	Soil Colour	MOTTLES		STONES			DEPTH TO GLEYING (cm)	DEPTH TO SPL (cm)	WETNESS CLASS	ALC	COMMENTS
					Munsell	Munsell	Ab.	Total	>2cm	>6cm					
44	351911-529087	PGR	30	sel	7.5YR2.5/3								‡	2	heree
			40	sel	7.5YR3/3										
			60	sel	5YR3/3										
			120	sel	5YR3/3			20			hr				
45	352000-528900	PGR	35	sel	7.5YR2.5/3								‡	2	stone at 45cm
			40	sel	7.5YR2.5/3										
			45	sel	7.5YR3/3										
			120	sel	7.5YR3/3			20			hr				
46	352050-528950	PGR	28	mel	7.5YR2.5/3								‡	2	droughtiness checked (MB=Grade 1)
			120	mel	7.5YR2.5/3			20			hr				
47	35275529004	NA	38	sel	40YR4/2								‡	NA	School playing field FCD-218-NEARBY NY526293
			40	sel	7.5YR4/3										
			50	sel	7.5YR4/3			15			hr				
			120	sel				15			hr				
48	352100-529000	PGR	25	sel	7.5YR3/3								‡	2	stone at 25cm difficult to auger
			120	sel	7.5YR3/3			20			hr				
49	352199-529228	PGR	20	mel	7.5YR3/2								‡	2	Droughtiness check MBw 64 MBp 42- FCD-218-NEARBY NY526293 climate limitation grade 2
			40	mel	7.5YR3/2			5			MBw=76				
			120	mel				15							
20	352278-529234	PGR	20	mel	7.5YR3/3								‡	2	
			60	sel	7.5YR3/3			5			hr				
			120	sel				15			hr				
23	352500-528900	PGR	38	mel	7.5YR3/3								‡	3a	GRAVEL AT 40CM
			40	mel	5YR3/3			5			hr				
			120	lms				15			hr				
24	352540-529000	PGR	38	sel	7.5YR3/3								‡	2	difficult to auger 60cm stone
			60	sel	5YR4/3										
			75	lms				15			hr				
			100	ms											
25	352560-529100	PGR	38	mel	5YR4/3	7.5YR5/6	e						‡	3a	augered to 90cm gravelly at 90cm- table 13 used
			75	sel	7.5YR5/3	7.5YR5/6	e								
			80	lms	5YR5/3	7.5YR5/6	e								
			120	ms											

BORING-NUMBER	NGR	LAND-USE	DEPTH (cm)	Texture	Soil Colour	MOTTLES		STONES			DEPTH TO GLEYING (cm)	DEPTH TO SPL (cm)	WETNESS CLASS	ALC	COMMENTS	
					Munsell	Munsell	Ab.	Total	>2cm	>6cm						Type
26	352660-529300	PGR	40 75 120	esi lms es	10YR3/3			45			hr			↓	2	augered to 40cm stone
27	352700-529300	PGR	30 50 120	mel mel	7.5YR3/3 7.5YR3/3									↓	2	auger stopped at 50cm stone
28	352800-529300	PGR	30 40 120	esi esi esi	7.5YR2.5/3 5YR4/4			5 45 45			hr hr			↓	2	augered to 40cm stone — MBw = 66 MBp = 44
29	352900-529300	PGR	35 40 60 120	mel esi esi es	7.5YR3/3 7.5YR4/3 7.5YR4/4 7.5YR4/4			2			hr			↓	3a	River area flood risk auger stopped at 70cm

350500 351000 351500 352000 352500 353000



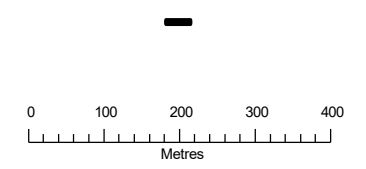
Highways England

A66 Northern Trans-Pennine

M6 Junction 40 to Kemplay Bank Agricultural Land Classification (ALC) Survey Results

- Order Limits
- Auger locations
- ALC**
- 2
- 3a
- 3b
- 4
- 5
- Non-ag
- Urban
- Not surveyed
- Not surveyed

Drawn by Paul Taylor 29/04/2022, Verified by John Grylls 29/04/2022



Scale: 1:10,000 at A3 size

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Appendix 2: Penrith to Temple Sowerby - Auger boring descriptions and ALC map

Auger Boring Descriptions

BORING NUMBER	DEPTH (cm)	Texture	Soil Colour	MOTTLES		STONES			DEPTH TO GLEYING (cm)	DEPTH TO SPL (cm)	WETNESS CLASS	ALC	COMMENTS
			Munsell	Munsell	Ab.	Total	>2cm	>6cm					
30	38	msl	7.5YR3/3			5			hr			2	FCD climatic limitation grade 2
	65	ms	2.5YR4/6			10			hr				
	120	ms											
31	40	msl	10YR3/3			5			hr			2	augered to 40cm stone
	65	ms				15			hr				
	120	ms											
32	40	slt org msl	vr dk br			3-5		fw	mx	40	2	2	TS OM and dark colour decreases markedly with depth, impenetrable below 60cm, elevated river terrace.
	60	msl	gry br			10-20			sst				
33	38	scl	10YR4/2									2	FCD 218 NEARBY NY526293
	40	scl	7.5YR4/3										
	50	scl	7.5YR4/3			15			hr				
	120	scl				15			hr				
34	30	fsl	dk br			5-10		fw	sst + mx		1	2	River floodplain, flat, very subtle TS-SS colour change, impenetrable below 60cm, possibly disturbed?
	60	msl	br			>50			mx				
35	99	msl	7.5YR3/3			2			hr			2	stone at 50cm difficult to auger 60cm gravel fragments 60cm
	45	lms	7.5YR4/4			5			hr				
	60	ms	7.5YR4/6										
	120	ms											
36	35	mcl	7.5YR3/3			3			hr			2	
	65	mcl	5YR3/4			3			hr				
	75	cs	5YR4/6			5			hr				
	120	cs											
37	35	scl	7.5YR3/3			5			hr			2	GRAVEL AT 43CM
	43	scl	7.5YR4/4			5			hr				
	65	scl				15			hr				
	120	cs											
38	40	msl	7.5YR3/4			5			hr			2	STONE AT 4CM
	120	ms											
39	33	lms	5YR3/4									2	difficult to auger 60cm stone
	40	lms	5YR4/6										
	100	cs	5YR4/6										
	120	cs											
40	38	lms	7.5YR4/4			2			hr			2	ohp
	43	lms	7.5YR4/6										
	70	cs	7.5YR4/6										
	120	cs											
41	40	msl	7.5YR4/4			2			hr			2	stone at 50cm
	50	lms	7.5YR4/4										
	120	ms											

BORING NUMBER	DEPTH (cm)	Texture	Soil Colour	MOTTLES		STONES				DEPTH TO GLEYING (cm)	DEPTH TO SPL (cm)	WETNESS CLASS	ALC	COMMENTS
			Munsell	Munsell	Ab.	Total	>2cm	>6cm	Type					
42	40	msl	7.5YR3/3			3			hr			I	2	gravel at 90cm
	45	lms	7.5YR3/3											
	65	lms	5YR4/6											
	120	ms				5			hr					
43	26	lms	br			< 1				60+ ?	1	2	Rolling undulating landscape, 4-7° slope, impenetrable gravel at 80cm.	
	60	lms	red br			3-5			peb & grvl					
	80	lms / ms	red / ye br			5-10			grvl					
44	26	msl	br			5-10			sst	45-60	2	2	Very subtle colour change TS-SS	
	45	lms	red br	red br		10-20			hd sst qz					
	100	lms->ms	lt yel br	red br & ye br		1-3			hd sst & qz					
45	40	msl	7.5YR3/3	7.5YR5/6	c							i	2	pipeline difficult to auger 40cm - gravel
	120	ms	7.5YR5/3	7.5YR5/6	c	20			hr					
46	40	msl	7.5YR3/4			5			hr			I	2	stone stopped auger 60cm
	45	msl	7.5YR3/4						hr					
	60	lms	7.5YR3/4											
	120	ms				15			hr					
47	25	lms	dk oran br		r lg	1-3				25	GW	3	3a	Bottom of slope of dry valley feature, wet - GW below 45cm, sandy lenses/bands between 60-80cm.
	45	lms	re ye	oc & Fe	c	5-10								
	100	scl	ye rd & pk	oc, gr & Fe	c	10-20			sst					
48	28	scl	dk gr br			3-5			rd sst + mx	28	45?	III?	3a	Disturbed, possibly worked for minerals, (sand and gravel), impenetrable at 95cm
	70	scl	pk rd	lt br & gr br	f	5-10			hrd, r lg cob					
	100	msl ts!	dk gr br			1-3			sst					
49	25	msl	dk gr br	oc	r	3-5			sst + mx	30	45	IV	3b	Disturbed, 10m from A66 boundary, wet 40cm, impenetrable below 50cm
	50	scl	rd br	gr	c	20-30			mx					
50	35	msl	7.5YR3/3			3			hr			I	2	
	70	lms	7.5YR3/3			5			hr					
	120	ms												
51	30	csl	7.5YR3/3			3			hr			I	2	gravel present 45cm
	39	lms	7.5YR3/3											
	45	ms	5YR4/6											
	120	ms				15			hr					
52	30	fsl	dk gr br			3-5			hd sst			3	3a	Flat area next to stream, impenetrable below 55cm
	55	scl	dk gr br			10-20			sst					
53	30	slt org msl	dk br			10-20		fw	sst + mx, & lg cob		>50	3	3a	Impenetrable below 50cm
	50	msl	br + ye			50			hd sst					
54	20	csl	7.5YR3/4			3			hr			I	2	
	75	lms	7.5YR4/6											
	80	ms	5YR4/4											
	120	cs												
55	30	msl	7.5YR3/3			3			hr			I	2	

BORING NUMBER	DEPTH (cm)	Texture	Soil Colour	MOTTLES		STONES				DEPTH TO GLEYING (cm)	DEPTH TO SPL (cm)	WETNESS CLASS	ALC	COMMENTS
			Munsell	Munsell	Ab.	Total	>2cm	>6cm	Type					
	65	lms	5YR4/4											
	120	ms	5YR4/4											
56	20	msl	dk br			5-10			sst + mx, & lg cob	20	>80	2	2	Impenetrable at 85cm
	40	lms	gr	oc & lt gr	c	5-10			hd sst					
	80	ms	lt gr	distinct oc	c	1-3			hd sst					
57	35	msl	7.5YR3/4			3			hr			I	2	augered to 70cm stone
	40	msl	7.5YR3/4											
	60	lms	7.5YR3/4											
	120	ms	5YR3/4			15			hr					
58	39	msl	7.5YR3/3			2			hr			I	2	some wet areas nearby- exposed drainage pipe
	60	lms	7.5YR3/3			2			hr					
	80	omsl	7.5YR2.5/2											
	120	ms	5YR5/2											
59	24	fsl	dk br			5-10			sst + mx, & lg cob	50		1	2	4-7° slope, reddish yellow below 50cm, impenetrable below 60cm, very high pebble content.
	45	lms	gr br			3-5			hd sst					
	60	lms	gr		c	5-10			hd sst					
60	39	msl	7.5YR3/3			2			hr	50		I	2	TABLE 13
	50	lms	7.5YR4/3											
	80	ms	10YR5/2	10YR5/6	c									
	120	ms	10YR5/2											
61	30	lms	dk br			3-5		fw	pebl & cob	40		II	I	Top of a hill, impenetrable at 75cm
	75	lms	dk ye rd	lt ye rd & gr	c > 40cm	10-20			pebl & grvl					
62	38	csl	7.5YR3/3									I	2	difficult to auger 40cm gravel
	40	ms	5YR4/6											
	120	ms	5YR4/6			20			hr					
63	30	msl	7.5YR3/3									I	2	difficult to auger 30cm see 68 (14/2)
	120	cs	7.5YR3/3			20			hr					
67	30	csl	7.5YR3/3									I	2	difficult to auger 40cm
	40	lms	7.5YR3/3											
	120	cs	7.5YR3/3			20			hr					
68	30	csl	7.5YR3/3									I	2	droughtiness inspection pit
	120	cs				20			hr					
69	35	csl	7.5YR3/3			5			hr			I	2	
	45	lms	7.5YR3/3			5			hr					
	50	ms	7.5YR4/6											
	120	ms	7.5YR4/6											
73	30	csl	7.5YR3/3									I	2	difficult to auger 50cm+
	39	lms	7.5YR4/4											
	50	ms	5YR4/4											
	120	ms	5YR4/4			20			hr					
74	30	csl	7.5YR3/3									I	2	
	120	cs				20			hr					
75	38	lcs	7.5YR2.5/2			2			hr			I	2	wet sand at 70cm

BORING NUMBER	DEPTH (cm)	Texture	Soil Colour	MOTTLES		STONES				DEPTH TO GLEYING (cm)	DEPTH TO SPL (cm)	WETNESS CLASS	ALC	COMMENTS
			Munsell	Munsell	Ab.	Total	>2cm	>6cm	Type					
	45	lcs	7.5YR2.5/3											
	70	cs	7.5YR4/6											
	120	cs	7.5YR4/6											
79	30	mzcl	7.5YR4/3							40	40	III	3a	near stream; wet S at 70cm; flood risk FCD<225
	40	mzcl	7.5YR5/2											
	50	hzcl	7.5YR4/2	c	7.5YR5/6									
	70	scl	7.5YR4/2											
	120	ms	7.5YR5/2											
80	30	msl	7.5YR3/3											Flood risk 3 - Close to R Eamont
	70	lms	7.5YR3/4											
	120	ms	7.5YR3/4											
81	20	csl	5YR4/4											Droughtiness checked,
	40	lms	5YR3/4											
	120	ms	5YR3/4			20			hr					
82	30	msl	7.5YR3/4											no stone
	55	scl	5YR3/4											
	80	msl	5YR4/4											
	120	scl	5YR4/4											
83	30	msl	7.5YR3/4											stone stopped auger at 60cm
	40	scl	5YR3/4											
	60	scl	5YR3/4											
	120	scl	5YR3/4			20			hr					
84	39	msl	7.5YR3/3			2			hr					soil wet at 80cm
	90	scl	5YR4/4											
	120	scl	5YR4/4											
85	20	msl	7.5YR3/3			6	6	3	hr					soil wet at 70cm
	35	lms	7.5YR3/3											
	70	scl	5YR3/4											
	120	scl	5YR3/4											
86	38	msl	7.5YR3/3											
	50	lms	5YR4/4											
	80	scl	5YR4/4											
	120	scl	5YR4/4			10			hr					
87	35	msl	7.5YR3/4			5	5		hr					
	100	ms	5YR3/4											
	120	ms	5YR3/4											
88	35	msl	7.5YR3/4			5	5		hr					auger stopped at 75cm stone
	60	lms	5YR3/4											
	75	ms	5YR4/4											
	120	ms	5YR4/4			20			hr					
89	38	msl	7.5YR3/3											
	48	lms	5YR4/4											
	58	ms	5YR4/4											
	120	scl	5YR4/4			10			hr					
90	30	msl	7.5YR3/4			5	5		hr					

BORING NUMBER	DEPTH (cm)	Texture	Soil Colour	MOTTLES		STONES				DEPTH TO GLEYING (cm)	DEPTH TO SPL (cm)	WETNESS CLASS	ALC	COMMENTS
			Munsell	Munsell	Ab.	Total	>2cm	>6cm	Type					
	38	msl	5YR3/4											
	48	lms	5YR4/4			20			hr					auger stopped at 48cm
	120	ms	5YR4/4											
91	40	msl	7.5YR3/3			3	3		hr					
	80	lms	5YR3/4									l	2	soil moist at 90cm
	90	ms	5YR4/4											
92	33	msl	7.5YR3/4			5	5							
	55	lms	5YR3/4									l	2	stone at 70cm
	70	scl	5YR3/4											
94	120	ms	5YR4/4			20			hr					
	38	msl	7.5YR3/3			5	5		hr					
	65	ms	2.5YR4/6			10			hr			l	2	FCD 216 climate limitation G2
95	120	ms												
	40	msl	10YR3/3			5	5		hr					
	65	ms				15			hr			l	2	augered to 40cm stone
96	120	ms												
	40	msl	7.5YR3/4			3	3		hr					
	110	ms	5YR4/6									l	2	
97	120	ms	5YR4/6											
	38	scl	10YR4/2			5	5							
	40	scl	7.5YR4/3									i	2	FCD 218 nearby NY526293
98	50	scl	7.5YR4/3			15			hr					
	120	scl				15			hr					
	35	mcl	7.5YR3/3			3			hr					
99	65	mcl	5YR3/4			3			hr					
	75	cs	5YR4/6			5			hr			l	2	
	120	cs												
100	35	MSL	7.5YR3/4			3	3		hr					
	48	lms	7.5YR3/4									l	2	Droughtiness checked.
	100	ms	5YR3/4											
101	120	MS	5YR3/4											
	35	scl	7.5YR3/3			5	5		hr					
	43	scl	7.5YR4/4			5			hr			l	2	Gravel at 43cm
102	65	scl				15			hr					
	40	msl	7.5YR3/4			5			hr					
	120	ms				15			hr			l	2	Stone at 4cm
103	38	lms	7.5YR4/4											
	43	lms	7.5YR4/6											
	75	ms	5YR4/6									l	2	augered to 75cm stony at 75cm
103	120	ms	5YR4/6											
	38	msl	7.5YR3/4			5	5		hr					
	40	ms	5YR3/4									l	2	soil wet at 80cm field drainage problem?
	80	ms	5YR4/4											
	120	ms	5YR4/4											

BORING NUMBER	DEPTH (cm)	Texture	Soil Colour	MOTTLES		STONES				DEPTH TO GLEYING (cm)	DEPTH TO SPL (cm)	WETNESS CLASS	ALC	COMMENTS
			Munsell	Munsell	Ab.	Total	>2cm	>6cm	Type					
104	33	csl	5YR3/4			3	3		hr			I	2	difficult to auger 60cm stone; Droughtiness checked Grade 2
	40	lms	5YR4/6			5			hr					
	100	cs	5YR4/6			3			hr					
	120	cs												
105	40	m sl	7.5YR3/3			3	3		hr			i	2	difficult to auger 40cm - gravel
	120	ms	7.5YR5/3			10			hr					
106	30	m sl	7.5YR3/3									I	2	
	45	lms	7.5YR3/3											
	80	ms	5YR4/4											
	120	ms	5YR4/4											
107	38	lms	7.5YR2.5/3									I	2	
	55	ms	7.5YR2.5/3											
	70	ms	7.5YR3/3			20			hr					
	120	ms	7.5YR3/3											
108	28	lms	7.5YR4/4									I	2	auger stopped at 28cm several attempts stone; Droughtiness MBw +6 MBp +4
	120	ms				20			hr					
109	38	lms	7.5YR3/4			3	3		hr			I	2	
	100	ms	5YR4/6											
	120	ms												
110	35	m sl	7.5YR3/4			3	3		hr			I	2	
	60	ms	5YR4/4											
	90	ms	2.5YR4/6											
	120	ms	2.5YR3/6											
111	42	m sl	7.5YR3/3			5	5		hr			I	2	augered to 100cm
	90	ms	5YR4/6											
	120	ms												
112	38	m sl	7.5YR3/3			2	2		hr			I	2	FCD 216 climate limitation G2
	110	ms	5YR4/6						hr					
	120	ms												
113	30	m sl	7.5YR3/3									I	2	augered to 90cm no stone
	43	lms	7.5YR3/3											
	60	lms	7.5YR4/3											
	120	scl	5YR4/4											
114	45	lms	7.5YR2.5/3									I	2	
	60	ms	7.5YR3/3											
	80	ms	7.5YR3/4											
	120	ms	5YR4/6											
115	28	m sl	7.5YR3/4									I	2	
	120	ms	7.5YR3/4											

BORING NUMBER	DEPTH (cm)	Texture	Soil Colour	MOTTLES		STONES				DEPTH TO GLEYING (cm)	DEPTH TO SPL (cm)	WETNESS CLASS	ALC	COMMENTS
			Munsell	Munsell	Ab.	Total	>2cm	>6cm	Type					
116	38	msl	7.5YR3/4									2		
	48	lms	7.5YR3/4								I			
	60	ms	5YR4/4			20			hr					
	120	ms	5YR4/4											
117	30	msl	7.5YR3/3									I	2	auger stopped at 70cm
	60	lms	7.5YR3/3											
	70	ms	5YR3/4			20			hr					
	120	ms	5YR3/4											
118	39	lms	7.5YR3/3								I	2		
	90	ms	2.5YR3/6											
	120	ms	2.5YR3/6											
119	39	lms	7.5YR3/4			2	2		hr		I	2		
	100	ms	2.5YR3/6											
	120	ms												
120	40	lms	7.5YR3/2			2	2		hr		I	2	stone at 50cm 3 attempts	
	50	ms	5YR4/6			10			hr					
	120	ms												
121	30	msl	7.5YR4/4								I	2	stone stopped auger at 40cm	
	120	ms	7.5YR4/4			20			hr					
122	39	msl	7.5YR4/4			3			hr		I	2		
	90	ms	7.5YR4/6											
	120	fs	7.5YR4/6											
123	35	msl	7.5YR3/3			5			hr		I	2		
	58	msl	7.5YR2.5/2						hr					
	100	ms	5YR4/6											
	120	ms												
124	38	msl	7.5YR3/4								I	2	soil moist at 50cm and saturated below 60cm	
	120	lms	5YR4/4											
125	30	msl	7.5YR4/4								I	2	auger stopped at 30cm 2 attempts	
	120	ms	5YR3/4			20			hr					
126	35	msl	7.5YR3/4			5			hr		I	2		
	60	lms	7.5YR3/4											
	100	lms	7.5YR3/4											
	120	ms												
127	39	csl	7.5YR3/4			3	3		hr		I	2		
	50	lms	5YR4/4						hr					
	100	ms	5YR4/4						hr					
	120	ms												
128	38	msl	7.5YR3/3			3	3		hr		I	2		
	50	lms	7.5YR4/3											

BORING NUMBER	DEPTH (cm)	Texture	Soil Colour	MOTTLES		STONES				DEPTH TO GLEYING (cm)	DEPTH TO SPL (cm)	WETNESS CLASS	ALC	COMMENTS
			Munsell	Munsell	Ab.	Total	>2cm	>6cm	Type					
	110	ms	5YR4/6											
	120	ms												
129	39	msl	7.5YR3/3			3	3		hr			I	2	
	55	lms	5YR4/4											
	80	ms	5YR4/4											
	120	ms												
130	38	lms	7.5YR3/4			5	5	2	hr			I	2	overall climate limitation Grade 2;
	50	ms	5YR4/6											
	120	ms	5YR4/6			20			hr					
131	38	lms	7.5YR3/3			5	5	1	hr			I	2	auger stopped 70cm
	43	lms	5YR3/4											
	70	ms	5YR4/6											
	120	ms	5YR4/6			20			hr					
132	38	lms	7.5YR3/3			3	3		hr			I	3a	auger stopped 50cm droughtiness limitation
	50	ms	5YR4/6											
	120	ms	5YR4/6			20			hr					
133	38	lms	7.5YR3/4			3	3	1	hr			I	3a	Droughtiness checked 3a
	40	ms	7.5YR5/6											
	50	ms	7.5YR4/6											
	120	ms	7.5YR4/6			20			hr					
134	30	msl	7.5YR3/4			6	6	3	hr			I	2	
	38	lms	7.5YR3/3											
	70	ms	2.5YR3/6											
	120	ms	2.5YR3/6			20			hr					
135	30	msl	7.5YR3/3			5	5	2	hr			I	2	augered to 90cm no stone
	38	lms	7.5YR3/4											
	60	ms	5YR4/4											
	120	ms	2.5YR4/6											
137	30	msl	7.5YR2.5/3							43		II	2	saturated at 60cm augered to 80cm pockets of pale S +och motts below 40cm
	43	ms	7.5YR5/4											
	80	scl	2.5YR4/4	c	10YR5/6									
	120	scl	2.5YR4/4											
139	30	msl	7.5YR3/3			6	6	4	hr			IV	3b	saturated at 50cm assume spl >50cm augered stopped at 60cm ; figure 7; surface soft to walk over
	50	hcl	5YR4/4											
	120	hcl	5YR4/4			20			hr					
140	40	lms	7.5YR3/4			4	4	1				I	2	auger stopped at 60cm stone Droughtiness checked Grade 2
	60	ms	2.5YR3/6											
	120	ms	2.5YR3/6			20			hr					
141	30	lms	7.5YR3/4			4	4	1				I	3a	auger stopped at 70cm stone
	70	ms	2.5YR4/6											
	120	ms	2.5YR4/6			20			hr					
144	40	msl	7.5YR3/4			2	2		hr			I	2	
	48	lms	7.5YR3/4											

BORING NUMBER	DEPTH (cm)	Texture	Soil Colour	MOTTLES		STONES				DEPTH TO GLEYING (cm)	DEPTH TO SPL (cm)	WETNESS CLASS	ALC	COMMENTS
			Munsell	Munsell	Ab.	Total	>2cm	>6cm	Type					
	55	ms	5YR4/6											
	120	ms	5YR4/6											
146	40	msh	7.5YR3/3			2	2		hr			I	2	Droughtiness checked- Grade 2
	50	ms	7.5YR4/4											
	120	ms	7.5YR4/4											
148	20	msh	7.5YR3/4									II	3a	stone at 50cm; saturated at 50cm ; subsoil assumed to be scl to depth
	50	scl	7.5YR3/3											
	120	scl	7.5YR3/3			20			hr					
149	25	scl	10YR4/2	10YR5/6	C							III	3a	mottles present at 25cm; soil saturated at 40cm; field drainage issue?
	40	scl	7.5YR4/3											
	45	scl	5YR4/4											
	120	scl	5YR4/4											
669	35	CSL	7.5YR4/3 Br			3		1				II	2	
	73	CSL	7.5YR6/2 Pi Gr			4			hr					
	100	LCS	7.5YR4/2 Pi Gr			2			hr					
670	28	CSL	7.5YR4/3 Br			3		1	hr			II	2	Impenetrable by stone at 58cm
	58	CSL	7.5YR5/3 Br			5			hr					
671	23	MSL	5YR4/2 Dk rd gr			4		1	hr			II	2	
	58	CSL	2.5YR6/4 Li Rd Br			4			hr					
	100	CSL	2.5YR6/4 Li Rd Br			4			hr					
672	24	MSL	7.5YR5/3 Br			4		1	hr			II	2	Impenetrable by stone at 58cm
	56	SCL	2.5YR6/4 Li Rd Br			4			hr					
	77	SCL	2.5YR6/4 Li Rd Br			4			hr					
673	30	CSL	5YR5/2 Rd Gr			4		1	hr			II	2	Water table at 80cm
	63	LCS	2.5YR5/3 Rd Br			4			hr					
	80	CSL	2.5YR5/4 Rd Br			4			hr					
	100	CSL	2.5YR6/4			2			hr					
674	26	OrgCSL	7.5YR5/3 V Dk Gr									II	2	Water table at 70cm
	43	LCS	7.5YR6/3 Lt Br											
	65	CS	2.5YR4/2 Wk Rd											
	100	CS	7.5YR5/3 Br											

BORING NUMBER	NGR	LAND-USE	DEPTH (cm)	Texture	Soil Colour	MOTTLES		STONES				DEPTH TO GLEYING (cm)	DEPTH TO SPL (cm)	WETNESS CLASS	ALC	SOIL TYPE	COMMENTS
					Munsell	Munsell	Ab.	Total	>2cm	>6cm	Type						
30	354000 529095	PGR	38	msh	7.5YR3/3			5			hr						
			65	ms	2.5YR4/6			40			hr			I	2		FCD climatic limitation grade 2
			120	ms													
34	354150 528075	PGR	40	msh	10YR3/3			5			hr						
			65	ms				45			hr			I	2		augered to 40cm stone
			120	ms													

32	NY 54478, 20202	PGR	40 60	slt-org-mel mel	vr-dk-br gry-br		3-5 10-20		fw	mx sst	40		2 2		TS-OM and dark colour decreases markedly with depth, impenetrable below 60cm, elevated river terrace.
33	354499 528924	PGR	38	sel	10YR4/2								1 2		FCD 218 NEARBY- NY526293
			40	sel	7.5YR4/3										
			50	sel	7.5YR4/3		15				hf				
			120	sel			15			hf					
34	NY 54504, 20302	PGR	30	fel	dk-br		5-10		fw	est + mx			4 2		River floodplain, flat, very subtle TS-SS colour change, impenetrable below 60cm, possibly disturbed?
			60	mel	br		>50				mx				
35	354500 528800	PGR	90	mel	7.5YR3/3		2				hf		1 2		stone at 60cm- difficult to auger- 60cm gravel- fragments 60cm
			45	lms	7.5YR4/4		5				hf				
			60	ms	7.5YR4/6										
			120	ms											
36	354600 529300	PGR	35	mel	7.5YR3/3		3				hf		1 2		
			65	mel	5YR3/4		3				hf				
			75	es	5YR4/6		5				hf				
			120	es											
37	354600 529200	PGR	35	sel	7.5YR3/3		5				hf		1 2		GRAVEL AT 43CM
			43	sel	7.5YR4/4		5				hf				
			65	sel			15				hf				
			120	es											
38	354600 528930	PGR	40	mel	7.5YR3/4		5				hf		1 2		STONE AT 4CM
			120	ms											
39	354600 528930	PGR	33	lms	5YR3/4								1 2		difficult to auger- 60cm stone
			40	lms	5YR4/6										
			100	es	5YR4/6										

BORING-NUMBER	NGR	LAND-USE	DEPTH (cm)	Texture	Soil Colour		MOTTLES		STONES			DEPTH TO GLEYING (cm)	DEPTH TO SPL (cm)	WETNESS CLASS	ALC	SOIL-TYPE	COMMENTS
					Munsell		Munsell	Ab.	Total	>2cm	>6cm						
			120	cs													
40	3592700 528700	PGR	38	lms	7.5YR4/4			2			hr			I	2		ohp
			43	lms	7.5YR4/6												
			70	es	7.5YR4/6												
			120	es													
41	354600 528700	PGR	40	msl	7.5YR4/4			2			hr			I	2		stone at 50cm
			50	lms	7.5YR4/4												
			120	ms													
42	354600 528700	PGR	40	msl	7.5YR3/3			3			hr			I	2		gravel at 90cm
			45	lms	7.5YR3/3												
			65	lms	5YR4/6												
			120	ms				5		hr							
43	NY 54700, 20200	PGR	26	lms	br			<1						I	2		Rolling undulating landscape, 4-7° slope, impenetrable gravel at 80cm.
			60	lms	red-br			3-5		peb & grvl	60+?						
			80	lms / ms	red / ye-br			5-10		grvl							
44	NY 54700, 20100	PGR	26	msl	br			5-10			est			2	2		Very subtle colour change TS-SS
			45	lms	red-br	red-br		10-20		hd-est-qz	45-60						
			100	lms > ms	lt-ye-br	red-br & ye-br		1-3		hd-est & qz							
45	354700 528900	PGR	40	msl	7.5YR3/3	7.5YR5/6	e	20			hr			I	2		pipeline difficult to auger 40cm gravel
			120	ms	7.5YR5/3	7.5YR5/6	e										
46	354700 528800	PGR	40	msl	7.5YR3/4			5			hr			I	2		stone stopped auger 60cm
			45	msl	7.5YR3/4					hr							
			60	lms	7.5YR3/4												
			120	ms				15		hr							
47	NY 54800, 20200	PGR	25	lms	dk-oran-br		r-lg	1-3						3	3a		Bottom of slope of dry valley feature, wet - GW below 45cm, sandy lenses/bands between 60-80cm.
			45	lms	re-ye	oc & Fe	e	5-10									
			100	scf	ye-rd & pk	oc, gr & Fe	e	10-20		est							
48	NY 54800, 20100	PGR	28	scf	dk-gr-br			3-5			rd-est + mx			III?	3a		Disturbed, possibly worked for minerals, (sand and gravel), impenetrable at 95cm
			70	scf	pk-rd	lt-br & gr-br	f	5-10		hrd, r-lg-cob	28	45?					
			100	msl-tesl	dk-gr-br			1-3		est							
49	NY 54800, 20000	PGR	25	msl	dk-gr-br	oc	r	3-5			est + mx			IV	3b		Disturbed, 10m from A66 boudry, wet 40cm, impenetrable below 50cm
			50	scf	rd-br	gr	e	20-30		mx	30	45					
50	354800 528800	PGR	35	msl	7.5YR3/3			3			hr			I	2		
			70	lms	7.5YR3/3			5		hr							

BORING-NUMBER	NGR	LAND-USE	DEPTH (cm)	Texture	Soil Colour	MOTTLES		STONES			DEPTH TO GLEYING (cm)	DEPTH TO SPL (cm)	WETNESS CLASS	ALC	SOIL-TYPE	COMMENTS	
					Munsell	Munsell	Ab.	Total	>2cm	>6cm							Type
			120	ms													
51	354800 528900	PGR	30	esl	7.5YR3/3			3			hr					gravel present 45cm	
			39	lms	7.5YR3/3												
			45	ms	5YR4/6									↓	2		
			120	ms					45			hr					
52	NY 54900, 29200	PGR	30	fsl	dk-gr-br			3-5			hd-sst					Flat area next to stream, impenetrable below 55cm	
			55	sel	dk-gr-br				40-20			est		3	3a		
53	NY 54900, 29049	PGR	30	silt-org msl	dk-br			10-20		fw	est + mx, & lg-cob		>50	3	3a	Impenetrable below 50cm	
			50	msl	br + ye				50			hd-sst					
54	354900 528900	PGR	20	esl	7.5YR3/4			3			hr						
			75	lms	7.5YR4/6									↓	2		
			80	ms	5YR4/4												
			120	es													
55	354900 528900	PGR	30	msl	7.5YR3/3			3			hr						
			65	lms	5YR4/4									↓	2		
			120	ms	5YR4/4												
56	NY 55000, 29000	PGR	20	msl	dk-br			5-10			est + mx, & lg-cob					Impenetrable at 85cm	
			40	lms	gr	ec & lt-gr	e	5-10				hd-sst	20	>80	2		2
			80	ms	lt-gr	distinct-ec	e	1-3				hd-sst					
57	355000 528900	PGR	35	msl	7.5YR3/4			3			hr					augered to 70cm stone	
			40	msl	7.5YR3/4												
			60	lms	7.5YR3/4												
			120	ms	5YR3/4				45			hr					
58	335100 528900	PGR	39	msl	7.5YR3/3			2			hr					some wet areas nearby exposed drainage pipe	
			60	lms	7.5YR3/3				2			hr					
			80	omsl	7.5YR2.5/2									↓	2		
			120	ms	5YR5/2												
59	NY 55100, 29000	PGR	24	fsl	dk-br			5-10			est + mx, & lg-cob					4-7° slope, reddish-yellow below 50cm, impenetrable below 60cm, very high pebble content.	
			45	lms	gr-br				3-5			hd-sst	50		4		2
			60	lms	gr				5-10			hd-sst					
60	355200 528900	PGR	39	msl	7.5YR3/3			2			hr					TABLE 13	
			50	lms	7.5YR4/3												
			80	ms	10YR5/2	10YR5/6	e							↓	2		
			120	ms	10YR5/2												
61	NY 55200, 29000	PGR	30	lms	dk-br			3-5		fw	pebl & cob	40		II	↓	Top of a hill, impenetrable at 75cm	
			75	lms	dk-ye-rd	lt-ye-rd & gr	e > 40cm	40-20				pebl & grvl					

BORING-NUMBER	NGR	LAND-USE	DEPTH (cm)	Texture	Soil Colour	MOTTLES		STONES			DEPTH TO GLEYING (cm)	DEPTH TO SPL (cm)	WETNESS CLASS	ALC	SOIL-TYPE	COMMENTS		
					Munsell	Munsell	Ab.	Total	>2cm	>6cm							Type	
62	355300 528000	PGR	38	csi	7.5YR3/3													
			40	ms	5YR4/6													
			120	ms	5YR4/6			20			fr			↓	2		difficult to auger- 40cm gravel	
63	355300 528086	PGR	30	msl	7.5YR3/3													
			120	es	7.5YR3/3			20			fr			↓	2		difficult to auger- 30cm see 68 (14/2)	
67	355400 529000	PGR	30	esi	7.5YR3/3													
			40	lms	7.5YR3/3													
			120	es	7.5YR3/3			20			fr			↓	2		difficult to auger- 40cm	
68	355400 528000	PGR	30	esi	7.5YR3/3													
			120	es				20			fr			↓	2		droughtiness- inspection pit	
69	355400 528800	PGR	35	esi	7.5YR3/3				5									
			45	lms	7.5YR3/3				5									
			50	ms	7.5YR4/6										↓	2		
			120	ms	7.5YR4/6													
73	355500 529000	PGR	30	esi	7.5YR3/3													
			30	lms	7.5YR4/4													
			50	ms	5YR4/4											↓	2	
			120	ms	5YR4/4			20				fr					difficult to auger- 50cm+	
74	355500 528000	PGR	30	esi	7.5YR3/3													
			120	es				20						↓	2			
75	355500 528800	PGR	38	les	7.5YR2.5/2				2									
			45	les	7.5YR2.5/3													
			70	es	7.5YR4/6										↓	2		wet sand at 70cm
			120	es	7.5YR4/6													
79	355621 528089	PGR	30	mzel	7.5YR4/3													
			40	mzel	7.5YR5/2													
			50	hzcl	7.5YR4/2	e	7.5YR5/6											
			70	esi	7.5YR4/2								40	40	III	3a		near stream; wet S- at 70cm; flood risk- FCD<225
80	355683 529293	RGR	30	msl	7.5YR3/3													
			70	lms	7.5YR3/4										↓	3b		FLOOD RISK 3- CLOSE TO R- EAMONT

BORING-NUMBER	NGR	LAND-USE	DEPTH (cm)	Texture	Soil-Colour	MOTTLES		STONES			DEPTH-TO-GLEYING (cm)	DEPTH-TO-SPL (cm)	WETNESS-CLASS	ALC	SOIL-TYPE	COMMENTS
					Munsell	Munsell	Ab.	Total	>2cm	>6cm						
			120	ms	7.5YR3/4											
81	355700 529000	PGR	20 40 120	esi lms ms	5YR4/4 5YR3/4 5YR3/4			20					1	2		check droughtiness
82	355800 528960	PGR	30 55 80 120	msl esi msl esi	7.5YR3/4 5YR3/4 5YR4/4 5YR4/4								1	2		no stone
83	355900 529000	PGR	30 40 60 120	msl esi esi esi	7.5YR3/4 5YR3/4 5YR3/4 5YR3/4			20					1	2		stone stopped- auger at 60cm
84	355900 528885	PGR	30 90 120	msl esi esi	7.5YR3/3 5YR4/4 5YR4/4			2					1	2		soil wet at 80cm
85	356000 528950	WC	20 35 70 120	msl lms esi esi	7.5YR3/3 7.5YR3/3 5YR3/4 5YR3/4			6	6	3			1	2		soil wet at 70cm
86	356104 528874	PGR	38 50 80 120	msl lms esi esi	7.5YR3/3 5YR4/4 5YR4/4 5YR4/4			40					1	2		
87	356200 528925	WC	35 100 120	msl ms ms	7.5YR3/4 5YR3/4 5YR3/4			5	5				1	2		
88	356295 529127	WC	35 60 75 120	msl lms ms ms	7.5YR3/4 5YR3/4 5YR4/4 5YR4/4			5 20	5				1	2		auger stopped at 75cm stone
89	356300 528860	PGR	38 48 58 120	msl lms ms esi	7.5YR3/3 5YR4/4 5YR4/4 5YR4/4			40					1	2		
90	356344 529035	WC	30 38	msl msl	7.5YR3/4 5YR3/4			5	5				1	2		auger stopped at 48cm

BORING-NUMBER	NGR	LAND-USE	DEPTH (cm)	Texture	Soil Colour	MOTTLES		STONES			DEPTH TO GLEYING (cm)	DEPTH TO SPL (cm)	WETNESS CLASS	ALC	SOIL-TYPE	COMMENTS		
					Munsell	Munsell	Ab.	Total	>2cm	>6cm							Type	
			48	lms	5YR4/4			20			fr							
			120	ms	5YR4/4													
91	356400 528950	WG	40	mel	7.5YR3/3			3	3		fr							
			80	lms	5YR3/4													
			90	ms	5YR4/4										↓	2		soil moist at 90cm
			120	ms	5YR4/4													
92	356500 529000	WG	33	mel	7.5YR3/4			5	5									
			55	lms	5YR3/4													
			70	scl	5YR3/4													
			120	ms	7.5YR4/2			20				fr			↓	2		stone at 70cm
94	356500 528800	WG	38	mel	7.5YR3/3			5	5		fr							
			65	ms	2.5YR4/6			40				fr			↓	2		FCD 216 climate limitation G2
			120	ms														
95	356510 528714	WG	40	mel	10YR3/3			5	5		fr							
			65	ms			15				fr			↓	2		augered to 40cm stone	
			120	ms														
96	356600 528900	WG	40	mel	7.5YR3/4			3	3		fr							
			110	ms	5YR4/6										↓	2		
			120	ms	5YR4/6													
97	356600 528800	WG	38	scl	10YR4/2			5	5									
			40	scl	7.5YR4/3													
			50	scl	7.5YR4/3			15				fr			↓	2		FCD 218 NEARBY-NY526293
			120	scl			15					fr						
98	356600 528700	WG	35	mel	7.5YR3/3			3			fr							
			65	mel	5YR3/4			3				fr			↓	2		
			75	es	5YR4/6			5				fr						
			120	es														
99	356700 528900	WG	35	MSL	7.5YR3/4			3	3		fr							
			48	lms	7.5YR3/4													
			100	ms	5YR3/4										↓	2		check droughtiness
			120	MS	5YR3/4													
100	356700 528800	WG	35	scl	7.5YR3/3			5	5		fr							
			43	scl	7.5YR4/4			5				fr			↓	2		GRAVEL AT 43CM
			65	scl			15					fr						
			120	es														
101	356700 528700	WG	40	mel	7.5YR3/4			5			fr							
			120	ms			15					fr			↓	2		STONE AT 4CM

BORING-NUMBER	NGR	LAND-USE	DEPTH (cm)	Texture	Soil Colour	MOTTLES		STONES			DEPTH TO GLEYING (cm)	DEPTH TO SPL (cm)	WETNESS CLASS	ALC	SOIL-TYPE	COMMENTS			
					Munsell	Munsell	Ab.	Total	>2cm	>6cm							Type		
402	356800 529100	PGR	38	lms	7.5YR4/4														
			43	lms	7.5YR4/6														
			75	ms	5YR4/6														
			120	ms	5YR4/6													augered to 75cm - stony at 75cm	
403	356800 528900	WG	38	msl	7.5YR3/4			5	5		hf								
			40	ms	5YR3/4														
			80	ms	5YR4/4														
			120	ms	5YR4/4													soil wet at 80cm - field drainage problem?	
404	356800 528800	WG	33	esl	5YR3/4			3	3		hf								
			40	lms	5YR4/6			5			hf								
			100	es	5YR4/6			3			hf							difficult to auger - 60cm - stone; droughtiness - checked Grade 2	
			120	es															
405	356800 528700	WG	40	msl	7.5YR3/3			3	3		hf								
			120	ms	7.5YR5/3			10			hf							difficult to auger - 40cm - gravel	
406	356900 529100	PGR	30	msl	7.5YR3/3														
			45	lms	7.5YR3/3														
			80	ms	5YR4/4														
			120	ms	5YR4/4														
407	356900 529000	PGR	38	lms	7.5YR2.5/3														
			55	ms	7.5YR2.5/3														
			70	ms	7.5YR3/3			20			hf								
			120	ms	7.5YR3/3														
408	356900 528900	PGR	28	lms	7.5YR4/4														
			120	ms				20			hf						auger stopped at 28cm several attempts - stone; droughtiness MBw +6 MBp +4		
409	356900 528800	WG	38	lms	7.5YR3/4			3	3		hf								
			100	ms	5YR4/6														
			120	ms															
410	356900 528700	WG	35	msl	7.5YR3/4			3	3		hf								
			60	ms	5YR4/4														
			90	ms	2.5YR4/6														
			120	ms	2.5YR3/6														
411	356980 528800	WG	42	msl	7.5YR3/3			5	5		hf								
			90	ms	5YR4/6														
			120	ms														augered to 100cm	
412		WG	38	msl	7.5YR3/3			2	2		hf								

BORING-NUMBER	NGR	LAND-USE	DEPTH (cm)	Texture	Soil-Colour	MOTTLES		STONES			DEPTH TO-GLEYING (cm)	DEPTH TO-SPL (cm)	WETNESS-CLASS	ALC	SOIL-TYPE	COMMENTS
					Munsell	Munsell	Ab.	Total	>2cm	>6cm						
	356080 528700		110 120	ms ms	5YR4/6											FCD-216 climate-limitation-G2
113	356091 529100	PGR	30 43 60 120	msl lms lms sel	7.5YR3/3 7.5YR3/3 7.5YR4/3 5YR4/4							↓	2			augered to 90cm no-stone
114	357000 529000	PGR	45 60 80 120	lms ms ms ms	7.5YR2.5/3 7.5YR3/3 7.5YR3/4 5YR4/6							↓	2			
115	357011 528800	PGR	28 120	msl ms	7.5YR3/4 7.5YR3/4							↓	2			
116	357100 529100	PGR	38 48 60 120	msl lms ms ms	7.5YR3/4 7.5YR3/4 5YR4/4 5YR4/4			20				↓	2			
117	357100 529000	PGR	30 60 70 120	msl lms ms ms	7.5YR3/3 7.5YR3/3 5YR3/4 5YR3/4			20				↓	2			auger stopped at 70cm
118	357100 528000	PGR	30 90 120	lms ms ms	7.5YR3/3 2.5YR3/6 2.5YR3/6							↓	2			
119	357100 528800	WC	30 100 120	lms ms ms	7.5YR3/4 2.5YR3/6			2	2			↓	2			
120	357100 528700	WC	40 50 120	lms ms ms	7.5YR3/2 5YR4/6			2 10	2			↓	2			stone at 50cm 3-attempts
121		PGR	30	msl	7.5YR4/4											

BORING-NUMBER	NGR	LAND-USE	DEPTH (cm)	Texture	Soil Colour	MOTTLES		STONES			DEPTH TO GLEYING (cm)	DEPTH TO SPL (cm)	WETNESS CLASS	ALC	SOIL-TYPE	COMMENTS		
					Munsell	Munsell	Ab.	Total	>2cm	>6cm							Type	
	357200 529000		120	ms	7.5YR4/4			20			fr					stone stopped- auger at 40cm		
122	357200 528800	WC	30	msl	7.5YR4/4			3			fr			↓	2			
			90	ms	7.5YR4/6													
			120	fs	7.5YR4/6													
123	357200 528700	WC	35	msl	7.5YR3/3			5			fr			↓	2			
			58	msl	7.5YR2.5/2													fr
			100	ms	5YR4/6													
			120	ms														
124	357212 528800	PGR	38	msl	7.5YR3/4												soil moist at 50cm- and saturated below- 60cm	
			120	lms	5YR4/4													
125	357300 528900	WC	30	msl	7.5YR4/4			20			fr			↓	2		auger stopped at- 30cm 2 attempts	
			120	ms	5YR3/4													
126	357300 528800	WC	35	msl	7.5YR3/4			5			fr			↓	2			
			60	lms	7.5YR3/4													
			100	lms	7.5YR3/4													
			120	ms														
127	357300 528700	WC	30	esl	7.5YR3/4			3	3		fr			↓	2			
			50	lms	5YR4/4													fr
			100	ms	5YR4/4													fr
			120	ms														
128	357300 528600	WC	38	msl	7.5YR3/3			3	3		fr			↓	2			
			50	lms	7.5YR4/3													
			110	ms	5YR4/6													
			120	ms														
129	357400 528700	PGR	30	msl	7.5YR3/3			3	3		fr			↓	2			
			55	lms	5YR4/4													
			80	ms	5YR4/4													
			120	ms														
130			38	lms	7.5YR3/4			5	5	2	fr			↓	2			

BORING-NUMBER	NGR	LAND-USE	DEPTH (cm)	Texture	Soil Colour	MOTTLES		STONES			DEPTH TO GLEYING (cm)	DEPTH TO SPL (cm)	WETNESS CLASS	ALC	SOIL-TYPE	COMMENTS
					Munsell	Munsell	Ab.	Total	>2cm	>6cm						
	357500 528700	GREEN COVER CROP	50 120	ms ms	5YR4/6 5YR4/6			20								overall climate limitation Grade 2;
131	357515 528800	GREEN COVER CROP	38 43 70 120	lms lms ms ms	7.5YR3/3 5YR3/4 5YR4/6 5YR4/6			5 20	5	1			↓	2		auger stopped 70cm
132	357600 528800	GREEN COVER CROP	38 50 120	lms ms ms	7.5YR3/3 5YR4/6 5YR4/6			3 20	3				↓	3a		auger stopped 50cm droughtiness limitation
133	357600 528700	GREEN COVER CROP	38 40 50 120	lms ms ms ms	7.5YR3/4 7.5YR5/6 7.5YR4/6 7.5YR4/6			3 20	3	1			↓	3a		Droughtiness checked 3a
134	357700 528785	GREEN COVER CROP	30 38 70 120	msl lms ms ms	7.5YR3/4 7.5YR3/3 2.5YR3/6 2.5YR3/6			6 20	6	3			↓	2		
135	357700 528700	GREEN COVER CROP	30 38 60 120	msl lms ms ms	7.5YR3/3 7.5YR3/4 5YR4/4 2.5YR4/6			5	5	2			↓	2		augered to 90cm no stone
137	357900 528750	GREEN COVER CROP	30 43 80 120	msl ms scl scl	7.5YR2.5/3 7.5YR5/4 2.5YR4/4 2.5YR4/4	e	10YR5/6				43		II	2		saturated at 60cm - augered to 80cm - pockets of pale S - och motts below 40cm
139	358100 528725	GREEN COVER CROP	30 50 120	msl hel hel	7.5YR3/3 5YR4/4 5YR4/4			6 20	6	4			IV	3b		saturated at 50cm - assume spl >50cm - augered stopped at 60cm - figure 7 - surface soft to walk over
140	358160 528600	GREEN COVER CROP	40 60 120	lms ms ms	7.5YR3/4 2.5YR3/6 2.5YR3/6			4 20	4	1			↓	2		auger stopped at 60cm stone - droughtiness checked Grade 2
141	358160 528500	GREEN COVER CROP	30 70 120	lms ms ms	7.5YR3/4 2.5YR4/6 2.5YR4/6			4 20	4	1			↓	3a		auger stopped at 70cm stone
144			40	msl	7.5YR3/4			2	2				↓	2		

BORING-NUMBER	NGR	LAND-USE	DEPTH (cm)	Texture	Soil Colour	MOTTLES		STONES			DEPTH TO GLEYING (cm)	DEPTH TO SPL (cm)	WETNESS CLASS	ALC	SOIL-TYPE	COMMENTS
					Munsell	Munsell	Ab.	Total	>2cm	>6cm						
	358400 528700	stubble turnips	48 55 120	lms ms ms	7.5YR3/4 5YR4/6 5YR4/6											
146	359600 528675	stubble turnips	40 50 120	msl ms ms	7.5YR3/3 7.5YR4/4 7.5YR4/4			2	2		hf		+	2		droughtiness- checked-Grade-2
148	358764 528577	PGR	20 50 120	msl scl scl	7.5YR3/4 7.5YR3/3 7.5YR3/3			20			hf		+	3a		stone at 50cm;- saturated at 50cm;- subsoil assumed to be scl to depth
149	358800 528645	PGR	25 40 45 120	scl scl scl scl	10YR4/2 7.5YR4/3 5YR4/4 5YR4/4	10YR5/6	€					25	III	3a		mottles present at 25cm; soil saturated at 40cm; field- drainage issue?
669		Arable	35 73 100	GSL GSL LCS	7.5YR4/3 Br 7.5YR6/2 Pi Gr 7.5YR4/2 Pi Gr		e e	3 4 2		1	hf hf	35	+	2		
670		Arable	28 58	GSL GSL	7.5YR4/3 Br 7.5YR5/3 Br		€	3 5		1	hf hf	28	+	2		Impenetrable by stone at 58cm
671		Arable	23 58 100	MSL GSL GSL	5YR4/2 Dk rd gr 2.5YR6/4 Li Rd Br 2.5YR6/4 Li Rd Br		€ €	4 4 4		1	hf hf hf	23	+	2		
672		Arable	24 56 77	MSL SCL SCL	7.5YR5/3 Br 2.5YR6/4 Li Rd Br 2.5YR6/4 Li Rd Br		€ €	4 4 4		1	hf hf hf	24	+	2		Impenetrable by stone at 58cm
673		Arable	30 63 80 100	GSL LCS GSL GSL	5YR5/2 Rd Gr 2.5YR5/3 Rd Br 2.5YR5/4 Rd Br 2.5YR6/4		€ € €	4 4 4 2		1	hf hf hf hf	30	+	2		Watertable at 80cm
674		Arable	26 43 65 100	OrgGSL LCS GS GS	7.5YR5/3 V Dk Gr 7.5YR6/3 Lt Br 2.5YR4/2 Wk Rd 7.5YR5/3 Br		€ €					26	+	2		Watertable at 70cm

354000 354500 355000 355500 356000 356500 357000 357500 358000 358500 359000 359500

531000

531000

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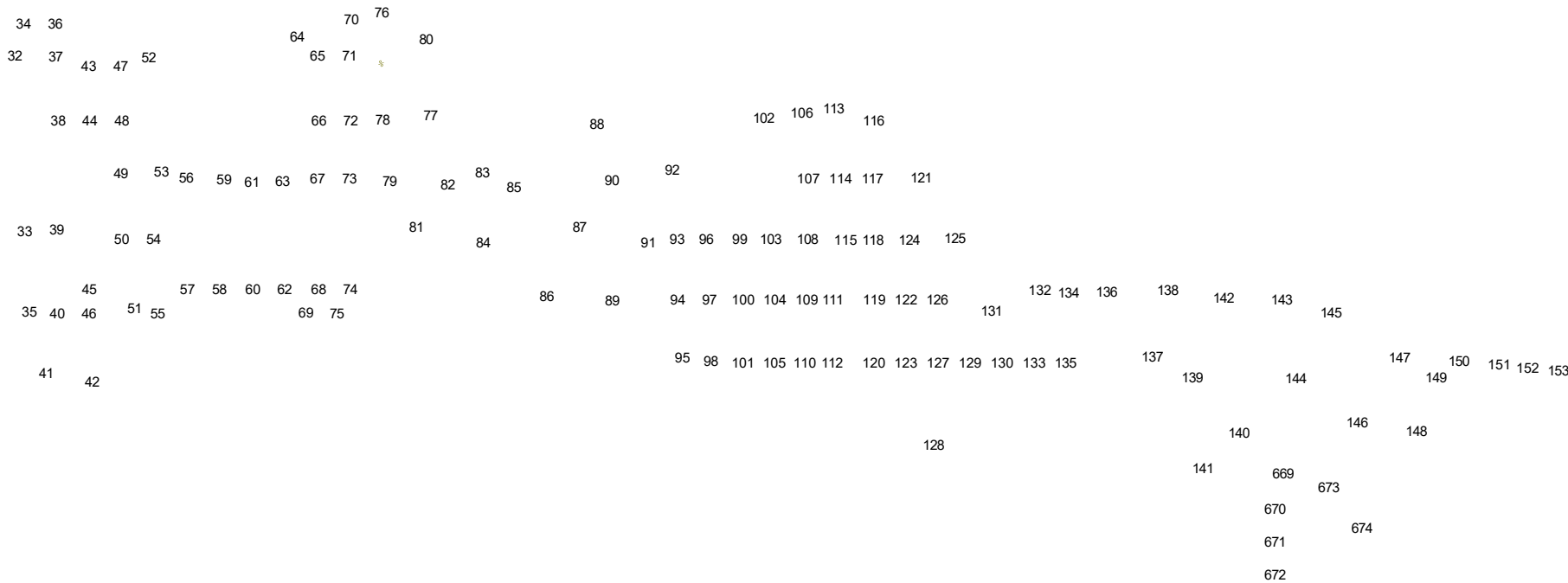
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Highways England

A66 Northern Trans-Pennine

Penrith to Temple Sowerby Agricultural Land Classification (ALC) Survey Results

1050859

- Order Limits
- Auger locations
- ALC**
- 2
- 3a
- 3b
- 4
- 5
- Non-ag
- Urban
-  Not surveyed

Drawn by Paul Taylor 29/04/2022, Verified by John Grylls 29/04/2022

0 100 200 300 400

Metres

Scale: 1:20,000 at A3 size

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Appendix 3: Temple Sowerby to Appleby - Auger boring descriptions and ALC map

Auger Boring Descriptions

BORING NUMBER	DEPTH (cm)	Texture	Soil Colour	MOTTLES		STONES			DEPTH TO GLEYING (cm)	DEPTH TO SPL (cm)	WETNESS CLASS	ALC	COMMENTS
			Munsell	Munsell	Ab.	Total	>2cm	>6cm					
154	39	msl	7.5YR3/6			5						2	augered to 90cm no stone
	58	msl	5YR4/4										
	80	scl	5YR4/4										
	120	ms	5YR4/6										
155	38	msl	7.5YR3/3			5						2	Augered to 50cm stone stopped auger
	50	scl	5YR4/4										
	120	scl	5YR4/4			20							
156	38	scl	7.5YR3/3			5			38	>80	III	3a	soil saturated at 60cm table 13; stone at 60cm
	60	scl	5YR5/3	7.5YR5/6	c								
	120	scl	5YR3/3			20		hr					
157	39	msl	7.5YR3/3			5						2	stone at 50cm
	50	scl	5YR4/4										
	120	scl	5YR4/4			20		hr					
158	43	lcs	7.5YR2.5/3			5						3a	augered to 90cm no stone Droughtiness checked 3a
	90	cs	2.5YR3/6										
	120	cs	2.5YR3/6										
159	35	msl	7.5YR2.5/3			5						2	soil moist at 60cm augered tom90cm
	80	ms	5YR4/4										
	90	scl	5YR4/3										
	120	scl	5YR4/3										
160	39	msl	7.5YR3/4			5						2	auger stopped at 43 cm stone ; Grade 2 for droughtiness
	43	ms	2.5YR3/6										
	120	ms	2.5YR3/6			20		hr					
161	30	msl	7.5YR4/4			5	5	1				2	difficult to auger 30cm stone; stone assessment from cutting at edge of field ; droughtiness checked Grade 2
	39	msl	7.5YR4/4			15							
	120	ms	2.5YR3/6			20		hr					
162	40	msl	7.5YR4/4			5						2	augered to 50cm stone (ley- dairy)
	50	scl	5YR3/4										
	120	scl	5YR3/4			20		hr					
163	38	msl	7.5YR3/3			5			60	65	III	3a	Augered to 65cm stone stopped auger
	45	scl	7.5YR3/2										
	60	scl	7.5YR5/2	10YR5/6	c								
	120	c	5YR5/4			20		hr					
164	30	scl	7.5YR3/3			5						3a	soil saturated at saturated at 65cm- assume C as per AB163
	40	scl	7.5YR4/4										
	70	scl	5YR4/4										
	120	c	5YR4/4			20		hr					
165	30	msl	5YR3/3			5						2	stone at 60cm 60cm msl/scl
	40	msl	5YR3/3										

BORING NUMBER	DEPTH (cm)	Texture	Soil Colour	MOTTLES		STONES			DEPTH TO GLEYING (cm)	DEPTH TO SPL (cm)	WETNESS CLASS	ALC	COMMENTS
			Munsell	Munsell	Ab.	Total	>2cm	>6cm					
	60	msl	5YR4/3										
	120	scl	5YR4/3			20							
166	40	scl	5YR3/3			5					I	2	
	120	scl	5YR3/3			20							
167	39	msl	5YR3/3			5					IV	3b	augered to 65cm stopped stone; red soil assume spl fig 7
	65	sc	2.5YR3/6							39			
	120	sc	2.5YR3/6			20							
168	38	msl	5YR3/3			5					IV	3b	saturated at 50cm pockets of mottled sand 38cm
	70	c	5YR4/4	10YR5/6	m								
	120	c	5YR4/4										
169	40	lms	7.5YR4/4			5	5					2	augered to 110cm no stone
	86	lms	7.5YR2.5/3								I		
	110	ms	2.5YR3/6										
	120	ms	2.5YR3/6										
170	39	lms	7.5YR2.5/3			5						2	augered to 80cm stopped stone
	80	ms	2.5YR3/6								I		
	120	ms	2.5YR3/6			20							
171	40	msl	7.5YR3/2									2	augered to 100 no stone
	90	lms	7.5YR3/3								I		
	100	ms	2.5YR3/3										
	120	ms	2.5YR3/3										
172	35	msl	7.5YR3/3									2	stone stopped auger at 70cm
	40	lms	7.5YR4/4								I		
	70	ms	5YR4/4										
	120	ms	5YR4/4			20							
173	30	msl	7.5YR3/3									2	stone stopped auger at 90cm
	40	lms	7.5YR3/3								I		
	90	ms	5YR3/3										
	120	ms	5YR3/3			20							
174	39	msl	7.5YR3/3									2	sand and gravel at 42cm
	42	ms	5YR4/4			15					I		
	120	ms	5YR4/4			20							
175	35	msl	7.5YR2.5/3			5	5	3	hr			2	sheep stubble turnips- soil moist at 70cm
	40	lms	5YR3/3								I		
	70	ms	5YR4/3										
	120	ms	5YR4/3			20			hr				
176	35	msl	7.5YR2.5/3									2	stony at 80cm
	50	scl	5YR3/4								I		
	80	ms	5YR4/4										
	120	ms	5YR4/4			20			hr				

BORING NUMBER	DEPTH (cm)	Texture	Soil Colour	MOTTLES		STONES			DEPTH TO GLEYING (cm)	DEPTH TO SPL (cm)	WETNESS CLASS	ALC	COMMENTS
			Munsell	Munsell	Ab.	Total	>2cm	>6cm					
177	40	msl	7.5YR4/4								2	stone at 80cm	
	70	lms	7.5YR3/4										
	80	ms	5YR3/4										
	120	ms	5YR3/4			20			hr				
178	43	msl	7.5YR3/3								2	stone at 70cm	
	70	scl	5YR4/4										
	120	scl	5YR4/4			20			hr				
179	30	msl	7.5YR3/2								2	sand and gravel at 45cm	
	40	lms	7.5YR3/2										
	45	ms	5YR4/4										
	120	ms	5YR4/4			20			hr				
180	35	msl	7.5YR3/3			5	5	1	hr		2	auger stopped at 40cm stone	
	40	lms	5YR3/4										
	80	lms	5YR3/4			10			hr				
	120	ms	5YR3/4			20			hr				
181	38	msl	7.5YR3/3								2	stone at 50cm	
	43	lms	7.5YR3/2										
	50	ms	5YR3/4										
	120	ms	5YR3/4			20			hr				
182	35	msl	7.5YR2.4/2			5	5	1	hr		2	augered to 80cm stopped by stone	
	70	msl	5YR3/2										
	80	lms	7.5YR3/4										
	120	ms	7.5YR3/4			20			hr				
183	38	msl	7.5YR2.5/2			3	3		hr		2	augered to 100cm	
	78	lms	7.5YR2.5/3										
	100	ms	2.5YR2.5/3										
	120	ms	2.5YR2.5/3										
184	38	msl	7.5YR2.5/3			5	5	1	hr		2	auger stopped at 50cm	
	50	lms	7.5YR3/4										
	80	lms	7.5YR3/4			15			hr				
	120	ms	7.5YR3/4			20			hr				
185	35	msl	7.5YR3/3			5	5	1	hr		2	auger stopped at 80cm	
	45	msl	5YR3/3										
	75	lms	5YR3/4										
	120	ms	5YR3/4			20			hr				
186	35	msl	7.5YR2.5/3			5	5	1	hr		2	auger stopped at 80cm	
	65	msl	5YR3/3										
	80	lms	5YR3/2										
	120	ms	5YR3/2			20			hr				
187	38	msl	7.5YR2.5/3			3	3		hr		2		
	58	msl	7.5YR3/3										
	90	scl	7.5YR4/4										

BORING NUMBER	DEPTH (cm)	Texture	Soil Colour	MOTTLES		STONES			DEPTH TO GLEYING (cm)	DEPTH TO SPL (cm)	WETNESS CLASS	ALC	COMMENTS	
			Munsell	Munsell	Ab.	Total	>2cm	>6cm						Type
	120	scl	7.5YR4/4											
188	35	msl	7.5YR3/3			5	5	1	hr			2	augered to 80cm no stone, no mottling	
	43	scl	7.5YR3/3											
	80	scl	5YR4/4											
	120	scl	5YR4/4			10			hr					
189	40	msl	5YR3/4			5	5	1	hr			2	auger stopped at 40cm by stone:2xs	
	80	lms	5YR3/4			5			hr					
	120	ms	5YR3/4			20			hr					
190	35	msl	7.5YR2.5/3			5	5	1	hr			2	augered to 70cm stone present	
	43	msl	7.5YR3/4											
	60	lms	2.5YR3/4											
	120	ms	2.5YR3/4			20			hr					
191	38	msl	7.5YR2.5/3			3	3	1	hr			2		
	40	lms	5YR3/4											
	55	ms	7.5YR4/4											
	120	ms	5YR4/4											
192	38	msl	7.5YR3/4									3a	common Manganese below 38cm Table 13 FCD 213	
	80	scl	2.5YR3/4											
	120	scl	2.5YR3/4											
193	35	msl	7.5YR3/3			5	5	1	hr			2	augered to 80cm (heavy rain shower and wind)	
	80	scl	7.5YR3/4											
	120	scl	7.5YR3/4			10			hr					
194	35	msl	7.5YR3/4			5	5	1	hr			2	point above a low lying part (archaeological pit) with standing water.	
	80	scl	5YR4/4											
	120	scl	5YR4/4			10			hr					
195	35	msl	7.5YR2.5/3									2	stone at 40cm stopped auger no gleying <40cm table 13	
	40	scl	7.5YR3/3											
	120	scl	7.5YR3/3			20			hr					
196	30	scl	5YR3/4									3a	difficult to auger 35cm stone	
	35	hcl	7.5YR5/3	c	10YR5/6									
	120	hcl	7.5YR5/3			15			hr					
197	38	scl	7.5YR2.5/3									3b	assume spl 50+ red soil fig 7.	
	50	scl	5YR4/6							50				
	70	hcl	5YR3/4											
	120	hcl	5YR3/4											
198	40	msl	7.5YR3/4									2	no stone, soil wet at 80cm	
	50	scl	7.5YR3/4											
	80	scl	7.5YR4/4											
	120	scl	7.5YR4/4											
199	38	msl	7.5YR4/4			3	3		hr			3a	spl 70cm fig 8	
	40	scl	5YR4/4							70				
	70	hcl	5YR4/4											
	120	c	2.5YR3/6			10			hr					
200	38	msl	7.5YR3/3			5	5	1	hr	70	>80	II	2	

BORING NUMBER	DEPTH (cm)	Texture	Soil Colour	MOTTLES		STONES			DEPTH TO GLEYING (cm)	DEPTH TO SPL (cm)	WETNESS CLASS	ALC	COMMENTS
			Munsell	Munsell	Ab.	Total	>2cm	>6cm					
	40	msl	7.5YR3/3										
	70	scl	7.5YR5/3	7.5YR5/6	m								
	120	hcl	5YR4/4			10							
201	39	scl	7.5YR3/4										
	60	scl	7.5YR4/3							I	2	augered to 100cm sl.stony at 70cm	
	100	scl	5YR4/3			10							
	120	scl	5YR4/3										
202	40	scl	7.5YR3/3			3	3						
	55	scl	7.5YR4/3							I	2	augered to 55cm	
	120	scl	7.5YR4/3										
203	38	scl	7.5YR4/4										
	70	scl	7.5YR3/4						70	III	3a	manganese present 70cm assume spl	
	75	c	5YR3/4										
	120	c	5YR3/4			5							
204	40	msl	7.5YR3/4										
	80	scl	7.5YR3/3							I	2		
	90	scl	7.5YR4/4										
	120	scl	7.5YR4/4										
205	25	msl	7.5YR3/3										
	50	scl	2.5YR3/6							I	2	grass sprayed off after cereal crop	
	100	scl	2.5YR3/6										
	120	scl	2.5YR3/6			20							
206	38	msl	7.5YR3/4										
	48	lms	5YR3/4										
	60	c	2.5YR3/4			10			60	III	3a		
	120	c	2.5YR3/4										
207	39	msl	7.5YR2.5/3			3	3						
	80	msl	5YR4/4							I	2	augered to 100cm	
	100	msl	7.5YR3/4										
	120	msl	7.5YR3/4										
208	38	msl	7.5YR2.5/3			3	3						
	40	msl	7.5YR3/3							I	2	augered to 40cm stone present	
	70	lms	7.5YR3/3			15							
	120	ms	7.5YR3/3										
209	35	msl	7.5YR3/2			5	5	1					
	55	msl	7.5YR3/3							I	2	augered to 55cm stopped by gravel	
	80	lms	7.5YR3/3			10							
	120	ms	7.5YR3/3			20							
210	30	msl	7.5YR3/2			5	5	1					
	58	msl	7.5YR3/2							I	2	augered to 100cm	
	100	lms	7.5YR3/3										
	120	ms	7.5YR3/3			20							
211	35	msl	7.5YR2.5/3			3	3						
	60	msl	7.5YR3/4							I	2	auger stopped at 80cm by stone	
	80	ms	7.5YR3/3										

BORING NUMBER	DEPTH (cm)	Texture	Soil Colour	MOTTLES		STONES			DEPTH TO GLEYING (cm)	DEPTH TO SPL (cm)	WETNESS CLASS	ALC	COMMENTS
			Munsell	Munsell	Ab.	Total	>2cm	>6cm					
	120	ms	7.5YR3/3				20						
212	38	msl	7.5YR2.5/3								I	2	augered to 55cm stone
	40	lms	7.5YR4/4										
	55	ms	5YR4/6										
	120	ms	5YR4/6				20		hr				
213	38	msl	7.5YR2.5/3							60	III	3a	red soil stone at 63cm stopped auger
	55	scl	7.5YR3/3										
	60	scl	5YR4/4										
	120	c	5YR4/4				20		hr				
214	35	msl	7.5YR2.5/2				5	5	1		I	2	augered to 100cm
	80	lms	7.5YR2.5/3										
	100	ms	5YR4/6										
	120	ms	5YR4/6				20		hr				
215	35	msl	7.5YR2.5/3				3				III	3a	auger stopped at 50cm stone
	50	scl	7.5YR3/2										
	60	scl	5YR4/4				20		hr				
	120	c	5YR4/4										
216	38	msl	7.5YR2.5/3				3			60	I	2	augered to 60cm stone
	40	scl	7.5YR3/3										
	60	ms	5YR4/3	c	7.5RY5/6								
	120	ms	5YR4/3				20		hr				
217	40	msl	7.5YR2.5/3								I	2	soil saturated at 80cm and wet soil 60cm+ (WCI)
	60	scl	7.5YR3/4										
	120	scl	7.5YR3/4										
218	35	msl	7.5YR3/3								I	2	stone at 70cm
	55	lms	7.5YR3/4										
	70	ms	7.5YR3/4										
	120	ms	7.5YR3/4				20		hr				
219	38	msl	7.5YR3/3								I	2	stone at 90cm+
	58	msl	7.5YR3/4										
	80	scl	7.5YR4/4										
	120	scl	5YR4/4				20		hr				
220	39	msl	7.5YR3/4							68	III	3a	>68cm manganese and mixed colours
	68	msl	7.5YR4/3										
	90	c	2.5YR3/4										
	120	c	2.5YR3/4										
221													Not Surveyed
222	25	msl	7.5YR3/3								II	2	marginal WCII/III
	78	scl	5YR4/4										
	80	c	5YR4/6										
	120	c	5YR4/6										
223	38	msl	7.5YR2.5/3								I	2	soil moist below 80cm
	75	msl	5YR3/3										
	80	ms	5YR3/4										
	120	ms	5YR3/4										

BORING NUMBER	DEPTH (cm)	Texture	Soil Colour	MOTTLES		STONES			DEPTH TO GLEYING (cm)	DEPTH TO SPL (cm)	WETNESS CLASS	ALC	COMMENTS
			Munsell	Munsell	Ab.	Total	>2cm	>6cm					
224	20	mcl	7.5YR4/2						20	30	IV	3b	wet on surface. Near gypsum works- geology gypsum bedrock and till deposits
	30	mcl	7.5YR4/2	10YR5/6	m								
	50	c	5YR4/3	10YR5/6	m								
	120	c	5YR4/3										
225	35	msl	7.5YR2.5/3						68	III	3a	stone at 70cm	
	40	msl	7.5YR3/3										
	68	scl	5YR3/3										
	120	c	5YR4/4			20		hr					
226	35	msl	5YR3/3						35	50	IV	3b	topsoil msl/scl stone at 60cm
	50	scl	5YR3/3	7.5YR5/6	c								
	60	c	5YR5/4										
	120	c	5YR5/4			20		hr					
227	40	msl	7.5YR2.5/2						60	III	3a	difficult to auger 60cm	
	60	scl	7.5YR3/3										
	120	c	5YR5/4			20		hr					
228	35	mcl	5YR4/3						35	35	IV	3b	wet on surface. Near gypsum works- overburden waste??
	65	c	5YR4/6	10YR5/6	m								
	120	c	5YR4/6										
229	33	mcl	7.5YR4/2						33	IV	3b		
	50	c	5YR4/3										
	120	c	5YR4/3										
230	30	scl	7.5YR3/4								I	2	stone at 70cm
	40	scl	7.5YR3/3										
	70	scl	7.5YR4/4										
	120	scl	7.5YR4/4										
231	40	msl	7.5YR3/2						68	68	III	3a	stone at 80cm
	68	scl	7.5YR3/4										
	75	c	5YR4/4	10YR5/6	m								
	120	c	5YR4/4			20		hr					
232	30	scl	7.5YR3/4						50	III	3a	stone at 50cm gravel in soil.	
	48	scl	7.5YR3/3										
	50	scl	5YR4/3										
	120	c	5YR4/3			20		hr					
233	36	scl	7.5YR3/3						36	36	IV	3b	stone at 50cm
	50	c	5YR3/3	10YR5/6	c								
	120	c	5YR3/3			20		hr					
234	33	mcl	5YR4/2						33	33	IV	3b	wet at surface
	70	c	5YR5/3	7.5YR5/6	c								
	120	c	5YR5/3										
235	38	msl	7.5YR4/4						75	>80	II	2	augered to 90cm mottling 70cm +
	45	scl	7.5YR4/3										
	90	scl	5YR4/3	10YR5/6	c								
	120	c	5YR4/3										
236	38	msl	7.5YR2.5/3								I	2	

BORING NUMBER	DEPTH (cm)	Texture	Soil Colour		MOTTLES		STONES			DEPTH TO GLEYING (cm)	DEPTH TO SPL (cm)	WETNESS CLASS	ALC	COMMENTS
			Munsell	Munsell	Ab.	Total	>2cm	>6cm	Type					
	75	msl	5YR3/3										soil moist below 80cm	
	80	ms	5YR3/4											
	120	ms	5YR3/4											
237	35	msl	7.5YR2.5/3								68	III	3a	stone at 70cm
	40	msl	7.5YR3/3											
	68	scl	5YR3/3											
	120	c	5YR4/4			20			hr					
238	35	msl	5YR3/3							35	50	IV	3b	topsoil msl/scl stone at 60cm
	50	scl	5YR3/3	7.5YR5/6	c									
	60	c	5YR5/4											
	120	c	5YR5/4			20			hr					
239													caravan storage area with hardcore and soil bund for stripped soil. Classified as Non-agricultural land-could be returned to agricultural use.	
241	40	msl	7.5YR2.5/2								60	III	3a	difficult to auger 60cm
	60	scl	7.5YR3/3											
	120	c	5YR5/4			20			hr					
242	35	msl	7.5YR3/3									I	2	
	40	msl	7.5YR3/4											
	60	lms	7.5YR4/3											
	120	ms	7.5YR4/4			20			hr					
243	40	msl	7.5YR2.5/3									I	2	stone at 80cm
	60	msl	7.5YR3/4											
	80	lms	5YR3/4											
	120	ms	5YR3/4			20			hr					
245	35	msl	7.5YR2.5/3							65	65	III	3a	
	55	scl	7.5YR2.5/3											
	65	scl	5YR4/3	10YR5/6	c									
	120	c	5YR5/4	10YR5/6	c									
249	35	msl	7.5YR2.5/3							40	60	III	3a	stone at 70cm
	40	scl	7.5YR3/3											
	60	hcl	5YR5/3	10YR5/6	c									
	120	c	5YR4/4			20			hr					
250	35	mcl	7.5YR3/3								60	III	3a	stone at 60cm
	60	hcl	7.5YR4/3											
	120	c	5YR4/4											
251	30	msl	7.5YR2.5/3								85	I	2	
	45	lms	7.5YR3/2											
	85	ms	7.5YR4/3											
	120	c	5YR4/4											
252													Not Surveyed	
253	38	scl	7.5YR3/4									III	3a	

BORING NUMBER	DEPTH (cm)	Texture	Soil Colour	MOTTLES		STONES			DEPTH TO GLEYING (cm)	DEPTH TO SPL (cm)	WETNESS CLASS	ALC	COMMENTS	
			Munsell	Munsell	Ab.	Total	>2cm	>6cm						Type
	75	scl	5YR5/6										some manganese 38cm gravel fragments at 75cm table 13 used	
	120	scl	5YR5/6			10								
254	30	scl	7.5YR3/4										stone at 70cm	
	40	scl	7.5YR3/3							I	2			
	70	scl	7.5YR4/4											
	120	scl	7.5YR4/4											
255	35	msl	7.5YR3/3								50		3a	
	50	lms	5YR3/3											
	120	c	5YR3/3			10						hr		
256	38	msl	7.5YR2.5/3										stone at 80cm	
	70	lms	5YR4/3							I	2			
	120	scl	5YR4/4			10						hr		
257	38	msl	7.5YR3/4										stone at 50cm	
	50	scl	7.5YR3/3							I	2			
	120	scl	7.5YR3/3			20						hr		
258	38	scl	5YR3/4										2	
	43	scl	5YR4/3							I				
	90	scl	5YR4/4											
	120	scl	5YR4/4											
259	30	msl	7.5YR3/3			3	3	1	hr				2	
	80	lms	5YR3/4											
	100	scl	5YR4/4							I				
	120	scl	5YR4/4											
260												Not Surveyed		
261												Not Surveyed		
262	30	mcl	7.5YR3/3										3b	
	35	hcl	7.5YR4/3											
	80	c	5YR5/3	10YR5/6	m						35	35		IV
	120	c	5YR5/3											
263	30	msl	7.5YR3/3										droughtiness checked moisture balance grade 1	
	70	ms	2.5YR4/6							I	2			
	120	fs	2.5YR3/6											
264												Not Surveyed		
265												Not Surveyed		
266												Not Surveyed		
268	35	msl	7.5YR3/3										augered to 100cm	
	45	msl	7.5YR3/2											
	70	lms	7.5YR3/3							I	2			
	120	ms	2.5YR3/6											
269	35	mcl	7.5YR3/2										stone at 65cm	
	40	hcl	7.5YR4/3	10YR5/6	c						40	>80		II
	60	scl	5YR4/3											
	120	msl	5YR3/4			20						hr		

BORING NUMBER	DEPTH (cm)	Texture	Soil Colour	MOTTLES			STONES			DEPTH TO GLEYING (cm)	DEPTH TO SPL (cm)	WETNESS CLASS	ALC	COMMENTS
			Munsell	Munsell	Ab.	Total	>2cm	>6cm	Type					
270													Not Surveyed	
271													Not Surveyed	
276	38	scl	7.5YR3/4							45	IV	3b	red soil fig 7 used	
	45	scl	7.5YR4/4											
	80	c	5YR4/6											
	120	c	5YR4/6											

Bore number	Depth (cm)	Texture	Soil Colour	Mottling	SPL	CaCO ₃	Stones (%)				Notes	Depth to gleying (cm)	Depth to spl (cm)	W C	WE grade	Overall grade	Limit(s)	Notes
							Total	>2cm	>6cm	Litho'								
267	0 - 26	MZCL	Gr	-	-		0				26		II	2	3a	TX	0°	
	26 - 44	HZCL	Gr	xxx	no		0											
	44 - 66	CSL	Gr	xxx	no		0											
	66 - 100	LCS	Gr	xxx	no		0											
272	0 - 30	FSL	Dk Rd Gr	-	-		2		2		30		II	2	2	WE,CL, GR	heavier to 53cm so borderline WC III, steeper in places, borderline 3a 7°	
	30 - 53	SCL	Rd Gr	xxx	no		2		2									
	53 - 71	CSL	Gr	xxx	no		5		2									
	71 - 100	CSL	Li Rd Br	xxx	no		4		2									
273	0 - 30	SCL	Rd Br	-	-		2		2		30		III	3a	3a	WE	5°	
	30 - 43	SCL	Rd Br	xxx	no		5		2									
	43 - 66	SCL	Li Rd Br	xxx	no		3		2									
	66 - 100	SCL	Rd Br	xxx	no		3		2									
274	0 - 28	SCL	Rd Br	-	-		1		1		28	49	IV	3b	3b	WE	7°	
	28 - 49	SCL	Rd Gr	xxx	no		1		1									
	49 - 100	HCL	Rd Br	xxx	yes		1		7	Sandy, stony layer at 76cm.								
277	0 - 28	SCL	Rd Br	-	-		1		1		28		III	3a	3a	WE	Variable slope, 5-10 7°	
	28 - 57	SCL	Gr	xxx	no		1		1									
	57 - 84	SCL	Li Rd Br + Rd Br	xxx	no		1		1									
	84 - 100	SCL	Rd Br	xxx	no		5		1									
278	0 - 27	SCL	Rd Br	-	-		1		1		27	67	III	3a	3a	WE	Variable slope 0°	
	27 - 67	SCL	Li Rd Br + Rd Br	xxx	no		2		1	FMC							4°	
	67 - 100	HCL	Rd Br	xxx	yes		3		1									
279	0 - 27	MZCL	Rd Gr	-	-		1		1		27	76	III	3a	3a	WE	Variable slope 0°	
	27 - 52	HZCL	Li Rd Br + Rd Br	xxx	no		1		1	FMC							up to 8 degrees	
	52 - 76	HZCL	Li Rd Br	xxx	no		1		1	FMC								
	76 - 100	HZCL	Li Rd Br	xxx	yes		1		1	FMC								
280	0 - 32	MZCL	Rd Gr	-	-		0				32		III	3a	3a	WE	Surrounding flood plain 0°	
	32 - 100	MCL	Gr	xxx	no		0											
283	0 - 30	MZCL	Rd Gr	-	-		1		1		30		III	3a	3a	WE	0°	
	30 - 76	MSL	Rd Br	xxx	no		0											
	76 - 100	SCL	Gr	xxx	no		1		1									
284	0 - 30	MSL	Rd Br	-	-		2		1		30		II	2	2	WE,CL	7°	
	30 - 54	CSL	Rd Br	xxx	no		1		1	FMC								
	54 - 85	CSL	Rd Br	xxx	no		1		1									
	85 - 100	LCS	Rd Br	xxx	no		1		1									

Bore number	Depth (cm)	Texture	Soil Colour	Mottling	SPL	CaCO ₃	Stones (%)				Notes	Depth to gleying (cm)	Depth to spl (cm)	W C	WE grade	Overall grade	Limit(s)	Notes
							Total	>2cm	>6cm	Litho'								
285	0 - 26	MCL	Rd Gr	-	-		1			1		26		IV	3b	3b	WE	0°
	26 - 68	HZCL	Li Rd Br	xxx	yes		1			1								
	68 - 100	HZCL	Li Rd Br	xxx	yes		1			1								
287	0 - 29	MZCL	Dk Rd Gr	-	-		0					29	56	III	3a	3a	WE	0°
	29 - 43	MZCL	Pi Gr	xxx	no		0											
	43 - 56	SCL	Rd Br	xxx	no		0											
	56 - 83	HZCL	Li Rd Br	xxx	yes		0											
	83 - 100	HCL	Rd Gr	xxx	yes		0				Sandy							
341	0 - 37	MCL	Br	-	-		3			2		53		IV	3b	3b	WE,MR,GR	12°
	37 - 53	SCL	Br	xx	no		2			2								
	53 - 100	HCL	Rd Br	xxx	yes		6			2	sandy, FMC							
344	0 - 26	MCL	Br	-	-		1			2		26	43	IV	3b	3b	WE	6°
	26 - 43	SCL	Gr	xxx	no		2			2								
	43 - 102	HCL	Rd Br	xxx	yes		5			1	sandy							
348	0 - 26	SCL	Br	-	-		2			2		26	26	IV	3b	3b	WE,GR	12°
	26 - 104	HCL	Rd Br	xxx	yes		5			2	sandy							

BORE NO.	DEPTH (cm)	TEXTURE	Soil Colour	MOTTLES	Stones			DEPTH TO GLEYING (cm)	DEPTH TO SPL (cm)	WETNESS CLASS	ALC LIMITATION	ALC	SOIL TYPE	COMMENTS
					Ab.	Total (%)	Type							
240	29	zcl/mcl	7.5yr 3/3 very dark brown	ochre strong brown	r	<1	hd st assorted	29	35	GW/IV	GW	3b	Medium-Heavy	Seasonally waterlogged. Few distinct mottles, matrix dominated by grey gley colour above 60cm. Saturated at 80cm, water table? Relic organic matter in fsl.
	70	c	dark grey	ochre, pale yellow, mn black, grey	fw	<1	hd st assorted							
	100	fsl	grey	yellowish brown	fw	<1	hd st assorted							
244	32	slt scl/fsl	v dark gr br	black Mn & Fe	r	1-3	assorted	>60	none	II	W	3a	Light	Severely poached surface, over wintering of cattle. Survey was conducted during worst possible winter conditions, gleying in the upper subsoil was variable, where better drained and gleying is absent then these soils will be ALC grade 2.
	62	msl	dark br	fe & mn black		1-3	hd st assorted							
	100	lms	5yr 4/4 rd br	yellowish brown & reddish brown bands		<1	hd st assorted							
246	28	mcl	7.5yr 3/3 very dark brown			3-5	ssst limestone	30	75	III	CL + W	3a	Medium-Heavy	3-4° slope. Severely poached surface, 20% vegetation remains. Mottling increasing with distinctness and abundance with depth.
	75	scl	dark reddish brown	mn fe black, dark grey, pink	cm -> ab >60	10-20	ssst limestone							
	100	c sandy lenses	dark reddish brown	pink, light brown, mn black	ab	1-2	ssst limestone							
247	40	mcl		mn black, yellowish brown	fw	<1	hd st assorted	40	40	GW/IV	GW	3b	Medium-Heavy	Sandy lenses formed around sst within the lower subsoil. Colour change from grey hues to yellowish brown below 95cm.
	50	hcl	grey 7.5yr 4/2	mn black, ochre strong brown, yellowish brown	cm	<1	hd st assorted							
		c	grey 7.5yr 5/2	mn black, yellowish brown, ochre strong brown	ab	<1	hd st assorted							
248	40	sl o scl	dark brown	ochre	r	1-3	hd st assorted	60		II	W	3a	Light-Medium	Top 5cm darker grey, increasing sand content with depth. Survey was conducted during worst possible winter conditions, gleying in the upper subsoil was variable, where better drained and gleying is absent then these soils will be ALC grade 2.
	60	scl	reddish brown			1-3	hd st assorted							
	95	msl	reddish brown	brown, light reddish brown, mn fe black	fw	<1	hd st assorted							
286	28	zcl	grey brown	dark brown	r	<1		30	No clear SPL, pos GW influence	III	FR + W	3a	Medium	Flood risk and possible soil wetness limitation
	43	zcl	dark grey brown	oc	fw	<1								

	100	zcl	light grey brown	oc & grey	com	<1								
288	30	fscl	dark grey brown			1-2	rounded small gravel	40	80	III	CL	3a	Medium	Subtle topsoil/subsoil boundary. Wet at 50cm.
	50	fscl	grey	Ochre, strong brown, yellowish brown	fw	1-2	rounded small gravel							
	80	msl	light grey	yellowish brown, ochre strong brown, dark grey	ab	1-2	rounded small gravel							
	100	scl & c lenses	light grey	yellow ochre, dark grey, mn fe black	ab distinct	1-2	rounded small gravel							
289	35	msl	dark brown			1-2	hd st	40		III	CL	3a	Light	Undulating landscape, AB located at top of embankments, possible aeolian sand dune formation. Adjacent to railway embankment. Wet below 60cm. 4-7° slopes
	60	msl	very pale red/ brown	light brown, mn fe black	cm	1-2	rounded small gravel							
	100	lms	very pale red/ brown	light brown, mn fe black	cm	1-2	rounded small gravel							

BORE NO.	DEPTH (cm)	TEXTURE	Soil Colour	MOTTLES		Stones		DEPTH TO GLEYING (cm)	DEPTH TO SPL (cm)	WETNESS CLASS	ALC LIMITATION	ALC	SOIL TYPE	COMMENTS
				Munsell	Munsell	Ab.	Total (%)							
290	28	fsl	v dk gr br	oc	r	1-3	sst & sh	30	GW	3	CL & W	3a	lt/md	near flat, wet below 60cm, no SPL. Surface moderately- severely poached.
	50	fscl	gr	oc & ye	c	1-3	sst & sh							
	100	lms & ms	dk rd br	oc, rd, bl, Mn/Fe	c	<1	-							
291	25	fscl	dark grey brown	ochreous strong brown	few	1-2		20	50	IV	W	3b	Medium-Heavy	Wet from 45cm. Gravel at 60cm. Impenetrable stones at 80cm.
	45	fscl	brown	light brown, black mn & fe, yellowish brown	few	1-2								
	70	scl	Light yellowish brown	mn, light brown, yellowish brown, grey	cm	10-20								
	80	hcl	dark red brown	grey, mn	ab	10-20								
292	27	fsl	dark grey brown	ochre dark grey	fw >20	1-2	small gravels	27	55	IV	wetness	3b	Medium-Heavy	Topsoil/subsoil indistinct increasingly light grey. wet at 50cm. Notably drier above 60cm.
	50	fsl	mid grey brown	ochre light grey yellow	cm	3-5	soft weathered ssst							
	100	hcl	reddish brown	mn yellows grey	cm	3-5	soft weathered ssst							
293	28	fsl (sl o)	dark grey brown			1-2	hd st	35	40	IV	wetness	3b	Medium-Heavy	Soft weathered ssst in subsoil forming sandy lenses
	35	scl	light brown	ochre grey	cm	1-2	small gravels							
	40	lms	pale orange brown	ochre mn	cm	3-5	small gravels							
	100	hcl	dark reddish brown	pinkish ochre fe mn	ab	3-5	small gravels							
294	30	zcl	dark brown			1-2	hd st	30	50	IV	W	3b	Medium-Heavy	adjacent to disused railway embankment no evidence of soil disturbance at boring, but offset 6m onto south side of fence, good sward coverage.
	50	mcl (gritty)	light reddish brown	ochre pale grey, reddish	cm	5-10	hd st							
	100	hcl	pale reddish brown	very light brown, dark reddish brown, grey, mn black	ab	10-20	hd st							
295	29	fscl				1-2	hd st	29	45	IV	W	3b	Medium-Heavy	

	45	scl	pale reddish brown	yellowish, black manganese and light grey	ab	5-10	sm a grvl							Offset 10m due to severe and extensive wheelings at field entrance.
	100	hcl	dark reddish brown	black mn, pale pinkish grey	ab	1-2	sm a grvl							
296	28	msl	dark grey brown	oc	r			28	55	IV	W	3b	Medium-Heavy	Soil saturated towards the bottom 55cm
	55	scl	pale red brown	pale red, dark reddish brown, yellowish brown	com	3-5	gravels							
	100	hcl	red brown	fe black, light grey, light reddish brown, yellowish brown	ab	5-10	sst & hd stones							

BORE NO.	DEPTH (cm)	TEXTURE	Soil Colour	MOTTLES		Stones		DEPTH TO GLEYING (cm)	DEPTH TO SPL (cm)	WETNESS CLASS	ALC LIMITATION	ALC	SOIL TYPE	COMMENTS
297	26	fscl (sl o)	very dark grey brown	ochre	r (cm >20)	1-2	hd st	20	35	IV	W	3b	Medium-Heavy	Possible disturbance due to 50% fscl topsoil found between 60-80cm and unusually loose structure, hypothesised to be the result of deep levelling cultivations or land drain installation.
	100	hcl	pale reddish brown	yellow, light grey, dark reddish brown, black mn	cm	1-2	hd st							
298	35?	fscl	dark brown			3-5	hd st	40	55	IV	W	3b	Medium-Heavy	Indistinct ts/ ss boundary, change evident from mottling incidence. Hcl app sandy. Severe wheelings across field.
	55	fscl	dark brown	ochre	fw	3-5	hd st							
	80	scl	yellowish brown	light grey, pale yellowish brown, dark orange	ab	1-2	sm a grvl							
	100	hcl app s	light reddish brown	pinkish grey, grey, light brown	ab	1-2	sm a grvl							
299	27	mcl	dark greyish brown	ochre strong brown	fw	3-5	hd igneous	27	35 (30)	IV	W	3b	Medium-Heavy	5m from carriageway, 3-4° slope. new drainage ditch dug since GI investigations. Severe sheep poaching across entirety of field - depreciated structure due to wetness.
	75	hcl	dark reddish brown	light brown, mn black & fe	cm	3-5	hd igneous							
	100	c	dark reddish brown	light brown, mn black & fe	cm	3-5	hd igneous							
300	28	fsl	dark grey brown	ochre	fw	1-2	hd stone	18	60	GW/ IV?	GW	3b	Medium-Heavy	Perched water table at 40cm. Increasing clay content with depth.
	60	gr scl	pale pk brown	black mn & light brown	com	3-5	small gravels							
	100	hcl	pale red brown	pale yellow, greyish brown, light reddish brown	ab	5-10	small gravels							
301	27	fscl	dk gr br			3-5%	ig	30	60 pos GW?	4	CL & W	3b	md	lms & msl sandy lenses in SS, wet below 60cm with common dark red streaks
	70	scl / fscl	ye br	lt gr & lt red	c	5-10%	hd sst							
	100	scl	dk rd br & lt br	bl Mn/Fe	ab	5-10%	hd sst							
302	21	fscl	dark brown			3-5	hd st	55	<70	III	W	3a	Medium-Heavy	Offset 3m due to poaching and compaction risk from nearby feeding point.
	55	scl	light brown	grey, dark grey, yellowish brown	cm	5-10	hd st							
	70	hcl app s	reddish brown	light brown, grey, reddish brown.	ab	5-10	hd st							
	100	hcl app s	pale reddish brown	light brown, grey, reddish brown.	ab	5-10	hd st							

303	27	fsc	dark reddish brown			3-5	hd igneous	40		III/ GW?	CL & GW	3b	Medium	Saturated at 60cm, hard stone below
	45	scl	light reddish brown	yellow, pale yellowish brown, red, mn black	fw	3-5	hd igneous							
	60	lfs	reddish brown	light reddish grey faint	fw	3-5	hd igneous							

BORE NO.	DEPTH (cm)	TEXTURE	Soil Colour	MOTTLES		Stones	DEPTH TO GLEYING (cm)	DEPTH TO SPL (cm)	WETNESS CLASS	ALC LIMITATION	ALC	SOIL TYPE	COMMENTS
304	29	mcl	dark brown	ochre >20	fw	3-5	hd st	20	III	W	3a	Light-Medium	AB located sides of shallow micro valley feature, 4-7° slope.
	70	msl	reddish brown	very light brown yellow, mn black & fe	fw faint	5-10	hd st						
	100	lms	dark reddish brown	dark red, dark brown, strong brown	fw faint	5-10							
305	27	mcl	dark brown	mn & mn black	fw faint	1-2	hd st	20	IV	W	3b	Medium-Heavy	AB located on sides of shallow micro dry valley feature, 7-11° slope. Impenetrable due to stone content at 75cm.
	65	hcl	Light reddish brown -> dark reddish brown > 50	brownish yellow, light brown, very dark grey	cm	5-10	hd st						
306	27	fsc	dk gr br			3-5	ig	27	4	CL & W	3b	md	Near flat but undulating landscape. wet > 45cm. Impenetrable stone at 70
	50	scl / fsc	lt rd br	lt br, ye oc, lt gr & Mn/Fe	ab	5-10	ig						
	70	scl & msl lense	dk rd br		ab	5-10	hd sst						
	70+	hard st				20+							
307	29	mcl	vry dk gr br			3-5%	ig	29	4	CL & W	3b	md	
	45	scl	lt br	lt red, ye & lt gr	c	5-10	sst & ig						
	100	hcl	dk rd br	lt rd, ye, lt gr & Mn	ab		sst						
308	26	fsc	dark grey brown			1-2	hd igneous	30	IV	W	3b	Medium-Heavy	Impenetrable at 95cm due to stone. Severe poaching across the entirety of the field, winter grazed sheep.
	45	scl	yellowish brown	strong brown, grey, mn	fw	5-10	hd igneous						
	50	scl with sandy lenses	yellowish brown	large mn, reddish brown	ab	3-5	hd igneous						
	95	hcl w/ sandy lenses	dark reddish brown	large mn, reddish brown	ab	3-5	hd igneous						
309	28	mcl	dark greyish brown			1-2	soft weathered ssst	35	IV	W	3b	Medium-Heavy	On 3° slope above muck heaps. Lenses of hcl, hscl and sand in clay due to weathered ssst.
	100	c	dark reddish brown	light brown, pale yellow, black mn	ab	1-2	soft weathered ssst						
310	15	fsl	greyish brown			1-2	sm a grvl	15+	IV	W	3b	Medium-Heavy	Stoney band at 35cm, saturated below. Alluvial influence. Stone impenetrable at 80cm. Offset due to detection on CAT scan.
	35	fsc	greyish brown	ochre, light grey	cm distinct	1-2	sm a grvl						
	80	hcl	reddish brown -> dark reddish brown	mn fe pale yellow, light grey	ab	5-10	sm a grvl						
311	26	scl	dark grey brown	gley <5	ab	1-2	hd igneous	30	IV	W	3b	Medium-Heavy	Severely gleyed with the top 5cm likely due to poaching/livestock compaction.
	40	scl	pale yellowish brown	reddish brown, grey, light reddish brown, black.	ab	1-2	hd igneous						

BORE NO.	DEPTH (cm)	TEXTURE	Soil Colour	MOTTLES		Stones	DEPTH TO GLEYING (cm)	DEPTH TO SPL (cm)	WETNESS CLASS	ALC LIMITATION	ALC	SOIL TYPE	COMMENTS
	100	hcl with sandy lenses	dark reddish brown	mn and fe, grey and yellow	ab	1-2	hd igneous						
312	27	mcl	dark grey brown	ochre, grey	fw	3-5	hd igneous	27	35	IV	W	3b	Top of hill, stony band between 30-60. Drier surface but severe poaching remains.
	100	hcl	pale yellowish brown	red, yellow, ol g, grey, light brown	ab	5-10 -> 1-2	hd igneous						
313	34	scl	dark grey brown			1-2	hd st	40	65	III	W	3a	Very sandy scl topsoil.
	43	fscl	dark grey	ochre	fw faint	1-2	hd st						
	65	fsl	pale yellowish brown	ochre fe mn	cm	1-2	hd st						
	100	hcl	reddish brown	dark reddish brown, yellow, mn, light brown	ab	1-2	hd st						
314	33	scl	dark grey brown	mn pale yellow ochre >25	fw faint	3-5	hd st	25	50	IV	W	3b	Impenetrable to stone at 60cm
	50	mcl	pale reddish brown	Strong brown, light grey, mn black	ab	5-10	hd st						
	60	hcl	pale reddish brown	Strong brown, light grey, mn black	ab	5-10	hd st						
315	30	fscl	Light reddish brown -> dark reddish brown > 50	pale yellow, pink	cm	3-5	ssst	20-35		III	W + MR	3a	4-7° slope
	95	msl	light brown	Strong brown, yellow, grey	fw faint	1-2	sm gvl						
	100	scl	dark reddish brown	pale brown	very faint								
316	26	fscl/ msl	dark grey brown			<1	hd igneous	35	60	IV	W	3b	Increasing clay content with depth, bordering msl in top 26cm. Wet below 60cm. Impenetrable due to stone at 80cm.
	40	fscl	grey brown	mn black	fw	<1	hd igneous						
	60	fscl	yellowish grey brown	light brownish grey	fw	3-5	sm a grvl						
317	30	scl	dark brown			5-10	hd st	35	50	IV	SLOPE	3b	Located middle of a 7-11° slope
	40	scl	dark brown reddish			5-10	hd st						
	100	hcl	dark brown reddish	pinkish yellow mn	cm>50	5-10	hd st						
318	30	fscl	dark brown			1-2	hd st	35	50	IV	W	3b	Indistinct ts/ss boundary. impenetrable due to stone content at 90cm. Red soils disguising mottling.
	50	fscl	pale reddish brown	pale red, mn, pale yellow, brownish yellow	cm	1-2	hd st						
	90	hcl	dark reddish brown	pink, black mn, reddish grey	cm	1-2	hd st						
319	40	fscl	dark red brown			3-5	gravels	40	<65	IV	slope & cl	3b	Undulating landscape within field. Standing water in valley basin feature. Boring on feature.
	65	scl	dark red brown	dark grey & mn black	fw	3-5							
	100	hcl	dark red brown	dark yellowish brown	ab	3-5							
320	30	scl app s	dark greyish brown			3-5	hd st	30	60	III	CL + SLOPE	3a	Increasingly red matrix with depth, AB located at the base of slope. Limited run off for turning machinery.
	60	scl	pale reddish brown	yellowish brown, pink, black	cm	3-5	hd st						

BORE NO.	DEPTH (cm)	TEXTURE	Soil Colour	MOTTLES		Stones		DEPTH TO GLEYING (cm)	DEPTH TO SPL (cm)	WETNESS CLASS	ALC LIMITATION	ALC	SOIL TYPE	COMMENTS
	100	hcl	pale reddish brown	mn fe black, ochre strong brown	cm	3-5	soft weathered ssst							
321	28	fscl	dark grey brown			5-10	hd st	28	50	IV	SLOPE	3b	Medium-Heavy	Located middle of a 7-11° slope
	50	scl	Pale grey	light grey, strong brown, black fe & mn	cm	5-10	hd st							
	100	hcl	reddish brown	light grey, strong brown, black fe & mn	ab	5-10	soft weathered ssst							
322	28	fscl	dark grey brown	oc	r	3-5	sst & bs	28	45	IV	W	3b	Medium-Heavy	Near flat relief
	45	gr scl	grey brown	oc & yellow	fw	5-10	w sst							
	100	gr hcl	dark red brown	oc, pale grey & mn	ab	5-10	w sst							
323	28	mcl	dark grey brown	ochreous strong brown	fw	<1%		35	35	IV	W	3b	Medium-Heavy	Between 28-35cm intermediate A2 horizon, paler grey in colour.
	35	mcl	light grey brown	ochreous strong brown	fw	1-2								
	45	scl	pale brown	ochreous strong brown, grey, pale brown	ab	<1%								
	55	hcl	dark red brown	mn black, pale red	ab	<1%								
324	30	mcl	dark brown	ochre	fw >15	1-2	hd st	27	50	GW	GW	3b	Medium-Heavy	Base of 7-11° undulating slope, ground water at 40cm. At 80cm pinkish and gravelly band. Quorndon soil series.
	50	scl	grey brown	ochre mn	fw	1-2	hd st							
	90	hcl	grey brown	yellow ochre light grey	cm	1-2	hd st							
	100	c	light reddish brown	light yellowish brown, black mn	ab	1-2	hd st							
325	25	zcl	dark greyish brown			<1	hd sst	25	35	IV	W	3b	Medium-Heavy	Gradient is flat, wet at 80cm but increasing sand content below 80cm. Sandy lenses due to soft weathered sandstone.
	80	hcl	yel br	red br mn	ab	3-5	hd sst							
325	100	hcl with sandy lenses	reddish brown	red br mn	ab	1-2	gravels	28	45?	4	CL & W	3b	md	flat, impenetrable stone > 40
	28	fscl	dk gr br			5-10	ig							
	45	fscl	gr br	oc	r	20+	ig							
	45+	stone												
326	27	fscl	dk gr br	oc & gr	r	1-3	hd sst	28	35	4	CL & W	3b	m/h	4-7° slope, very wet @ surface
	35	scl	gr br	oc & gr	f	5-10	hd sst							
	100	gr hcl	dk rd br	oc, gr, ye & Mn	ab	3-5	sst							
328	30	mcl	dark brown	ochreous strong brown	fw	1-2		30	35	IV	W	3b	Medium-Heavy	Increasing sand content above 90cm.
	90	hscl	dark red brown	mn black, ochreous strong brown, grey	ab	3-5								
329	32	fscl / zcl	dark grey brown	ochreous strong brown above 20cm	fw	1-2	soft weathered sst	32	40	IV	W	3b	Medium-Heavy	Offset due to archaeological pit disturbance. Increasing fine sand with depth above 75cm.
	75	hcl with sandy lenses	dark red brown	yellow, dark grey, pink, red, fe & mn black	ab	3-5	soft weathered sst							
	100	hcl	pale red brown	mn black, yellow, pink & grey	ab	1-2	soft weathered sst							

BORE NO.	DEPTH (cm)	TEXTURE	Soil Colour	MOTTLES		Stones	DEPTH TO GLEYING (cm)	DEPTH TO SPL (cm)	WETNESS CLASS	ALC LIMITATION	ALC	SOIL TYPE	COMMENTS	
330	26	mcl	dark brown			1-2		26		III	W	3a	Medium-Heavy	
	100	hcl app s	yellow brown	reddish brown, yellowish brown, mn black	ab	3-5	soft weathered sst							
331	26	mcl	dark grey					25	50?	IV	W	3b	Medium	Heavily applied FYM. Undulating landscape. Impenetrable at 80cm.
	80	scl	yel brown	grey & dark grey & yellowish brown	ab	5-10								
332	27	mcl	dark brown			3-5		27	50	IV	W	3b	Medium	Undulating landscape.
	50	hscl	dark red brown	weak red, yellow, mn black	m	5-10	hd & sft sst							
	100	hcl	dark red brown	light grey, reddish yellow, pale red, above 80cm mn black	ab		soft weathered sst							
333	26	fscl	dk gr br	oc	fw >15cm	1-3	ig	30	45? GW	no obvious SPL	W & Slope	3b	md	7-11° slope, valley side, saturated > 45cm, possible ground water influence. Impenetrable stone @ 70cm
	45	scl	lt rd br	oc, gr & Mn	c	3-5	hd sst							
	60	msl	lt rd br	oc, gr & Mn	ab	5-10								
	60+	stones				20+								
334	30	mcl / fscl	dark grey brown	ochre strong brown	fw	1-2	hd sst			III	slope	3a	Medium	Mid slope, wet and increasing stone content above 90cm
	50	fscl	dark red brown	mn black	fw	1-2	hd sst							
	100	msl	dark red brown	dark red brown, >above 90cm pale brown	fw & faint	1-2								
335	22	mcl	dark red brown			3-5	hd sst	22	35	IV	W & SLOPE	3b	Medium-Heavy	Mid slope, check slope gradient. impenetrable at 60cm due to a stone.
	60	hcl abrs	red brown	pale brown	cm	5-10	hd sst							
337	27	mcl abrs	dark greyish brown			1-2	hd sst	27	40	IV	SLOPE	3b	Medium-Heavy	Top of side of valley, 18+ degrees running out into large flat field. Moist to wet top soil. Subsoil sandy clay loam with heavy clay loam bands increasing with depth. Desktop slope calculation resolving shallower slope than expected, check with survey topography if available.
	45	scl	yel br	grey, yellow, red brown	m	3-5	hd sst							
	60	hcl	red br	yellowish brown, grey	ab	5-10	hd sst							
	100	scl with heavy loam clay bands	red br	yellowish brown, pale yellow	ab	3-5	soft weathered ssst							
339	20	mcl	dk gr br	oc	c	3-5	sst	20	20	4	W & Slope	3b	m/h	7-11° slope, horses
	100	hcl	dk rd br	gr Mn & ye	ab	5-10	sst							
340	30	fscl	dk gr br	oc	c			30	45	4	CL & W	3b	m/h	4-7° slope, very wet surface, poaching damage
	45	mcl	lt rd gr	ye, lt gr	c	3-5	ig.qz							
	100	hcl	dk rd br	Mn, oc	ab	10-20	ig, qz							
342	30	fscl	dk gr br	oc	r	3-5	grvl	30	30	4	CL & W	3b	m/h	near flat, soft weathered sandstone in SS
	100	hcl	dk rd br	oc, gr, ye & Mn	ab	10-20	grvl							
343	28	fscl	dk gr br			1-3	sst	28	45	4	CL & W	3b	m/h	moved to avoid aggressive horses, flat. Soft weathered sandstone in SS
	45	hcl	gr	oc & gr	c	3-5	wth sst							
	65	hcl	re br	oc, gr, ye & Mn	ab	3-5	wth sst							
	100	c	dk rd br	oc, gr, ye & Mn	ab	5-10	wth sst							
345	40	fscl	dark brown	ochre strong brown	fw	3-5	hd st	20	40	IV	W & SLOPE	3b	Medium-Heavy	Evidence of modification by road work. 7-11° slope.
	55	hcl saturated	light reddish brown			3-5	hd st							

BORE NO.	DEPTH (cm)	TEXTURE	Soil Colour	MOTTLES		Stones	DEPTH TO GLEYING (cm)	DEPTH TO SPL (cm)	WETNESS CLASS	ALC LIMITATION	ALC	SOIL TYPE	COMMENTS
	100	c	dark reddish brown	grey, yellow, pink, black mn fe	ab	3-5 hd st							
346	0-26	scl	5YR 4/3	55YR 5/6	c	3-5 hdsst grvl q	<10	55	IV	WT/CL	3b	Medium-Heavy	Gleyed topsoil. Slight NE slope 3-4°. Valley to north
	26-55	scl	5YR 4/2	5YR 6/6 Mn	m	3-5 hdsst grvl q							
	55-100	hcl	2.5YR 6/3	GY 5/1 2.5 YR 7/2 Mn	ab	3-5 hdsst grvl g							
347	0-30	msl	5YR 4/4			3-5 hdsst grvl q	30	No SPL	II	WT/WT	3a	Light-Medium	Indistinct topsoil subsoil boundary. 4-5° NE slope. Very >45. Confirm climate limitation
	30-45	msl	5YR 5/3	5YR 5/6 Mn	m	3-5 hdsst grvl q							
	45-80	msl	5YR 6/2	5YR 7/2	ab	1-2 hdsst grvl q							
	0-100	lms	2.5 YR 5/6	5YR 6/6 5/2	ab	3-5 hdsst grvl q hr							
349	27	fscl	greyish brown	ochre strong brown	fw	1-2 hd st	20	40	IV	Slope	4	Medium-Heavy	10m from carriageway, 5m raised escarpment. Base of 22° slope with no turning area, moderated on slope.
	40	scl	light greyish brown	ochre, grey, Black	ab	1-2 hd st							
	100	hcl	pale reddish yellow	ochre, black mn, pink, yellow, grey	ab	5-10 hd st							
350	0-26	scl	5 YR 4/4	5 YR 5/6	c	3-5 hdssr q g	28	35	IV	WT	3b	Medium-Heavy	Base of slope poorly drained with standing water. Heavily poached gateways to east
	26-50	hcl (gritty)	5YR 5/6	7.5 YR 6/6 10YR6/2 Mn	ab	3-5 hdsst grvl q							
	50-100	hcl (gritty)	2,5 YR 5/6	10YR6/2 (6/6 6/8)	ab	3-5 hdssr q grvl							
351	30	fscl	dark greyish brown	ochre strong brown	fw	1-2 hd st	20	35	IV	W	3b	Medium-Heavy	Wet from 60cm, mix of scl and drier hcl lense bands.
	50	scl	pale brown	ochre, mn black, yellow	ab	1-2 hd st							
	60	hcl	pale brown	ochre, mn black, yellow	ab	1-2 hd st							
	100	wet scl & c	inkis red	ochre, mn black	ab	1-2 hd st							
352	28	fscl	greyish brown	ochre	cm	1-2 hd st	20	35	IV	W	3b	Medium-Heavy	
	35	hcl	light greyish brown -> dark reddish brown	ochre grey yellow	ab	5-10 soft weathered ssst							
	60	c	pale brown	ochre grey yellow	ab	5-10 soft weathered ssst							
353	29	fscl	dark grey brown	ochre strong brown	cm	1-2 soft weathered ssst	20	35	IV	W	3b	Medium-Heavy	Near flat field, surrounded by gentle slopes
	40	hcl	greyish brown	brownish yellow, yellow	ab	1-2 soft weathered ssst							
	100	hcl/ c	dark reddish brown	mn, yellow, grey, dark grey, fe black.	ab	1-2 soft weathered ssst							
354	26	zcl	dark brown			1-2 gravels		60	III	CL	3a	Medium-Heavy	Band of hcl 45-60, saturated at 90cm Base of 4-7°. Newport deep sand.
	45	fscl	pale brown	pale yellow, yellow, ochre strong brown	fw	1-2 gravels							
	70	hcl	grey	pale brown, ochre strong brown, black mn	ab	1-2 gravels							
	100	fsl-> msl. >80 -> lms	pale red	dark grey, pale pink	fw	<1 gravels							
355	30	zcl (sl o) -> mcl	dark brown			3-5 hd st bslt ign	30	35	IV	W	3b	Medium-Heavy	3-4° slope
	100	hcl	light reddish brown	mn fe black, ochre, light brownish grey	cm (ab>45)	3-5 hd st bslt ign & soft weathered ssst							
356	25	mcl	dark brown	ochre strong brown around root channels	fw	1-2 sm gravel	25	35 (25)	IV	W	3b	Medium-Heavy	
	80	hcl	dark reddish brown	ochre black fe -> light grey, yellow	ab	3-5 sm gravel							
	100	c	grey	light grey yellow	ab	1-2 soft weathered ssst							

BORE NO.	DEPTH (cm)	TEXTURE	Soil Colour	MOTTLES		Stones		DEPTH TO GLEYING (cm)	DEPTH TO SPL (cm)	WETNESS CLASS	ALC LIMITATION	ALC	SOIL TYPE	COMMENTS
357	30	fsl	dark brown			3-5	sm gravel	30	40	IV	W	3b	Medium-Heavy	Raised ground above road as AB359. A2 horizon to 40cm, indications of surplus topsoil material from adjacent road construction.
	40	fsl	dark grey brown	faint greyish brown	fw	3-5	sm gravel							
	48	scl	dark grey brown	ochre strong brown, black mn	cm	3-5	sm gravel							
	60	scl	pale brown	mn black, yellow, pale brown, dark grey	ab	3-5	sm gravel							
	100	hcl/ c	pale light reddish brown	dark grey, mn, yellowish brown, light reddish brown	ab	3-5	sm gravel							
358	23	msl	dark brown			1-2	hd st bslt ign	30	35	IV	W	3b	Medium-Heavy	mid 4-7° slope. HCL appreciably sandy to depth.
	60	scl	dark reddish brown	dark grey, pink, yellowish brown	cm	3-5	hd st sm gvls							
	100	hcl sandy	dark reddish brown	dark grey, grey, yellow, pink, yellowish brown	ab	5-10	hd st sm gvls							
359	24	mcl	dark brown			3-5	sm gravel	24	24	IV	W	3b	Medium-Heavy	Undulating landscape, AB located on 5-10m elevated area above road. Hypothesised road cut through glacial moraine, possible disturbance from road construction? Wet topsoil, dry beneath.
	100	hcl	reddish brown	pale brown, mn, grey, yellow, ink, dark red	m	5-10	sm gravel (blue green basalt)							
360	30	fsl	dk gr br			3-5	rounded peb	35	35	4	CL & W	3b	m/h	sandy patches in SS associated with soft weathered sst
	100	hcl	rd br	ye, lt rd, lt gr & Mn	c > ab	3-5	sst & ig							
361	29	zcl	dk gr br			1-3		30	30	4	CL & W	3b	m/h	flat area at top of hill
	100	c	rd br	ye, lt rd & Mn/Fe	c	3-5	sst & other stone							
362	27	msl	brown			1-2	hd st bslt ign	30	35	IV	W	3b	Medium-Heavy	Hcl considerably sandy to depth, gritty medium sand. Large mn and iron nodules around Topsoil/subsoil boundary.
	100	hcl app sandy	dark reddish brown	dark grey, yellow, mn, fe, pinkish	ab	3-5	hd st sm gvls							
363	32	sl org mcl	dk gr br			5-10	sst, ig	55	55	3	W & slope	3b	m/h	7-11° slope, impenetrable at 70cm due to stone.
	55	mcl	gr br	faint oc & black	c	3-5	sst & ig							
	70	hcl	dk ye br	oc & gr & lt br	ab	5-10	sst							

BORING-NUMBER	NGR	LAND-USE	DEPTH (cm)	Texture	Soil Colour		MOTTLES		STONES			DEPTH TO GLEYING (cm)	DEPTH TO SPL (cm)	WETNESS CLASS	ALC	SOIL TYPE	COMMENTS
					Munsell		Munsell	Ab.	Total	>2cm	>6cm						
154	361600 526400	PGR	30	msl	7.5YR3/6				5			hr			†	2	augered to 90cm - no stone
			58	msl	5YR4/4												
			80	scl	5YR4/4												
			120	ms	5YR4/6												
155	361600 526300	PGR	38	msl	7.5YR3/3				5			hr		†	2	Augered to 50cm - stone stopped - auger	
			50	scl	5YR4/4												
			120	scl	5YR4/4				20		hr						
156	361600 526200	PGR	38	scl	7.5YR3/3				5					III	3a	soil saturated at 60cm table 13; stone at 60cm	
			60	scl	5YR5/3	7.5YR5/6	e										
			120	scl	5YR3/3				20		hr						
			30	msl	7.5YR3/3				5			hr					

157	361700 526300	PGR	50 120	sel sel	5YR4/4 5YR4/4			20			hr			†	2	stone at 50cm
158	361700 526200	PGR	43 90 120	les es es	7.5YR2.5/3 2.5YR3/6 2.5YR3/6			5			hr			†	3a	augered to 90cm- no stone- droughtiness- checked 3a
159	361800 526300	PGR	35 80 90 120	mel ms sel sel	7.5YR2.5/3 5YR4/4 5YR4/3 5YR4/3			5			hr			†	2	soil moist at 60cm- augered to 90cm
160	361900 526300	PGR	39 43 120	mel ms ms	7.5YR3/4 2.5YR3/6 2.5YR3/6			5 20			hr hr			†	2	auger stopped at 43 cm stone ; 2- droughtiness
161	362000 526345	PGR	30 39 120	mel mel ms	7.5YR4/4 7.5YR4/4 2.5YR3/6			5 15 20	5	4	hr hr hr			†	2	difficult to auger- 30cm stone; stone- assessment from cutting at edge of field; droughtiness- checked Grade 2
162	362100 526240	LEY	40 50 120	mel sel sel	7.5YR4/4 5YR3/4 5YR3/4			5 20			hr hr			†	2	augered to 50cm- stone (ley dairy-)
163	362200 526200	LEY	38 45 60 120	mel sel sel c	7.5YR3/3 7.5YR3/2 7.5YR5/2 5YR5/4	10YR5/6	c	5 20			hr hr	60	65	‡	3a	Augered to 65cm- stone stopped- auger

BORING-NUMBER	NGR	LAND-USE	DEPTH (cm)	Texture	Soil-Colour	MOTTLES		STONES			DEPTH-TO GLEYING (cm)	DEPTH-TO SPL (cm)	WETNESS-CLASS	ALC	SOIL-TYPE	COMMENTS
					Munsell	Munsell	Ab.	Total	>2cm	>6cm						
464	362300 526150	LEY	30	scl	7.5YR3/3			5						III	3a	soil saturated at saturated at 65cm - assume C as per AB163
			40	scl	7.5YR4/4											
			70	scl	5YR4/4											
			120	e	5YR4/4			20			hf					
465	362400 526200	LEY	30	msl	5YR3/3			5						I	2	stone at 60cm - 60cm msl/scl
			40	msl	5YR3/3						hf					
			60	msl	5YR4/3											
			120	scl	5YR4/3			20			hf					
466	362400 526100	LEY	40	scl	5YR3/3			5					I	2		
			120	scl	5YR3/3			20			hf					
467	362500 526200	LEY	30	msl	5YR3/3			5					30	IV	3b	augered to 65cm - stopped stone; red soil - assume spl fig 7
			65	sc	2.5YR3/6											
			120	sc	2.5YR3/6			20			hf					
468	362510 526110	LEY	38	msl	5YR3/3			5					IV	3b	saturated at 50cm - pockets of mottled sand 38cm	
			70	e	5YR4/4	10YR5/6	m									
			120	e	5YR4/4											
469	362600 526300	LEY	40	lms	7.5YR4/4			5	5				I	2	augered to 110cm - no stone	
			86	lms	7.5YR2.5/3						hf					
			110	ms	2.5YR3/6						hf					
			120	ms	2.5YR3/6											
470	362600 526200	LEY	30	lms	7.5YR2.5/3			5					I	2	augered to 80cm - stopped stone	
			80	ms	2.5YR3/6											
			120	ms	2.5YR3/6			20			hf					
471	362600 526100	PGR	40	msl	7.5YR3/2								I	2	augered to 100 - no stone	
			90	lms	7.5YR3/3											
			100	ms	2.5YR3/3											
			120	ms	2.5YR3/3											
472	362700 526100	PGR	35	msl	7.5YR3/3								I	2	stone stopped - auger at 70cm	
			40	lms	7.5YR4/4											
			70	ms	5YR4/4											
			120	ms	5YR4/4			20			hf					
473	362700 526000	PGR	30	msl	7.5YR3/3								I	2	stone stopped - auger at 90cm	
			40	lms	7.5YR3/3											
			90	ms	5YR3/3											
			120	ms	5YR3/3			20			hf					

BORING-NUMBER	NGR	LAND-USE	DEPTH (cm)	Texture	Soil-Colour	MOTTLES		STONES			DEPTH-TO GLEYING (cm)	DEPTH-TO SPL (cm)	WETNESS-CLASS	ALC	SOIL-TYPE	COMMENTS			
					Munsell	Munsell	Ab.	Total	>2cm	>6cm							Type		
174	362700 525046	PGR	30	msl	7.5YR3/3														
			42	ms	5YR4/4			15			hr								
			120	ms	5YR4/4			20			hr							sand and gravel at 42cm	
175	362800 526100	PGR	35	msl	7.5YR2.5/3			5	5	3	hr								
			40	lms	5YR3/3														
			70	ms	5YR4/3														sheep stubble- turnips-soil moist at 70cm
			120	ms	5YR4/3			20			hr								
176	362800 526000	PGR	35	msl	7.5YR2.5/3														
			50	scl	5YR3/4														
			80	ms	5YR4/4														
			120	ms	5YR4/4			20			hr							stony at 80cm	
177	362900 526100	PGR	40	msl	7.5YR4/4														
			70	lms	7.5YR3/4														
			80	ms	5YR3/4														
			120	ms	5YR3/4			20			hr							stone at 80cm	
178	362900 526000	PGR	43	msl	7.5YR3/3														
			70	scl	5YR4/4														
			120	scl	5YR4/4			20			hr							stone at 70cm	
179	362940 526200	PGR	30	msl	7.5YR3/2														
			40	lms	7.5YR3/2														
			45	ms	5YR4/4														
			120	ms	5YR4/4			20			hr							sand and gravel at 45cm	
180	363000 526200	LEY	35	msl	7.5YR3/3			5	5	4	hr								
			40	lms	5YR3/4														
			80	lms	5YR3/4			10			hr								
			120	ms	5YR3/4			20			hr							auger stopped at 40cm stone	
181	363000 526100	PGR	38	msl	7.5YR3/3														
			43	lms	7.5YR3/2														
			50	ms	5YR3/4														
			120	ms	5YR3/4			20			hr							stone at 50cm	
182	363000 526000	LEY	35	msl	7.5YR2.4/2			5	5	4	hr								
			70	msl	5YR3/2														
			80	lms	7.5YR3/4														
			120	ms	7.5YR3/4			20			hr							augered to 80cm- stopped by stone	
183	363100 526200	WC	38	msl	7.5YR2.5/2			3	3		hr								
			78	lms	7.5YR2.5/3														
			100	ms	2.5YR2.5/3														
			120	ms	2.5YR2.5/3														augered to 100cm

BORING-NUMBER	NGR	LAND-USE	DEPTH (cm)	Texture	Soil-Colour	MOTTLES		STONES			DEPTH-TO GLEYING (cm)	DEPTH-TO SPL (cm)	WETNESS-CLASS	ALC	SOIL-TYPE	COMMENTS	
					Munsell	Munsell	Ab.	Total	>2cm	>6cm							Type
184	363100 526100	LEY	38	msl	7.5YR2.5/3			5	5	4	hr			†	2	auger stopped at 50cm	
			50	lms	7.5YR3/4												
			80	lms	7.5YR3/4												
			120	ms	7.5YR3/4												
185	363100 526000	LEY	35	msl	7.5YR3/3			5	5	4	hr			†	2	auger stopped at 80cm	
			45	msl	5YR3/3												
			75	lms	5YR3/4												
			120	ms	5YR3/4												
186	363100 525000	LEY	35	msl	7.5YR2.5/3			5	5	4	hr			†	2	auger stopped at 80cm	
			65	msl	5YR3/3												
			80	lms	5YR3/2												
			120	ms	5YR3/2												
187	363200 526200	WG	38	msl	7.5YR2.5/3			3	3		hr			†	2		
			58	msl	7.5YR3/3												
			90	scl	7.5YR4/4												
			120	scl	7.5YR4/4												
188	363200 526100	LEY	35	msl	7.5YR3/3			5	5	4	hr			†	2	augered to 80cm- no stone, no mottling	
			43	scl	7.5YR3/3												
			80	scl	5YR4/4												
			120	scl	5YR4/4												
189	363200 526000	LEY	40	msl	5YR3/4			5	5	4	hr			†	2	auger stopped at 40cm by stone:2xs	
			80	lms	5YR3/4			5									
			120	ms	5YR3/4			20									
190	363200 525000	LEY	35	msl	7.5YR2.5/3			5	5	4	hr			†	2	augered to 70cm- stone present	
			43	msl	7.5YR3/4												
			60	lms	2.5YR3/4												
			120	ms	2.5YR3/4			20									
191	363300 526300	FAL	38	msl	7.5YR2.5/3			3	3	4	hr			†	2		
			40	lms	5YR3/4												
			55	ms	7.5YR4/4												
			120	ms	5YR4/4												
192	363300 526200	FAL	38	msl	7.5YR3/4									‡	3a	common- Manganese below 38cm Table 13 FCD 213	
			80	scl	2.5YR3/4												
			120	scl	2.5YR3/4												
193	363300 526100	LEY	35	msl	7.5YR3/3			5	5	4	hr			†	2	augered to 80cm- (heavy rain shower and wind)	
			80	scl	7.5YR3/4												
			120	scl	7.5YR3/4			10									
194	363350 526000	LEY	35	msl	7.5YR3/4			5	5	4	hr			†	2	point above a low- lying part (archaeological pit)- with standing water.	
			80	scl	5YR4/4												
			120	scl	5YR4/4			10									

BORING-NUMBER	NGR	LAND-USE	DEPTH (cm)	Texture	Soil Colour	MOTTLES		STONES			DEPTH-TO-GLEYING (cm)	DEPTH-TO-SPL (cm)	WETNESS-CLASS	ALC	SOIL-TYPE	COMMENTS	
					Munsell	Munsell	Ab.	Total	>2cm	>6cm							Type
195	363400 526700	PGR	35	msl	7.5YR2.5/3											stone at 40cm- stopped auger no- gleying <40cm- table 13	
			40	scl	7.5YR3/3												
			120	scl	7.5YR3/3			20				hr					
196	363400 526600	PGR	30	scl	5YR3/4											difficult to auger- 35cm stone	
			35	hcl	7.5YR5/3	e	40YR5/6										
			120	hcl	7.5YR5/3			45				hr					
197	363400 526400	PGR	38	scl	7.5YR2.5/3											assume spl 50+ red- soil fig 7.	
			50	scl	5YR4/6								50	IV	3b		
			70	hcl	5YR3/4												
			120	hcl	5YR3/4												
198	363400 526300	PGR	40	msl	7.5YR3/4											no stone, soil wet at- 80cm	
			50	scl	7.5YR3/4												
			80	scl	7.5YR4/4												
			120	scl	7.5YR4/4												
199	363400 526200	FAL	38	msl	7.5YR4/4				3	3						spl 70cm fig 8	
			40	scl	5YR4/4												
			70	hcl	5YR4/4								70	III	3a		
			120	e	2.5YR3/6			40				hr					
200	363401 526085	LEY	38	msl	7.5YR3/3				5	5	4						
			40	msl	7.5YR3/3												
			70	scl	7.5YR5/3	7.5YR5/6	m						70	>80	II		2
			120	hcl	5YR4/4			40				hr					
201	363500 526600	LEY	39	scl	7.5YR3/4											augered to 100cm- stony at 70cm	
			60	scl	7.5YR4/3												
			100	scl	5YR4/3			40				hr					
			120	scl	5YR4/3												
202	363500 526500	LEY	40	scl	7.5YR3/3				3	3						augered to 55cm	
			55	scl	7.5YR4/3												
			120	scl	7.5YR4/3												
203	363500 526400	LEY	38	scl	7.5YR4/4											manganese present 70cm assume spl	
			70	scl	7.5YR3/4								70	III	3a		
			75	e	5YR3/4												
			120	e	5YR3/4			5				hr					
204	363500 526300	PGR	40	msl	7.5YR3/4												
			80	scl	7.5YR3/3												
			90	scl	7.5YR4/4												
			120	scl	7.5YR4/4												
205	363500 526200	FAL	25	msl	7.5YR3/3											grass sprayed off- after cereal crop	
			50	scl	2.5YR3/6												
			100	scl	2.5YR3/6												
			120	scl	2.5YR3/6			20				hr					

BORING-NUMBER	NGR	LAND-USE	DEPTH (cm)	Texture	Soil-Colour	MOTTLES		STONES			DEPTH-TO-GLEYING (cm)	DEPTH-TO-SPL (cm)	WETNESS-CLASS	ALC	SOIL-TYPE	COMMENTS
					Munsell	Munsell	Ab.	Total	>2cm	>6cm						
206	363500 526400	FAL	38	mel	7.5YR3/4							60	III	3a	3a	
			48	lms	5YR3/4											
			60	e	2.5YR3/4		40			hr						
			120	e	2.5YR3/4											
207	363600 526400	FAL	30	mel	7.5YR2.5/3			3	3				I	2		augered to 100cm
			80	mel	5YR4/4					hr						
			100	mel	7.5YR3/4											
			120	mel	7.5YR3/4											
208	363600 526300	FAL	38	mel	7.5YR2.5/3			3	3				I	2		augered to 40cm- stone present
			40	mel	7.5YR3/3					hr						
			70	lms	7.5YR3/3		15			hr						
			120	ms	7.5YR3/3											
209	363645 526485	FAL	35	mel	7.5YR3/2			5	5	4			I	2		augered to 55cm- stopped by gravel
			55	mel	7.5YR3/3					hr						
			80	lms	7.5YR3/3		10			hr						
			120	ms	7.5YR3/3		20			hr						
240	363650 526400	FAL	30	mel	7.5YR3/2			5	5	4			I	2		augered to 100cm
			58	mel	7.5YR3/2											
			100	lms	7.5YR3/3											
			120	ms	7.5YR3/3		20			hr						
241	363660 526400	FAL	35	mel	7.5YR2.5/3			3	3				I	2		auger stopped at 80cm by stone
			60	mel	7.5YR3/4											
			80	ms	7.5YR3/3											
			120	ms	7.5YR3/3		20			hr						
242	363700 526400	FAL	38	mel	7.5YR2.5/3								I	2		augered to 55cm- stone
			40	lms	7.5YR4/4											
			55	ms	5YR4/6											
			120	ms	5YR4/6		20			hr						
243	363700 526300	FAL	38	mel	7.5YR2.5/3							60	III	3a		red soil stone at 63cm stopped- auger
			55	scl	7.5YR3/3											
			60	scl	5YR4/4											
			120	e	5YR4/4		20			hr						
244	363700 526200	LEY	35	mel	7.5YR2.5/2			5	5	4			I	2		augered to 100cm
			80	lms	7.5YR2.5/3											
			100	ms	5YR4/6											
			120	ms	5YR4/6		20			hr						
245	363800 526400	FAL	35	mel	7.5YR2.5/3			3				60	III	3a		auger stopped at 50cm stone
			50	scl	7.5YR3/2											
			60	scl	5YR4/4		20			hr						
			120	e	5YR4/4											
246	363800 526300	FAL	38	mel	7.5YR2.5/3			3				60	I	2		augered to 60cm- stone
			40	scl	7.5YR3/3											
			60	ms	5YR4/3	e	7.5RY5/6									
			120	ms	5YR4/3		20			hr						

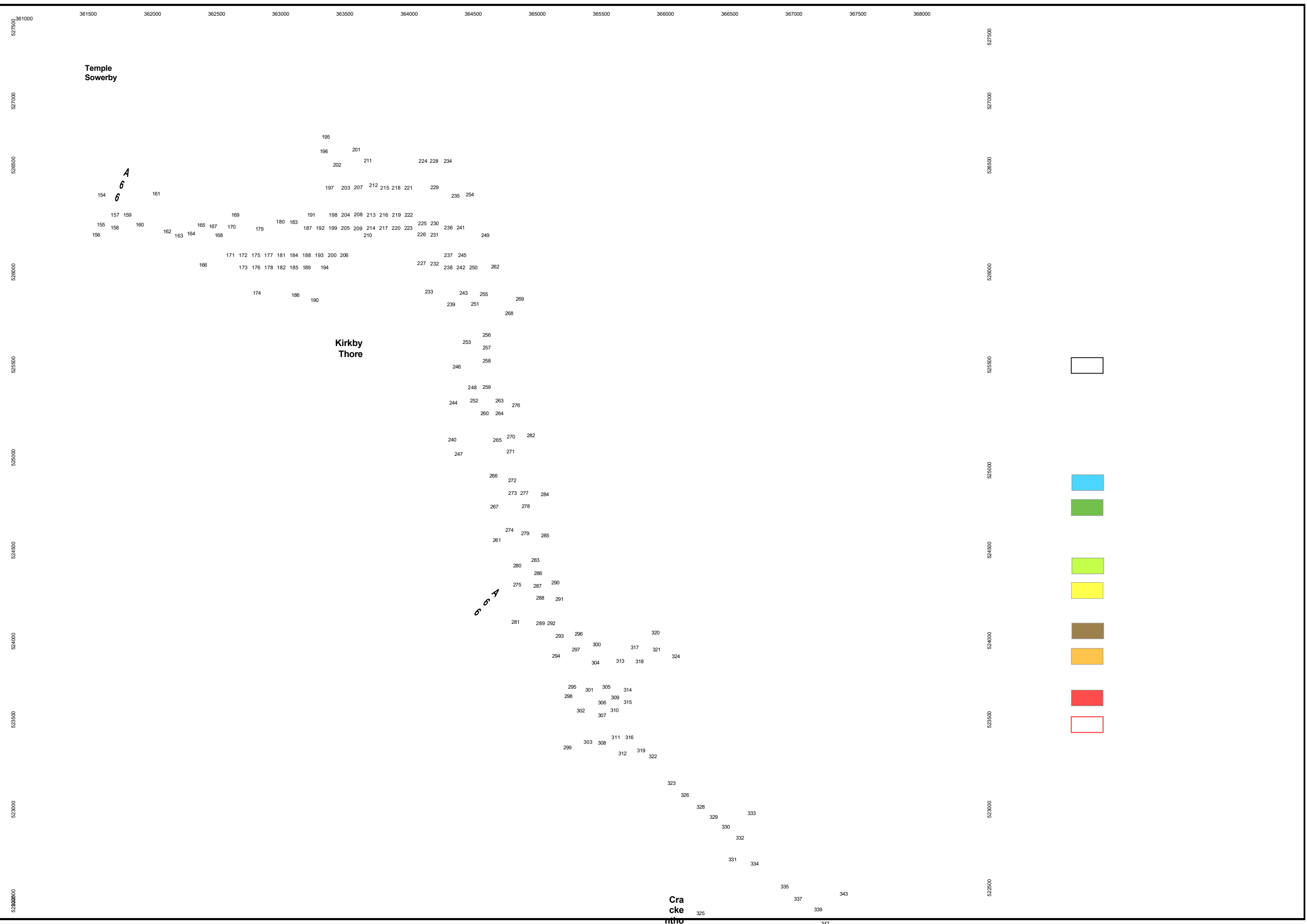
BORING-NUMBER	NGR	LAND-USE	DEPTH (cm)	Texture	Soil-Colour	MOTTLES		STONES			DEPTH-TO-GLEYING (cm)	DEPTH-TO-SPL (cm)	WETNESS-CLASS	ALC	SOIL-TYPE	COMMENTS
					Munsell	Munsell	Ab.	Total	>2cm	>6cm						
217	363800 526200	LEY	40	mel	7.5YR2.5/3								‡	2		soil saturated at 80cm and wet soil 60cm+ (WC)
			60	sel	7.5YR3/4											
			120	sel	7.5YR3/4											
218	363885 526400	LEY	35	mel	7.5YR3/3								‡	2		stone at 70cm
			55	lms	7.5YR3/4											
			70	ms	7.5YR3/4											
			120	ms	7.5YR3/4		20			hr						
219	363900 526300	LEY	38	mel	7.5YR3/3								‡	2		stone at 90cm+
			58	mel	7.5YR3/4											
			80	sel	7.5YR4/4											
			120	sel	5YR4/4		20			hr						
220	363900 526200	LEY	39	mel	7.5YR3/4								III	3a		>68cm manganese and mixed colours
			68	mel	7.5YR4/3											
			90	e	2.5YR3/4											
			120	e	2.5YR3/4											
221																Not Surveyed
222	364000 526300	LEY	25	mel	7.5YR3/3								II	2		marginal WCH/III
			78	sel	5YR4/4											
			80	e	5YR4/6											
			120	e	5YR4/6											
223	364000 526200	LEY	38	mel	7.5YR2.5/3								‡	2		soil moist below 80cm
			75	mel	5YR3/3											
			80	ms	5YR3/4											
			120	ms	5YR3/4											
224	364100 526500	LEY	20	mel	7.5YR4/2								IV	3b		wet on surface - Near gypsum works - geology gypsum bedrock and till deposits
			30	mel	7.5YR4/2	10YR5/6	m									
			50	e	5YR4/3	10YR5/6	m									
			120	e	5YR4/3											
225	364100 526300	LEY	35	mel	7.5YR2.5/3								III	3a		stone at 70cm
			40	mel	7.5YR3/3											
			68	sel	5YR3/3											
			120	e	5YR4/4		20			hr						
226	364100 526200	LEY	35	msl	5YR3/3								IV	3b		topsoil msl/scl - stone at 60cm
			50	sel	5YR3/3	7.5YR5/6	e									
			60	e	5YR5/4											
			120	e	5YR5/4		20			hr						
227	364100 526400	LEY	40	mel	7.5YR2.5/2								III	3a		difficult to auger - 60cm
			60	sel	7.5YR3/3											
			120	e	5YR5/4		20			hr						

BORING-NUMBER	NGR	LAND-USE	DEPTH (cm)	Texture	Soil-Colour	MOTTLES		STONES			DEPTH-TO-GLEYING (cm)	DEPTH-TO-SPL (cm)	WETNESS-CLASS	ALC	SOIL-TYPE	COMMENTS	
					Munsell	Munsell	Ab.	Total	>2cm	>6cm							Type
228	364100 526500	LEY	35	mel	5YR4/3						35	35	IV	3b		wet on surface-- Near gypsum- works overburden waste??	
			65	e	5YR4/6	10YR5/6	m										
			120	e	5YR4/6												
229	364200 526400	LEY	33	mel	7.5YR4/2						33	IV	3b				
			50	e	5YR4/3												
			120	e	5YR4/3												
230	364200 526300	LEY	30	scl	7.5YR3/4								I	2		stone at 70cm	
			40	scl	7.5YR3/3												
			70	scl	7.5YR4/4												
			120	scl	7.5YR4/4												
231	364200 526200	LEY	40	mel	7.5YR3/2						68	68	III	3a		stone at 80cm	
			68	scl	7.5YR3/4												
			75	e	5YR4/4	10YR5/6	m										
			120	e	5YR4/4			20		hr							
232	364200 526100	LEY	30	scl	7.5YR3/4						50	III	3a			stone at 50cm- gravel in soil.	
			48	scl	7.5YR3/3												
			50	scl	5YR4/3												
			120	e	5YR4/3			20		hr							
233	364200 526000	LEY	36	scl	7.5YR3/3						36	36	IV	3b		stone at 50cm	
			50	e	5YR3/3	10YR5/6	e										
			120	e	5YR3/3			20		hr							
234	364300 526500	LEY	33	mel	5YR4/2						33	33	IV	3b		wet at surface	
			70	e	5YR5/3	7.5YR5/6	e										
			120	e	5YR5/3												
235	364300 526300	LEY	38	mel	7.5YR4/4						75	>80	II	2		augered to 90cm- mottling 70cm +	
			45	scl	7.5YR4/3												
			90	scl	5YR4/3	10YR5/6	e										
			120	e	5YR4/3												
236	364300 526200	LEY	38	mel	7.5YR2.5/3								I	2		soil moist below- 80cm	
			75	mel	5YR3/3												
			80	ms	5YR3/4												
			120	ms	5YR3/4												
237	364300 526100	LEY	35	msl	7.5YR2.5/3						68	III	3a			stone at 70cm	
			40	mel	7.5YR3/3												
			68	scl	5YR3/3												
			120	e	5YR4/4			20		hr							
238	364300 526000	LEY	35	mel	5YR3/3						35	50	IV	3b		topsoil msl/scl- stone at 60cm	
			50	scl	5YR3/3	7.5YR5/6	e										
			60	e	5YR5/4												
			120	e	5YR5/4			20		hr							

BORING-NUMBER	NGR	LAND-USE	DEPTH (cm)	Texture	Soil-Colour	MOTTLES		STONES			DEPTH-TO-GLEYING (cm)	DEPTH-TO-SPL (cm)	WETNESS-CLASS	ALC	SOIL-TYPE	COMMENTS
					Munsell	Munsell	Ab.	Total	>2cm	>6cm						
239	364300 525000	Non-Ag														caravan-storage-area-with-hardcore-and-soil-bund-for-stripped-soil. Classified as Non-agricultural land-could be returned to agricultural use.
241	364400 526200	LEY	40 60 120	msl sel e	7.5YR2.5/2 7.5YR3/3 5YR5/4			20				60	III	3a		difficult to auger-60cm
242	364400 526000	LEY	35 40 60 120	msl msl lms ms	7.5YR3/3 7.5YR3/4 7.5YR4/3 7.5YR4/4			20					I	2		
243	364400 525000	LEY	40 60 80 120	msl msl lms ms	7.5YR2.5/3 7.5YR3/4 5YR3/4 5YR3/4			20					I	2		stone at 80cm
245	364411 526000	LEY	35 55 65 120	msl sel sel e	7.5YR2.5/3 7.5YR2.5/3 5YR4/3 5YR5/4		10YR5/6 10YR5/6					65	III	3a		
249	364500 526100	LEY	35 40 60 120	msl sel hel e	7.5YR2.5/3 7.5YR3/3 5YR5/3 5YR4/4		10YR5/6					40	III	3a		stone at 70cm
250	364500 526000	LEY	35 60 120	msl hel e	7.5YR3/3 7.5YR4/3 5YR4/4							60	III	3a		stone at 60cm
251	364500 525000	LEY	30 45 85 120	msl lms ms e	7.5YR2.5/3 7.5YR3/2 7.5YR4/3 5YR4/4							85	I	2		
252																Not Surveyed
253	364508 525700	LEY	38 75 120	sel sel sel	7.5YR3/4 5YR5/6 5YR5/6			40					III	3a		some manganese-38cm-gravel-fragments at 75cm-table 13 used
254	364532 526338	LEY	30 40 70	sel sel sel	7.5YR3/4 7.5YR3/3 7.5YR4/4								I	2		stone at 70cm

BORING-NUMBER	NGR	LAND-USE	DEPTH (cm)	Texture	Soil-Colour	MOTTLES		STONES			DEPTH-TO-GLEYING (cm)	DEPTH-TO-SPL (cm)	WETNESS-CLASS	ALC	SOIL-TYPE	COMMENTS	
					Munsell	Munsell	Ab.	Total	>2cm	>6cm							Type
			120	sel	7.5YR4/4												
255	364600 525000	LEY	35 50 120	mel lms e	7.5YR3/3 5YR3/3 5YR3/3			40				50	III	3a			
256	364600 525600	LEY	38 70 120	mel lms sel	7.5YR2.5/3 5YR4/3 5YR4/4			40					I	2		stone at 80cm	
257	364600 525600	LEY	38 50 120	mel sel sel	7.5YR3/4 7.5YR3/3 7.5YR3/3			20					I	2		stone at 50cm	
258	364600 525600	LEY	38 43 90 120	sel sel sel sel	5YR3/4 5YR4/3 5YR4/4 5YR4/4								I	2			
259	364600 525404	WC	30 80 100 120	mel lms sel sel	7.5YR3/3 5YR3/4 5YR4/4 5YR4/4			3	3	4			I	2			
260																	Not Surveyed
261																	Not Surveyed
262	364700 526000	LEY	30 35 80 120	mel hel e e	7.5YR3/3 7.5YR4/3 5YR5/3 5YR5/3		10YR5/6					35	IV	3b			
263	364700 525200	WC	30 70 120	mel ms fs	7.5YR3/3 2.5YR4/6 2.5YR3/6								I	2		droughtiness-checked moisture-balance grade 1	
264																	Not Surveyed
265																	Not Surveyed

BORING-NUMBER	NGR	LAND-USE	DEPTH (cm)	Texture	Soil-Colour	MOTTLES		STONES			DEPTH-TO-GLEYING (cm)	DEPTH-TO-SPL (cm)	WETNESS-CLASS	ALC	SOIL-TYPE	COMMENTS
					Munsell	Munsell	Ab.	Total	>2cm	>6cm						
266																Not Surveyed
268	364723 525823	LEY	35 45 70 120	msl msl lme ms	7.5YR3/3 7.5YR3/2 7.5YR3/3 2.5YR3/6									‡	2	augered to 100cm
269	364800 525000	LEY	35 40 60 120	msl hel sel msl	7.5YR3/2 7.5YR4/3 5YR4/3 5YR3/4	10YR5/6	e		20		40	>80	‡	3a		stone at 65cm
270																Not Surveyed
271																Not Surveyed
276	364829 525263	WG	38 45 80 120	sel sel e e	7.5YR3/4 7.5YR4/4 5YR4/6 5YR4/6							45	IV	3b		red soil fig 7 used



Temple
Sowerby

Kirkby
Thore

Crack
thorn



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Highways England

A66 Northern Trans-Pennine

Temple Sowerby to Appleby Agricultural Land Classification (ALC) Survey Results

Order Limits
Auger locations

- ALC**
- 2
 - 3a
 - 3b
 - 4
 - 5
 - Non-ag
 - Urban
 -  Not surveyed



Drawn by Paul Taylor 29/04/2022, Verified by John Grylls 29/04/2022

0 100 200 300 400

Metres

Scale: 1:25,000 at A3 size

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Appendix 4: Appleby to Brough - Auger boring descriptions and ALC map

Auger Boring Descriptions

Auger	Depth (cm)	Colour	Texture	Mottling	SPL	CaCO ₃	Stones (%)			Notes	Depth to gleying (cm)	Depth to spl (cm)	W C	WE grade	Overall grade	Limit(s)	Notes
							Total	>2cm	>6cm								
364	0 - 23	Dk Rd Gr	CSL	-	-		0			organic	23	II	2	4	GR,MR	severely undulating microrelief, gullies, moorland 15°	
	23 - 43	Rd Br	CS	xxx	no	0											
	43 - 81	Rd Br	CS	xxx	no	0											
	81 - 102	Rd	CS	xxx	no	0											
366	0 - 31	Dk Yl Br	CSL	-	-		1		2			I	2	3a	CL	8°	
	31 - 58	Rd Br	LCS	xx	no	2			2								
	58 - 104	Rd Br	CS	x	no	2			2								
367	0 - 28	Br	CSL	-	-		5		2	SBS at 46cm	28	II	2	3b	GR	10°	
	28 - 46	Br	CSL	xxx	no	12			2								
368	0 - 36	Rd Br	CSL	-	-		0					I	1	3b	MR	10°	
	36 - 85	Rd Br	CSL	o	no	0											
	85 - 105	Rd Br	CS	o	no	0											
369	0 - 24	Br	CSL	-	-		2		2		57	I	1	3a	CL	3°	
	24 - 57	Rd Br	LCS	xx	no	1			2								
	57 - 103	Dk Rd Br	CSL	xxx	no	1			1								
370	0 - 25	Rd Br	CSL	-	-		0					I	1	4	GR	15°	
	25 - 72	Rd Br	CSL	x	no	0											
	72 - 103	Rd Br	CSL	x	no	0											
375	0 - 33	Rd Br	CSL	-	-		2		2	inclusions of scl	33	II	2	4	GR	15°	
	33 - 74	Rd Br	CSL	xxx	no	5			2								
	74 - 102	Rd Br	CSL	xxx	no	5			2								
377	0 - 28	Rd Br	CSL	-	-		2		2	SBS at 85cm	28	II	2	4	GR	15°	
	28 - 48	Rd Br	CSL	xxx	no	3			2								
	48 - 85	Rd Br	LCS	xxx	no	8			2								
379	0 - 23	Dk Br	MCL	-	-		0			scl in places	23	II	2	4	GR	saturated profile from 23cm, side of steep banking above road, spring line? 15°	
	23 - 53	Dk Gr Br	CSL	xxx	no	0											
	53 - 102	Rd Br	CSL	xxx	no	0											
381	0 - 26	Br	MCL	-	-		2		2		26	II	2	4	GR,MR	saturated profile from 26cm, disturbed? soil store? microrelief mounds, 15°	
	26 - 78	Br	CSL	xxx	no	0											
	78 - 105	Yl Rd	CSL	xxx	no	0											
395	0 - 31	Br	CSL	-	-		2		2			I	1	3b	GR	8°	
	31 - 43	Rd + Br	CSL	o	no	2			2								
	43 - 102	Rd	CSL	o	no	5			2								
396	0 - 32	Br	CSL	-	-		2		2			I	1	3b	GR	8°	
	32 - 39	Rd + Br	CSL	o	no	2			2								
	39 - 103	Rd	CSL	o	no	5			2								
404	0 - 36	Br	CSL	-	-		2		2			I	1	3b	GR	10°	
	36 - 53	Br + Rd Br	SCL	xx	no	2			2								
	53 - 102	Rd Br	SCL	x	no	5			2								
489	0 - 22	Dk Rd Gr	Fib Pt	-	-		0				61	V	5	5	WE,GR MR, CL	very variable slope, flat at boring, 15 deg 10m north, anaerobic, sphagnum prevalent 15°	
	22 - 41	Dk Rd Gr	SF Pt	x	no	0											
	41 - 61	Dk Rd Gr	Hum Pt	xx	no	0											
	61 - 100	Li Rd Br	CSL	xxx	no	0											
490	0 - 29	Br	CSL	-	-		2		2			I	2	3b	CL,GR	8°	
	29 - 74	St Br	CSL	xx	no	1			2								

Auger	Depth (cm)	Colour	Texture	Mottling	SPL	CaCO ₃	Stones (%)			Notes	Depth to gleying (cm)	Depth to spl (cm)	W C	WE grade	Overall grade	Limit(s)	Notes
							Total	>2cm	>6cm Litho'								
	74 - 103	Rd Br	SCL	xxx	no	0											
492	0 - 22	Br	MCL	-	-	1			2		22	II	3a	3b	MR,GR,CL	0°	
	22 - 44	Gr	HCL	xxx	no	0											
	44 - 62	Gr	LCS	xxx	no	0											
	62 - 100	Gr	CS	xxx	no	0											
495	0 - 28	Br	CSL	-	-	0				56	II	3a	3b	CL	7°		
	28 - 56	Rd Br	CSL	x	no	4		2	nearly SBS								
	56 - 100	Rd Br	CSL	xxx	no	0											
501	0 - 23	Br	FSZL	-	-	1		2		23	II	3a	3b	MR,CL,GR	variable slope 4°		
	23 - 62	Br	FSZL	xxx	no	2		2									
	62 - 102	Br + Li Gr	FSL	xxx	no	1		2									
502	0 - 27	Rd Gr	FSL	-	-	1		2			I	2	3b	MR,GR	near base of small valley 15°		
	27 - 100	Rd Br	CSL	x	no	1		2									
503	0 - 31	Dk Rd Gr	MSL	-	-	2		2		31	31	IV	3b	WE,MR	7°		
	31 - 56	Rd Gr	SCL	xxx	yes	3		2									
	56 - 102	Rd Br + Li Rd Br	SCL	xxx	yes	5		2									
504	0 - 28	Dk Rd Gr	MSL	-	-	2		2		28	28	IV	3b	WE,GR,MR	8°		
	28 - 62	Gr	SCL	xxx	yes	3		2									
	62 - 102	Gr	SCL	xxx	yes	5		2									
505	0 - 23	Dk Rd Gr	MCL	-	-	1		1	light	23	23	IV	3b	3b	MR,WE	6°	
	23 - 102	Li Rd Br + Li Gr	SCL	xxx	yes	5		2									
507	0 - 32	Dk Rd Gr	SCL	-	-	2		1		32	32	IV	3b	3b	WE,GR	15°	
	32 - 102	Rd Br	SCL	xxx	yes	5		1									
508	0 - 32	Dk Gr	SCL	-	-	1		1	evidence of gleying sandy at depth	32	32	IV	3b	3b	WE	5°	
	32 - 104	Li Rd Br + Li Gr	SCL	xxx	yes	2		2									
511	0 - 28	V Dk Gr	MCL	-	-	1		1	organic, light cl, sandy	28	56	IV	3b	3b	MR,GR,WE	11°	
	28 - 56	Rd Gr	SCL	xxx	no	3		1									
	56 - 102	Rd Gr	SCL	xxx	yes	1		1	saturated below 56cm								
512	0 - 28	Rd Br	MSL	-	-	2		2	organic, some mottles	28		II	2	3b	CL, MR	significant microrelief undulation 6°	
	28 - 102	Rd Br	CSL	xxx	no	5		1	SBS on first boring at 45cm								

BORE NO.	DEPTH (cm)	TEXTURE	Soil Colour	MOTTLES		Stones				DEPTH TO GLEYING (cm)	DEPTH TO SPL (cm)	WETNESS CLASS	ALC LIMITATION	ALC	SOIL TYPE	COMMENTS
			Munsell	Munsell	Ab.	Total (%)	>2cm	>6cm	Type							
365	30	msl	very dark greyish brown -> light grey	ochre grey	cm >15	<1			ssst			GW	GW	3b	Light	Water sitting on topsoil/subsoil boundary, saturated filling with water. Very high water table. 1m above quarry floor.
	50	lms	very light grey	light grey ochreous	fw	<1			ssst							
	100	lms	very light grey	liquid soil slurry		20-40			ssst							
371	32	msl	dark reddish brown			1-2			assorted hd st, s&m, r l	32		III	CL	3a	Light-Medium	Top of slope, near flat relief.
	82	lms	reddish brown	mn & pink	fw	<1										
	100	scl	dark reddish brown	dark grey	fw	<1										
372	26	scl(very sandy)	dark brown			5-10			assorted hd st, s&m, r l	40		III	CL	3a	Light-Medium	7-11° slope. Impenetrable stone at 45cm.
	45	msl	reddish brown	rare ochre	cm >40	5-10			assorted hd st, s&m, r l							
373	42	msl	very dark brown	o	fw >30	1-2			ssst	42		III	CL	3a	Light	4-7° slope, deep topsoil possibly due to soil storage from adjacent historic quarry.
	60	msl	grey brown	pale brown & dark yellowish brown	cm	3-5			ssst							

BORE NO.	DEPTH (cm)	TEXTURE	Soil Colour	MOTTLES			Stones			DEPTH TO GLEYING (cm)	DEPTH TO SPL (cm)	WETNESS CLASS	ALC LIMITATION	ALC	SOIL TYPE	COMMENTS
			Munsell	Munsell	Ab.	Total (%)	>2cm	>6cm	Type							
	80	msl & lms lenses	yellowish brown	ochre strong brown & grey	cm	5-10		ssst								
	100	lms	pale brown	very pale brown, grey, light reddish brown	cm	5-10		ssst								
374	28	msl	dark grey brown	ochre yellowish brown	cm	<1		ssst	28	60	IV	CL	3b	Light-Medium	Wet at 50cm, perched water table at 60cm, loamy sand bands 50-60cm. Completed after rainstorm. 1m above quarry ground level. SPL on border between 3a/3b for 220 FCD.	
	50	msl	dark yellowish brown	ochre yellowish brown	m	<1		ssst								
	70	scl	dark yellowish brown	ochre yellowish brown	ab	<1		ssst								
	95	hcl & sandy lenses	dark reddish brown	pale brown		<1		ssst								
	100	ms	dark reddish brown	pale brown		<1		ssst								
376	28	msl	reddish brown			3-5		assorted hd st, s&m, r l	28	60	III/IV	CL	3a/3b	Light-Medium	10-15 m from road edge, located on top of shallow valley sides. Impenetrable stones at 70cm. SPL on border between 3a/3b for 220 FCD - edge mapping required.	
	60	scl	light reddish brown	mn black & fe nodules	cm-> ab	10-20		assorted hd st, s&m, r l								
	70	hscl	dark reddish brown	mn	ab	20-40		assorted hd st, s&m, r l								
378	30	mcl	grey brown	ochreous grey	fw	<1			<35		III	CL	3a	Light	AB located in basin of previously excavated area for quarrying, stoneless topsoil created from quarry washing. Offset 7m south due to a compacted field pathway. Mixed pale ms and dark brown at 75cm indicative of a relic topsoil. Impenetrable due to stone or bedrock at 95cm.	
	75	scl	Pale grey	reddish brown & rare ochreous	cm-> ab (<40)	<1										
	95	lms mixed mcl relic topsoil.	Pale grey			<1										
380	28	scl	very dark brown			5-10		assorted hd st, s&m, r l			III	CL	3a	Medium	Undulating landscape with assorted hard stones likely originating from glacial moraine. Subsoil in topsoil in hill crests. Impenetrable due to stones at 60cm.	
	50	scl	reddish brown			5-10										
	60	scl	reddish brown			30-50										
382	29	msl	dark grey brown			3-5		ssst		no obvious spl	III	CL	3a	Light	Heavy slurry applications, Ab located at the top of the crest of hill, possible dune or sand hill moraine.	
	70	lms	dark yellowish brown			1-2		ssst								
	100	ms	pale brown	streaky black mn	fw >90	1-2		ssst								
383	36	msl	very dark brown			3-5		grvl	50	no obvious spl	III	CL	3a	Light	Ab located mid way up 7-11° slope. Saturated >80cm. Erosion risk due to gradient and soil texture, signs of gully where crop cover is poor.	
	50	lms	Reddish brown			1-2										
	100	msl	grey brown	yellowish brown & light grey	cm	1-2										
384	26	zl (o)/pty	very dark brown			5-10		ssst	26		GW	Slope	4	Light	22° + slope with signs of slippage, severely poached containing water, saturated. Podzol soil	
	45	lms	light grey	ochre strong brown	cm	5-10		ssst								
	70	msl	yellowish brown			5-10		ssst								
	100	scl	yellowish brown	liquid slurry		5-10		ssst								
385	25	mcl	dark brown	pale brown	fw	1-2		ssst	25	60	GW	GW	3b	Medium		

BORE NO.	DEPTH (cm)	TEXTURE	Soil Colour	MOTTLES			Stones			DEPTH TO GLEYING (cm)	DEPTH TO SPL (cm)	WETNESS CLASS	ALC LIMITATION	ALC	SOIL TYPE	COMMENTS
			Munsell	Munsell	Ab.	Total (%)	>2cm	>6cm	Type							
	60	mcl	reddish brown	ochre	fw	1-2			ssst							Adjacent to permanent wet area/ pond. Indistinct ts/ss boundary. gw at 60cm.
	100	scl	reddish brown	yellow & pale brown	m	1-2			ssst							
386	28	scl	dark grey brown	mn & fe	fw >22	1-2			ssst	22	no obvious spl	III	CL	3a	Light-Medium	marginal scl/msl topsoil. AB location near to field entrance. Podzol turning light reddish brown @50cm, 5cm band of finer textured scl from 60cm and at 100cm. Wet/saturated >60 cm. Altitude 5m from 3b Climate threshold.
	100	lms	bleached light grey - >pinkish grey	yellowish brown distinct	fw	10-20			l hd ssst							
387	27	scl	dark reddish brown			3-5			ssst	28	75	III	CL	3a	Medium	Offset 5m to avoid historic trackway. Soil characteristics for these soils justify an ALC sub-grade 3a but they lie very close to the climatic limit to sub-grade 3b due to their altitude on the border between 3b and 3a climatic limitations.
	75	msl	reddish brown / red	pink & strong brown & grey & mn black	fw	3-5										
388	30	scl	very dark grey			3-5			ssst	40	no obvious spl	III	CL	3a	Medium	10-15m from road edge, 3m below road height. 7-11° slope top. Altitude 5m from 3b Climate threshold.
	70	scl	pale reddish brown	mn & fe, pale yellowy brown and light grey	cm/m	1-2			ssst							
	100	msl	pale reddish brown	yellowy brown and light grey		1-2			ssst							
389	30	msl (sl o)	very dark greyish black			1-2			ssst	35	50	IV	W	3b	Light-Medium	Series of muck heaps between previous boring. Likely podzol. Very wet at depth. Standing water across large areas and tractor wheelings abundant.
	50	lms	light grey	yellowish brown & pale brown & greyish brown	cm	1-2			ssst							
	100	scl	dark reddish brown	yellowish brown	ab	1-2			ssst							
390	30	msl	dark grey brown			1-2			hd ssst	40	60?	III	CL	3a	Light-Medium	In woodland shade - coniferous. Soil characteristics for these soils justify an ALC sub-grade 3a but they lie very close to the climatic limit to sub-grade 3b due to their altitude on the border between 3b and 3a climatic limitations.
	55	lms	dark reddish brown	mn light reddish brown	fw	1-2			ssst							
	100	scl & sandy lenses	light reddish brown													
391	27	msl (sl o)	very dark grey			1-2			ssst	35		III	CL	3a	Light-Medium	Ab located at the top of an embankments of a shallow sided valley. Surface layer is compacted, trafficked by tractors traversing to nearby muck heaps, wet underfoot and standing water across field. Abundant mottles above 60cm but no clear spl.
	75	msl	dark reddish brown	pale red and mn black	cm	1-2			ssst							
	100	scl	pale reddish brown			1-2			ssst							
392	27	szl (sl o)	very dark grey			5-10			ssst	27	45	IV	W	3b	Medium-Heavy	Erosion risk due to light textured topsoil and 7-11° slope.
	40	scl	pale red	yellowish brown & light grey	cm	5-10			ssst							
	100	hcl	reddish brown	strong brown & pale brown.	m	5-10			ssst							
393	30	msl (app sandy)	very dark brown			3-5			grvl			GW	GW	3b	Light	Saturated from 30cm.
	50	lms	grey			3-5										

BORE NO.	DEPTH (cm)	TEXTURE	Soil Colour		MOTTLES			Stones			DEPTH TO GLEYING (cm)	DEPTH TO SPL (cm)	WETNESS CLASS	ALC LIMITATION	ALC	SOIL TYPE	COMMENTS
			Munsell		Munsell	Ab.	Total (%)	>2cm	>6cm	Type							
	>50	liquid slurry															
394	27	msl (sl o)	very dark grey			1-2			hd ssst	60	60	III/IV	W	3a/3b	Light-Medium	Saturated at 70cm due to recent rain, temporary water table at 60cm. Clay content increasing with depth >80cm. 4-7° slope. Erosion risk as evident from rills in adjacent archaeological pit run off.	
	60	lms	reddish brown			1-2			hd ssst								
	100	scl	reddish brown	mn black	fw	3-5			hd ssst								
397	28	msl (app sandy)	very dark grey/ black			1-2			grvl			GW	GW	3b	Light	In woodland shade - coniferous. Saturated at 60cm, water table	
	100	lms	pale brown	ochre large distinct	cm	1-2			grvl								
399	26	msl	black			1-2			grvl	40		GW	GW	3b	Light-Medium	Located in woodland shade - coniferous. Saturated at 60cm, water table	
	60	lms	light grey brown	brown and dark grey, fe & mn (black and strong brown)	cm	1-2			grvl								
	90	msl & scl	light grey brown			1-2											
	100	scl	dark grey brown			1-2											
400	51	msl	5yr 2.5/2			1-2			ssst	51		III	CL	3a	Light	Very dark/ black topsoil with indistinguishable topsoil subsoil boundary - flat area adjacent to warehouse development therefore likely a flattened area of disturbance.	
	100	lms	5yr 4/4	5yr 5/8	cm	<1			ssst								
401	26	mcl/ scl	dark grey brown			5-10			hd ssst	26	35	IV	CL	3b	Medium-Heavy	7-11° slope, roots observed at 90cm.	
	100	hcl	dark reddish brown	grey, black mn fe	cm	5-10			hd ssst								
403	31	scl	5yr 2.5/2	7.5yr 5/6	fw	1-2			ssst hdsst	41	41?	III or IV	CL	3a or 3b	Light-Medium	Offset 5m due to existing gravel field entrance. SLP confirmation requires pit for structural identification.	
	41	msl -> lms	5yr 4/4			1-2			ssst hdsst								
	80	scl	5yr 4/4	7.5yr 5/8 & 5/3	m	1-2			ssst hdsst								
	90	msl	5yr 4/4			1-2			ssst hdsst								
406	29	msl	dark greyish brown			3-5			hd ssst	40	40	IV	GW	3b	Medium-Heavy	Located on 3-4m raised plateau above and 10-15 m from carriageway, base of 7-11° slope. Wet from 30cm.	
	40	scl	pinkish grey			3-5											
	100	hcl	pinkish grey	black mn & fe, strong brown ochre	cm-> ab												
407	20	scl/msl	5yr 2.5/2	7.5yr 5/8	fw	1-2			ssst hdsst			GW	CL	3a	Medium	Ground water at 60cm, increasing clay content with depth. Indistinct topsoil/subsoil boundary.	
	100	scl	5yr 4/4			3-5			ssst hdsst								
410	25?	5yr 3/3	scl			1-2			ssst	85		III	CL	3b	Light-Medium	Just off crest of the hill, base of 4-7° slope of hummocky landscape. Topsoil/subsoil boundary very indistinct. Moderated to 3b due to FCD >225 at 171m AOD.	
	100	5yr 3/3	msl - scl	mn >85 cm	fw	3-5			ssst								
412	25	scl	7.5Yr 4/2	7.5Yr 4/6	fw	1-2			ssst	49	70	III	W	3a or 3b	Medium	ALC grade debated due to 160m AOD on boundary of FCD >225	
	49	scl	7.5Yr 4/3	7.5Yr 4/4&5/4	fw	3-5			ssst								
	70	scl	7.5Yr 2/2	7.5Yr 5/4	cm	3-5			ssst								
	100	scl	5yr 5/6	5yr 5/8	ab	1-2			ssst								
413	10	zcl	dark greyish	ochre	cm faint	<1			ssst	10	35 (10)	V	GW	4	Heavy		

BORE NO.	DEPTH (cm)	TEXTURE	Soil Colour	MOTTLES			Stones			DEPTH TO GLEYING (cm)	DEPTH TO SPL (cm)	WETNESS CLASS	ALC LIMITATION	ALC	SOIL TYPE	COMMENTS	
			Munsell	Munsell	Ab.	Total (%)	>2cm	>6cm	Type								
	40	hcl	dark greyish gley 1				<1			ssst					Offset 10m south due to abundant wetness and rush area. Saturated from the surface, rushes dominate vegetation. Wet slurry in top 10cm. Receiving site in low lying basin. Impenetrable at 45cm due to rock.		
	50	c	dark greyish gley 1				<1			ssst							
	100	scl wth pty inclusions <70cm	very light grey & dark brown				5-10				ssst						
414	29	scl	greyish brown				3-5			hd ssst	29	III	Slope	4	Medium	22°+ slope limited.	
	80	scl	light greyish brown	light grey, yellowish brown	fw		3-5			hd ssst							
415	28	scl	7Yr 3/2				1-2			ssst		III	CL	3a	Light-Medium	Mid 4-7° slope, faint indistinct dark greyish brown mottles but freely draining within 1m.	
	100	msl/ lms	7Yr 4/6				3-5			ssst							
417	25	msl (sl o)	5YR 3/3				<1			ssst		III	CL	3a	Light	Offset 10m due to possible disturbance and field gateway on 3-4° slope.	
	100	msl -> lms	5YR 5/6				3-5			ssst							
419	30	mcl	2.5Y 4/1	7Yr 5/8 & mn	m		<1			ssst	30	GW	GW	5	Medium	Adjacent to area of field dominated by rush. Very wet underfoot and poached. Surface waterlogging related to contours, AB at base of 3-4° slope. Clay content increasing with depth, likely clay below. Bright colourful olive green mottles.	
	70	scl	7Yr 5/8	5Y 6/6	ab		3-5			ssst							
	100	scl	5Yr 5/6	5Yr 6/3	ab		<1			ssst							
428	27	mzcl	2.5Y 3/2				<1			ssst	30	GW	F	4	Medium-Heavy	Adjacent to field gateway. Ground water from 50-60cm, distinct abundantly mottled and gleyed. Increasingly yellowish brown above 80cm.	
	100	mcl -> c	7.5YR 5/8	7.5YR 6/8 & 5/1 & 7/2 & 7/6	ab		<1			ssst							
425	29	mcl (sl o)	2.5yr 3/2	saturated			<1			ssst	? GW	GW	F	5	Medium	Ground water affected beyond 50cm, Saturation disguising any mottles. Positioned in area of field dominated by rushes and standing water.	
	95	fscl	2.5yr 5/2	saturated			<1			ssst							
	100	scl	2.5yr 4/6	saturated			<1			ssst							
424	24	hcl	7.5Yr 4/3	7.5Yr 5/8	cm		<1			ssst	24	IV	F	4	Heavy	Standing water in field, gleying between 24 -35 but absent below, common ochre mottling in sandier red matrix.	
	35	hcl	7.5Yr 5/2	gley 7/5pb & 7.5YR 7/8	ab		<1			ssst							
	100	hcl/ c/ sc	10Yr 6/4	10Yr 5/8	m		<1			ssst							
422	25	hcl	10Yr 4/3	7.5Yr 4/6	cm		<1			ssst	26	35? Definitely at 55	IV	W	4	Medium-Heavy	Standing water in field, wet under foot. Obvious ground water not encountered.
	40	hcl	10Yr 5/3	7.5Yr 4/6	cm		<1			ssst							
	55	scl	10Yr 5/3	2.5Yr 6/8 7.5Yr 5/6&6/2	m		<1			ssst							
	80	c with sandy lenses	10Yr 4/3	gley 7/5pb & 2.5YR 5/8	ab		<1			ssst							
	100	scl	10Yr 4/3	2.5Yr 6/8	cm		<1			ssst							
429	28	mcl	2.5Y 3/2				1-2				28	IV	W	3b	Medium-Heavy	Offset due to field wet patch likely a result of adjacent archaeology workings. Gleyed lacustrine clay at depth.	
	55	hcl	2.5Y 4/2	2.5Y 5/6 & 7/3	ab		1-2										
	75	scl	10Yr 5/6	10Yr 7/6	m		3-5			gvl							
	100	c	gley 1 5/10y	gley 1 5/10y	ab		<1										
430	30	hcl	10Yr 5/3	10Yr 4/6	ab		<1			ssst	15	IV	CL & F	4	Heavy	Moderately poached at surface, adjacent to rush vegetation and farm yard entrance	
	60	hcl-> c	10Yr 5/3	10Yr 6\8 & 5/1	ab		<1			ssst							
	100	pty l -> p	5.5yr 2.5/2				<1			ssst							
435	20	scl	7.5Yr 3/3				1-2			lst	20	III	CL	3a	Medium	Clay content increases with depth. Around topsoil/Subsoil	

BORE NO.	DEPTH (cm)	TEXTURE	Soil Colour	MOTTLES			Stones			DEPTH TO GLEYING (cm)	DEPTH TO SPL (cm)	WETNESS CLASS	ALC LIMITATION	ALC	SOIL TYPE	COMMENTS
			Munsell	Munsell	Ab.	Total (%)	>2cm	>6cm	Type							
	60	scl	5Yr 3/3	blck	fw	3-5			lst							boundary navy blue and shiny black concretions, coal and basalt. Sandy lenses throughout. Mid 4-7• slope.
436	30	mcl	7.5Yr 3/2	10Yr 4/6	cm	<1			ssst	25		III	CL	3a	Medium	Better drained, red sandy variant subsoil
	100	scl	7.5Yr 5/3	7.5Yr 5/6	cm	<1			ssst							
437	25	fszl	7.5Yr 3/3			1-2			lst	25		III	CL	3a	Medium	Clay content increasing up to 80cm, greater proportion of sandy lenses 80-90 cm.
	100	scl	5Yr 4/4	7.5Yr 3/2 & mn	fw	3-5			lst							
440	24	(o) scl	v dk b	mn	cm	1-2			ssst	45		II	CL	3a	Medium	Common manganese concretions at base of topsoil boundary. Impenetrable due to stones stone @55.
	45	scl	reddish brown			3-5			ssst							
	55	mcl	reddish brown	dark greyish	fw	3-5			ssst							
439	30	mcl	reddish brown	ochre red& n <15	fw	1-2			hd sst	40	80	III	Slope	3b	Medium	Located at base of 11-16° slope
	80	mcl	reddish brown	mn faint pink and pale brown	fw	1-2			hd sst							
	100	mcl	pale red	mn faint pink and pale brown	cm	1-2			hd sst							
443	19	scl				<1			ssst	25	40	IV	W	3b	Medium	Adjacent to wet area of standing water parallel to field boundary.
	40	mcl	7.5YR 4/3	mn & 7.5YR 6/6	fw	<1			ssst							
	60	hcl	7.5YR 6/6	mn & 7.5YR 5/8	cm	<1			ssst							
	100	fsl				<1			ssst							
445	22	light scl	7.5Yr 3/3	7.5Yr 5/6 & 2/5 & mn	fw	1-2			ssst	20	45	III	CL	3a	Medium	SPL unlikely - pit confirmation. Soft weathered sandstones throughout forming ochreous mottling around sandy lenses.
	80	scl	7.5Yr 4/3 5YR 5/6	7.5Yr 6/8 & 5/1	com	1-2			ssst							
	100	fscl	5YR 5/6	2.5YR 5 /8	fw	1-2			ssst							
447	20	scl	7.5YR 4/3	7.5YR 4/6	fw	1-2			ssst	<10		GW	F	3a?	Medium	Ochreous mottling around roots in top 10cm, absent in the remainder of the topsoil. Saturated gw (?) below 55cm, mottles undistinguishable. The boundary between topsoil and subsoil indistinct.
	55	scl	10Yr 4/4	7.5YR 4/3	fw	1-2			ssst							
	80	scl	10Yr 4/4	Saturated	Saturated	10-20			ssst							
452	28	fscl	7.5YR 4/4			1-2			ssst	60		III	CL	3a	Medium	Better drained profile field wet underfoot with standing water in places.
	100	fscl -> fsl	7.5YR 4/4	7.5YR 3/1 & 5/8	fw	1-2			ssst							
455	33	scl	10YR 5/1	5YR 4/6	cm	1-2			hdsst	<10	35	IV	GW	3b	Medium	Standing water in historic wheelings. Ochreous mottling around roots in topsoil.
	100	mcl appr. sandy	10YR 6/6	2.5Y 7/1 & 5YR 4/6	m	1-2			hdsst							
457	26	scl	7.5YR 4/3			<1			ssst	30		III	CL	3a	Medium	Well drained to depth, faint mottling indistinct against red matrix. Raised sandier area adjacent to disused railway.
	60	msl	5YR 5/8			<1			ssst							
	100	scl	5YR 5/8	2.5YR 4/6	fw	<1			ssst							
460	30	scl	7.5 Yr 2.5/2			3-5			hdsst ssst	50	none	III	CL	3a	Medium	Clay lenses above 90cm. Pale sandier variant immediately above.
	50	scl	5Yr 5/8	5YR 2.5/1	fw	3-5			hdsst ssst							
	89	msl -> lms	5Yr 6/8			3-5			hdsst ssst							
	100	scl	5Yr 5/8			3-5			hdsst ssst							
466	30	scl	7.5Yr 3/2			3-5			hdsst ssst	40	none	III	CL	3a	Medium	Red matrix disguising mottles, clay content increasing with depth.
	70	scl	2.5YR 4/8			5-10			hdsst ssst							
	100	mcl appr. sandy	2.5YR 4/8	5YR 6/6 & 5YR 2.5/1	cm	3-5			hdsst ssst							
469	15	scl	5YR 3/4			10-15	5-10	1-2	hd r		none	III	MR	5	Medium	Disturbed by MOD activity, poor agricultural use limited
	60	scl	2.5YR 4/8	7YR 2.5/1	fw	10-15	5-10	1-2	hd r							

BORE NO.	DEPTH (cm)	TEXTURE	Soil Colour	MOTTLES			Stones			DEPTH TO GLEYING (cm)	DEPTH TO SPL (cm)	WETNESS CLASS	ALC LIMITATION	ALC	SOIL TYPE	COMMENTS
			Munsell	Munsell	Ab.	Total (%)	>2cm	>6cm	Type							
																to grazing. Impenetrable at 60cm due to stones.
473	23	scl	5YR 3/3				3-5		hd r	55	none	III	CL	3b	Medium	Confirm altitude, 3-4° slope.
	55	scl	2.5Y 5/6	7YR 5/3	fw		5-10		hd r							
	100	scl	2.5Y 5/6	5YR 6/8	m		5-10		hd r							
474	23	scl	5YR 3/3				3-5		hd r		none	III	CL	3b	Medium	Saturated at 60cm, evidence of a possible spring line.
	100	msl	2.5Y 5/6				3-5		hd r							
476	30	msl					5-10		hdsst ssst	30	none	III	Gradient	4	Light	Marginal climatic limitation.
	100	msl	10YR 6/8	7.5Yr 5/8 & 5/3	cm		5-10		hdsst ssst							
479	20	mzcl app s	7.5 Yr 3/4				1-2		hd r		none	III	FR	3b	Light-Medium	AB located in a wet area of the flat field - standing water. ALC Moderated due to flood risk. Farmer says rarely floods, current water present for more than 4days.
	50	scl	7.5 Yr5/6				1-2		hd r							
	100	msl/lms	7.5 Yr5/4				3-5		hd r							
480	23	msl					3-5		hd r	45	none	III	CL	3b	Light	Red clay lenses between 51-56cm - ungleyed.
	51	msl	2.5Y 5/6				3-5		hd r							
	100	msl	2.5Y 5/6	o g	cm		3-5		hd r							
485	27	scl					1-2		hd r	54	none	III	CL	3b	Medium	Top of steep embankment from previous quarry (?). Proportion of fine sediment increases above 80cm.
	54	scl	2.5Y 5/6				1-2		hd r							
	100	scl	2.5Y 5/6	2.5Y 5/8 & 5/2	cm		1-2		hd r							
487	60	pty l/ o mzcl					1-2		hd r		none	GW	MR	5	Peat	AB located on a rough grazing plateau at the base of steep slope, possible historic quarry and adjacent to marsh land and water coarse. Area dominated by rushes. Soil saturated from surface.
496	31	msl	dark brown				1-2		hd st	40?		III	FR	3b	Light	Lower subsoil, streaky yellow sand mixed with upper subsoil reddish brown, unlikely true mottling rather mixing of bleached sand and upper subsoil. Impenetrable at 75cm due to stone. Ab located to river bank and EA flood mapping show location within high risk flood zone - Flood risk and groundwater effects have been deemed sufficient to limit these soils to sub-grade 3b.
	52	msl-> lms	dark reddish brown	light reddish brown, mn, yellow	fw		1-2		hd st							
	75	lms	pale brown	yellowish white, pale yellow, yellowish brown	ab		1-2		hd st							
497	29	szl (sl o)	dark brown				1-2		hd st	40		III / Gw	GW	3a	Light	Wet above 55cm, saturated at 80cm- GW, on flat area adjacent to Lowgill Beck water course. Small rounded gravels - flood plain? Impenetrable due to stones at 80cm. Flood risk and groundwater effects may be sufficient to limit these soils to sub-grade 3b in some
	55	lms	brown	pale brown, mn, pale red	cm		1-2		hd st							
	80	lms/ ms	dark reddish brown	yellowish brown, yellow	cm		5-10		hd st							
498	31	scl	brown				1-2		hd st	70		III	CL	3a	Light	Flat plateau on top of slope above flood plain adjacent to

BORE NO.	DEPTH (cm)	TEXTURE	Soil Colour	MOTTLES			Stones			DEPTH TO GLEYING (cm)	DEPTH TO SPL (cm)	WETNESS CLASS	ALC LIMITATION	ALC	SOIL TYPE	COMMENTS	
			Munsell	Munsell	Ab.	Total (%)	>2cm	>6cm	Type								
	70	msl	reddish brown				3-5			hd st					road. Grade 2 soils, 3a climate. Soil characteristics for these soils justify an ALC sub-grade 3a but they lie very close to the altitudinal climatic limit to sub-grade 3b.		
	100	fsl	pale reddish orange brown	mn	fw		3-5			hd st							
499	29	szl / zcl	dark brown				1-2			assorted sm hd st	50	III	CL	3a	Light-Medium	Adjacent to water course, not within mapped flood risk zone. Soil characteristics for these soils justify an ALC sub-grade 3a but they lie very close to the altitudinal climatic limit to sub-grade 3b.	
	70	msl/scl	dark reddish brown	nn	fw		3-5			assorted sm hd st							
	100	scl & sandy lenses	pale reddish brown	mn	fw		3-5			assorted sm hd st							
500	15	mzcl	dark greyish brown				1-2			ssst	15	40	IV	CL	3b	Medium-Heavy	Adjacent to wet area of field entrance flat area of field at base of 7-11° slope, hcl high sand content, sandy clay gleyed at depth.
	40	scl & clay bands	greyish brown	dark grey, pale brown	cm		1-2			ssst							
	70	hcl	light greyish brown	grey, yellowish brown, yellow	ab		1-2			ssst							
	100	clay with sandy lenses	light grey	ochre and red	fw		1-2			ssst							
506	27	scl (sl o)	dark brown	ochre	fw >20		3-5			hd st	27	40	IV	CL + W	3b	Medium-Heavy	7-11° slope of south of valley. Mottles increasing in distinctness with depth.
	100	hcl	pale yellowish brown	yellow, light grey, mn, ochre strong brown	ab		10-20			hd st							
509	25	mcl	dark brown				3-5			hd st	35	50	IV	CL + W	3b	Medium-Heavy	Seasonal SPL if present. HCL contained high sand content.
	50	hcl	pale reddish brown	pale brown, mn black	cm		3-5			hd st							
	100	hcl	pale red	light red, yellow, mn	cm		1-2			hd st							
510	25	scl	dark reddish brown				<1			hd sst			III	CL + W	3a	Medium	Recently reseeded and annuals sprayed off. Indistinct ts/ss boundary, reduction in OM content at 25cm, small increase in paleness with depth. Grade 1 soil limited to 3b by climate.
	100	scl	dark brown				<1			hd sst							
513	29	scl	dark brown				1-2			hd st	29	35	IV	CL + W	3b	Medium	Clay bands containing abundant ochreous and manganese mottling. Impenetrable at 70cm due to stones.
	70	scl & clay bands	reddish brown	yellow & mn black	ab		1-2			hd st							
514	30	szl (sl o)	dark reddish brown				3-5			hd st	30	50	IV	CL + W	3b	Medium-Heavy	10m from road edge 5m above road level, road cut out?
	50	mcl	dark red brown	mn & pale brown & light grey	m		3-5			hd st							
	100	hcl	dark red brown	mn & pale brown & light grey	ab		5-10			hd st							
515	30	o zcl	very dark grey / black				<1			hd st	65		Gw or III	CL + GW	3b	Medium	Likely flood plain due to unmottled surface and deep dark stoneless layers. Gw at 70cm. No flood risk according to EA flood models.
	65	fscl	dark brown				<1										
	100	scl	brown	pale brown i distinctly	fw		1-2			sm r gvl							

BORING NUMBER	DEPTH (cm)	Texture	Soil Colour	MOTTLES		STONES				DEPTH TO GLEYING (cm)	DEPTH TO SPL (cm)	WETNESS CLASS	ALC Limitation	ALC	SOIL TYPE	COMMENTS
				Colour	Ab.	Total (%)	>2cm	>6cm	Type							
398	32	slt org msl	v dk br	oc >~24cm	c	1-3		fw	sst	35	35	4	CL & W	3b	md	Flattish, close to factory site boundary. Upper ss compact and SP, (ts very wet and ss only moist)
	80	scl	dk rd br	ye, rd & gr	c->ab	3-5			sst							
	100	c	dk red br	ye, rd & gr	ab	1-3			sst							
402	30	slt org msl	v dk br			3-5		fw	sst	30	no clear SPL	2	CL	3a	lt/md	Subsoil relatively well drained
	60	msl	dk rd br	ye, rd & gr	c	3-5			sst							
	100	msl	rd br	ye rd & gr	c->ab	3-5			sst							
405	35	slt. Org. msl	v dk br			1-3		fw	sst	35	no clear SPL	2	CL	3a	md	4-7° slope, close to the reinforced, (stone gabions) road embankment.
	90	msl & scl bands	v dk rd br	gr & lt rd	ab	5-10			sst							
	100	msl & gvl	v dk rd br			50+			sst & qz							
408	27	scl	dk br			5-10%	com		sst	30	45	4	CL, W & Gr	4	md	impenetrable below 80cm, 11-18° slope
	45	scl	yel br	lt br & lt gr	f	3-5%			sst							
	80	hcl	ple red br	ye, lt rd & Mn/Fe	c	5-10%			sst							
409	20	scl/msl	dk br			5-10	com		sst	25	no clear SPL	2	CL & Gr	3b	md	7-11 slope°, saturated SS below 45, impenetrable stones >60cm
	45	scl	dk rd br	oc & ye	c											
	60	scl	gr br	oc & ye	c	50+			sst							
411	22	msl	dk br			5-10	com		sst gvl & peb	none	none	2	CL & M-Rel	3b	lt	4-7° slope as above, large badger set se of this boring
	70	lms & msl bands	dk red br			10-20			sst peb							
	70+	lms & gvl				50+			sst peb							
416	26	scl	v dk br			5-10	com		sst peb	30	none	2	CL & Gr	3b	lt	7-11 slope°, complex micro-relief, glacial moraine
	45	msl	dk ye br	oc	c	10-20			sst peb							
	100	lms	lt ye br			3-5			gvl							
418	30	scl	v dk br			3-5	fw		blue shl & sst	30	60	3	CL & W	3a	md	4-7° slope, saturated below 60cm
	45	scl	ye br	lt rd	f	5-10			sst							
	60	scl	lt rd br	ye & lt rd	c	3-5			sst							
	100	scl	gr br	ye, rd & gr	c	3-5			sst							
420	29	mcl / zycl	dk gr	oc dist	c	<1%	fw		sst	0	60	4 GW	CL & W	3b	m/h	large areas of standing water, soil is gleyed to surface, water table at 40cm
	60	gritty scl	lt gr br	faint oc & ye	f	<1%			sst							
	100	c	lt gr	oc & ye	ab	<1%			sst							
421	15	hcl	v dk gr br	oc	ab	<1	fw		sst	0	0	5 GW	W & Flood Rsk	5	hvy	Probably lacustrine, very flat. flooded over majority of field, veg dominated by rush. Possibly non-Ag
	100	c	dk gr	oc, ye, ol & lt gr	ab	<1			sst							
423	26	hcl	v dk gr br	oc	m	<1	fw		sst	0	25	4	CL & W	4	hvy	Probable lacustrine origins. Below 60cm alternate narrow bands of c, cs and peat, repeating.
	60	c	dk gr	oc, ye, ol & lt gr	ab	<1			sst							
	100	banded	see comments			<1			sst							
426	24	mcl	v dk gr br	oc	c	1-3		fw	sst	24	45	4	CL & W	3b	m/h	Surface saturated with widespread standing surface water
	45	scl	dk gr	oc & gr	ab	1-3			sst							
	70	hcl/c	ye br	oc & gr	ab	3-5			sst							
	80	c	ye br	oc & gr	ab	5-10			sst							
	100	scl	dk gr br	oc, gr & ye	ab	10-20			sst							
427	26	scl/msl	v dk br			1-3	fw		sm gvl	30	75	3	CL & W	3a	md	4-7° slope, very subtle ts/ss colour change. Saturated >70cm.
	75	scl	dk rd br	lt rd br & Mn	c	1-3			sst							

BORING NUMBER	DEPTH (cm)	Texture	Soil Colour	MOTTLES		STONES				DEPTH TO GLEYING (cm)	DEPTH TO SPL (cm)	WETNESS CLASS	ALC Limitation	ALC	SOIL TYPE	COMMENTS
				Colour	Ab.	Total (%)	>2cm	>6cm	Type							
	100	gritty hcl	dk rd	lt rd br & Mn	c	1-3			sst							
431	25	mcl	v dk gr br	oc	c	1-3		fw	sst	25	25	4	CL & W	3b	m/h	Gently undulating landscape, widespread standing surface water.
	60	hcl/c	ye br	lt gr, ye & oc	ab	1-3		fw	sst							
	100	c + fine peaty inclusions	v dk gr br			1-3			sst							
432	23	org szl	v dk br			1-3	fw		sm gvl	30	45?	3/4	CL & Gr	3b	md	7-11° slope, large glacial moraine on valley floor. Dark red colours in ss makes mottling and gleying hard to see. No clear SPL
	45	mcl	dk red br	lt rd br & Mn	c	1-3			sst							
	100	scl	dk red br	lt rd br & Mn	c	1-3			sst							
433	28	scl	v dk br			1-3	fw		sm gvl	30	60+	3	CL & Gr	4	md	side of moraine, 11-18° slope, as above re colours & SPL
	85	scl	dk red br	lt rd br & Mn	c				sst							
	100	gritty hcl	dk red br	lt rd br & Mn	c				sst							
434	27	fscl	v dk br			1-3			sst & qz	35	35	4	CL & W	3b	md	flat valley bottom, prob alluvial influence.
	35	fscl	dk rd br			1-3			sst							
	55	hcl	dk rd br	ye & Mn	c	1-3			sst							
	95	bands of scl, fscl & fsl	dk rd br	Mn	f	1-3			sst							
	100+	c	dk gr	ye & oc	ab	1-3			sst							
444	30	scl	dk br			ls <1%				30		3	CL & W	3a	med	flat ground, wet, saturated with coarse sandy lenses, impenetrable blw 80cm
	80	msl	ye br	ye	f	ls <1%			sst							
448	29	fscl	br	oc	r	<1%			sst	30	45	GW / 4	CL & W	3b	m/h	very wet at surface, saturated > 65cm, NB unstable wet sand >65
	45	mcl	lt gr	oc & ye	c											
	65	hcl	dk gr	oc & ye	ab											
	100	msl/lms	dk gr	oc & ye	ab											
449	26	msl	dk br			3-5			gvl	30	60	3	CL & W	3a	lt/m	4-7° slope, subsoil too dark red to see mottles. Close to stream on the edge of the flood plain.
	60	msl	rd br	oc	c	1-3			sst							
	85	scl	dk rd br	too red to tell		1-3			sst							
450	30	scl	br	oc	f	<1%				30	not found	GW / 3	CL & W	3a	alluv	Impenetrable at 45cm. Flat floodplain, large areas of standing water
	45	fscl	lt gr	ye, lt gr & oc	c											
453	32	msl	vr dk br			<1%				30	none	3	CL & W	3a	md	Slightly raised area in comparison to rest of field
	60	msl > scl blw 60cm	rd br	pale rd & lt br	c	5-10%			ssd							
454	35	lms	dk br			<1%			gvl	35	none	GW / 3	CL & W	3a	lt	Slightly undulating with standing water in low lying area wet below 50cm
	90	fsl/fscl	dk rd br	black Mn	c											
	100	lfs	lt br													
456	28	zycl	dk rd br			<1	r		sst & qz	28	40	4 GW	CL, W & Flood Risk	3b	alluv	Flood plain. Common, localised flooding and surface ponding, sev gleyed / permanently waterlogged below 70, Ground Water
	40	mcl	rd ye	oc	c	1-3			sst							
	70	hcl	ye br	oc, gr, rd, Mn	ab	1-3			sst							
	100	fscl	gr			1-3			sst							
465	32	org szl	v dk br			1-3	fw		sst	60	60?	3	CL & W	3a	lt	near flat, close to the road. Dark reddish colours in ss make mottling hard to see
	60	lms	pale rd			1-3			sst							
	100	lms / msl	pale rd	dk rd br streaks	f	1-3			sst							
468	30	org szl	v dk br			1-3	fw		sst	30	60	3	CL & W	3a	lt/m	4-7° slope

BORING NUMBER	DEPTH (cm)	Texture	Soil Colour	MOTTLES		STONES			DEPTH TO GLEYING (cm)	DEPTH TO SPL (cm)	WETNESS CLASS	ALC Limitation	ALC	SOIL TYPE	COMMENTS	
				Colour	Ab.	Total (%)	>2cm	>6cm								Type
	60	msl	pale rd	dk rd br	f	3-5			sst							
	100	scl	pale rd	dk rd br	ab	3-5			sst							
470	32	lms	dr br			5-10	com		sst, grvl	none	none	1	CL	3a	lt	Disturbed, severe micro relief interspersed with tarmac/concrete
	60	lms	lt rd			5-10			sst							
475	26	org msl	v dk br			3-5	fw		sst, grvl	none	none	1	CL	3a	lt	Top of hill, moderately severe micro-relief, impenetrable stone at 60cm.
	60	lms/msl	rd br			3-5			sst							
478	28	org lms	v dk br			1-3	r		sst	30	80	3	CL, W & Gr	4	lt	Limited by severe slope, 11-18° although farmer is clearly spreading slurry. Faint mottles in lower SS barely visible due to red colour.
	80	lms	lt br	oc & gr	m	1-3			sst							
	100	scl + hcl	rd	gr	c	1-3			sst							
482	24	org msl	v dk br			1-3	fw	fw	gvl	50		1	CL	3a	lt	4-7° slope, very faint, subtle mottling in lower SS. Impenetrable stone at 60cm
	50	lms	ye br			3-5			gvl							
	60	lms	ds rd	oc, lt gr & Mn	f	20+			gvl							
483	28	org msl	v dk br			1-3	fw	fw	mx	40		2	CL & Gr	4	lt	Limited by severe slope, 11-18°
	100	lms	pale br	lge oc streaks & Mn/Fe	c	1-3			mx							
486	26	org msl	v dk br			5-10	fw	fw	mx	50		2	CL & Gr	3b	lt	Limited by moderate slope, 7-11°
	100	lms	dk br	oc & gr	c	3-5			sst							

BORE NO.	DEPTH (cm)	TEXTURE	Soil Colour	MOTTLES		Stones			DEPTH TO GLEYING (cm)	DEPTH TO SPL (cm)	WETNESS CLASS	ALC LIMITATION	ALC	SOIL TYPE	COMMENTS	
			Munsell	Munsell	Ab.	Total	>2cm	>6cm								Type
477	0-23	msl	7.5YR 4/3			3-5			hdsst gr	65	No SPL	II	CL	3b	Light-Medium	Check climate @ 173m AOD. Wet >60cm - likely springs in area due to permeable soils
	23-65	msl	2.5YR 5/6	7.5YR 5/3	c	5-10			hdsst							
	65-100	scl	2.5YR4/6	7.5 YR 4/4 Mn	c	5-10			hdsst ssst							
484	0-20	msl	7.5 YR 4/4			5-10			hdsst grvl	>70	No SPL	I	CL	3b	Light	Stony at base of topsoil. Check climate @168m AOD - 3b. AOD. Freely drained
	20-45	lms	7.5YR 5/8			1-2			hdsst hr							
	45-70	lms	5YR5/6	7.5YR 4/4	f	3-5			hdsst hr							
481	0-23	msl(sl o)	7.5YR 4/4			3-5			hdsst q gr	>70	No SPL	I	GR > 11°	4	Light	Variable microrelief - locally steep > 11°
	23-60	lms	7.5YR 5/6	10YR 4/4		5-10			hdsst ssst q							
	60-100	lms	7.5 YR 5/3			10-15			hdsst ssst q							
461	0-24	lms	7.5YR 4/3			3-5			hdsst gr	70	No SPL	II	CL	3a	Light-Medium	Check climate limitation @ 150 AOD
	24-45	lms	7.5YR 5/6			3-5			hdsst ssst gr							
	45-100	scl	10R 5/6	10YR5/2	c	3-5			hdsst q gr							
458	0-30	scl	10YR 3/3			3-5			hdsst hr	30	55	IV	WT	3b	Medium-Heavy	Alluvial - boring offset 15m to south due to stream. Pit nearby on exposed bank of watercourse
	30-55	scl	10YR 6/2	10YR 6/8	c	3-5			hdst hr gr							
	55-100	mcl/hcl	10YR 7/2	10 YR 6/8	ab	3-5			hdsst hr							
494	0-27	msl	5YR 3/4			3-5			hdsst grvl q	80	No SPL	I	CL	3b	Light-Medium	Check climate limitation. Boring offset 10m due to slight cable reading. Stony at base of topsoil
	27-60	msl	5YR 5/8			5-10			hdsst grvl							
	60-80	msl	5YR 6/6			5-10			hdsst grvl							
	80-100	scl	2.5 YR 5/6	2.5YR7/2		5-10			hdst grvl q							
491	0-28	msl	2.5 YR 4/3			3-5			hdsst grvl q hr	80	No SPL	I/II	CL	3b	Light-Medium	

	58-104	Rd-Br	CS	*	no	2		2								
367	0-28	Br	CSL	-	-	5		2	SBS at 46cm	10	#	2		3b	GR	
	28-46	Br	CSL	xxx	no	12		2								
368	0-36	Rd-Br	CSL	-	-	0				10	+	±		3b	MR	
	36-85	Rd-Br	CSL	o	no	0										
	85-105	Rd-Br	CS	o	no	0										
369	0-24	Br	CSL	-	-	2		2		3	+	±		3a	CL	
	24-57	Rd-Br	LCS	xx	no	1		2								
	57-103	Dk-Rd-Br	CSL	xxx	no	1		1								
370	0-25	Rd-Br	CSL	-	-	0				15	+	±		4	GR	
	25-72	Rd-Br	CSL	*	no	0										
	72-103	Rd-Br	CSL	*	no	0										
375	0-33	Rd-Br	CSL	-	-	2		2	inclusions of scl	15	#	2		4	GR	
	33-74	Rd-Br	CSL	xxx	no	5		2								
	74-102	Rd-Br	CSL	xxx	no	5		2								
377	0-28	Rd-Br	CSL	-	-	2		2	SBS at 85cm	15	#	2		4	GR	
	28-48	Rd-Br	CSL	xxx	no	3		2								
	48-85	Rd-Br	LCS	xxx	no	8		2								
379	0-23	Dk-Br	MCL	-	-	0			scl in places	15	#	2		4	GR	saturated profile from 23cm, side of steep banking above road, spring line?
	23-53	Dk-Gr-Br	CSL	xxx	no	0										
	53-102	Rd-Br	CSL	xxx	no	0										

Auger	Depth (cm)	Colour	Soil Profile								Agricultural Land Classification						Notes	
			Texture	Mottling	SPL	CaCO ₂	Stones (%)			Notes	(°)	W-C	WE grade	DR grade	Overall grade	Limit(s)		
							Total	>2cm	>6cm									Litho ¹
381	0-26 26-78 78-105	Br Br Yl-Rd	MCL CSL CSL	- xxx xxx	- no no		2 0 0			2		15	#	2		4	GR,MR	saturated profile from 26cm, disturbed? soil store? microrelief mounds, coarse grasses, side of steep banking, spring line?
395	0-31 31-43 43-102	Br Rd+Br Rd	CSL CSL CSL	- o o	- no no		2 2 5			2 2 2		8	†	1		3b	GR	
396	0-32 32-39 39-103	Br Rd+Br Rd	CSL CSL CSL	- o o	- no no		2 2 5			2 2 2		8	†	1		3b	GR	
404	0-36 36-53 53-102	Br Br+Rd-Br Rd-Br	CSL SCL SCL	- xx x	- no no		2 2 5			2 2 2		10	†	1		3b	GR	
489	0-22 22-41 41-61 61-100	Dk-Rd-Gr Dk-Rd-Gr Dk-Rd-Gr Li-Rd-Br	Fib-Pt SF-Pt Hum-Pt CSL	- x xx xxx	- no no no		0 0 0 0					15	v	5		5	WE,GR MR,CL	very variable slope, flat at boring, 15 deg 10m north, anaerobic, sphagnum prevalent
490	0-29 29-74 74-103	Br St-Br Rd-Br	CSL CSL SCL	- xx xxx	- no no		2 1 0			2 2		8	†	2		3b	CL,GR	
492	0-22 22-44 44-62 62-100	Br Gr Gr Gr	MCL HCL LCS CS	- xxx xxx xxx	- no no no		1 0 0 0			2		0	#	3a		3b	MR,GR,CL	
495	0-28 28-56 56-100	Br Rd-Br Rd-Br	CSL CSL CSL	- x xxx	- no no		0 4 0			2	nearly SBS	7	#	3a		3b	CL	
501	0-23 23-62 62-102	Br Br Br+Li-Gr	FSZL FSZL FSL	- xxx xxx	- no no		1 2 1			2 2 2		4	#	3a		3b	MR,CL,GR	variable slope

Auger	Depth (cm)	Colour	Texture	Soil Profile							Notes	Agricultural Land Classification					Notes	
				Mottling	SPL	CaCO ₂	Stones (%)			Litho ¹		pH	W-C	WE grade	DR grade	Overall grade		Limit(s)
							Total	>2cm	>6cm									
502	0-27	Rd-Gr	FSL	-	-		1			2		15	I	2		3b	MR,GR	near base of small valley
	27-100	Rd-Br	CSL	x	no		1			2								
503	0-31	Dk-Rd-Gr	MSL	-	-		2			2		7	IV	3b		3b	WE,MR	
	31-56	Rd-Gr	SCL	xxx	yes		3			2								
	56-102	Rd-Br + Li-Rd-Br	SCL	xxx	yes		5			2								
504	0-28	Dk-Rd-Gr	MSL	-	-		2			2		8	IV	3b		3b	WE,GR,MR	
	28-62	Gr	SCL	xxx	yes		3			2								
	62-102	Gr	SCL	xxx	yes		5			2								
505	0-23	Dk-Rd-Gr	MCL	-	-		1			1	light	6	IV	3b		3b	MR,WE	
	23-102	Li-Rd-Br + Li-Gr	SCL	xxx	yes		5			2								
507	0-32	Dk-Rd-Gr	SCL	-	-		2			1		15	IV	3b		3b	WE,GR	
	32-102	Rd-Br	SCL	xxx	yes		5			1								
508	0-32	Dk-Gr	SCL	-	-		1			1	evidence of gleying	5	IV	3b		3b	WE	
	32-104	Li-Rd-Br + Li-Gr	SCL	xxx	yes		2			2	sandy at depth							
511	0-28	V-Dk-Gr	MCL	-	-		1			1	organic, light cl, sandy	11	IV	3b		3b	MR,GR,WE	
	28-56	Rd-Gr	SCL	xxx	no		3			1								
	56-102	Rd-Gr	SCL	xxx	yes		1			1	saturated below 56cm							
512	0-28	Rd-Br	MSL	-	-		2			2	organic, some mottles	6	II	2		3b	CL,MR	significant microrelief undulation
	28-102	Rd-Br	CSL	xxx	no		5			1	SBS on first boring at 45cm							

BORE NO.	OS-GRID REF	OS-GRID REF	LAND USE	DEPTH (cm)	TEXTURE	Soil Colour	MOTTLES			Stones			DEPTH TO GLEYING (cm)	DEPTH TO SPL (cm)	WETNESS CLASS	ALC LIMITATION	ALC	SOIL TYPE	COMMENTS
						Munsell	Musell	Ab.	Total (%)	>2cm	>6cm	Type							
365	371861	517680	PGR	30	msl	very dark grayish brown -> light gray	ochre gray	em->15	<1			ssst			GW	GW	3b	Light	Water sitting on topsoil/subsoil boundary, saturated filling with water. Very high water table. 1m above quarry floor.
				50	lms	very light gray	light gray ochreous	fw	<1			ssst							
				100	lms	very light gray	liquid soil slurry		20-40			ssst							
371	372000	517900	PGR	32	msl	dark reddish brown			1-2			assorted hd-st, s&m, r-l	32		III	CL	3a	Light-Medium	Top of slope, near flat relief.
				82	lms	reddish brown	mn & pink	fw	<1										
				100	scl	dark reddish brown	dark gray	fw	<1										
372	372000	517800	PGR	26	scl(very sandy)	dark brown			5-10			assorted hd-st, s&m, r-l	40		III	CL	3a	Light-Medium	7-11° slope. Impenetrable stone at 45cm.
				45	msl	reddish brown	rare ochre	em->40	5-10			assorted hd-st, s&m, r-l							
												assorted hd-st, s&m, r-l							
373	372000	517700	PGR	42	msl	very dark brown	e	fw->30	1-2			ssst	42		III	CL	3a	Light	4-7° slope, deep topsoil possibly due to soil storage from adjacent historic quarry.
				60	msl	gray brown	pale brown & dark yellowish brown	em	3-5			ssst							
				80	msl & lms lenses	yellowish brown	ochre strong brown & gray	em	5-10			ssst							
				100	lms	pale brown	very pale brown, gray, light reddish brown	em	5-10			ssst							
374	372100	517638	PGR	28	msl	dark gray brown	ochre yellowish brown	em	<1			ssst	28	60	IV	CL	3b	Light-Medium	Wet at 50cm, perched water table at 60cm, loamy sand bands 50-60cm. Completed after rain storm. 1m above quarry ground level. SPL on border between 3a/3b for 220 FCD.
				50	msl	dark yellowish brown	ochre yellowish brown	m	<1			ssst							
				70	scl	dark yellowish brown	ochre yellowish brown	ab	<1			ssst							
				95	hcl & sandy lenses	dark reddish brown	pale brown		<1			ssst							
				100	ms	dark reddish brown	pale brown		<1			ssst							
376	372200	517800	F	28	msl	reddish brown			3-5			assorted hd-st, s&m, r-l	28	60	III/IV	CL	3a/3b	Light-Medium	10-15 m from road edge, located on top of shallow valley sides. Impenetrable stones at 70cm. SPL on border between 3a/3b for 220 FCD—edge mapping required.
				60	scl	light reddish brown	mn black & fe nodules	em->ab	10-20			assorted hd-st, s&m, r-l							
				70	hscl	dark reddish brown	mn	ab	20-40			assorted hd-st, s&m, r-l							

BORE NO.	OS-GRID REF	OS-GRID REF	LAND USE	DEPTH (cm)	TEXTURE	Soil Colour	MOTTLES			Stones			DEPTH TO GLEYING (cm)	DEPTH TO SPL (cm)	WETNESS CLASS	ALC LIMITATION	ALC	SOIL TYPE	COMMENTS
						Munsell	Musell	Ab.	Total (%)	>2cm	>6cm	Type							
*	y																		
378	372293	517523	PGR	30	mcl	gray brown	ocreous gray	fw	<1				<35	III	CL	3a	Light	AB located in basin of previously excavated area for quarrying, stoneless topsoil created from quarry washing. Offset 7m south due to a compacted field pathway. Mixed pale ms and dark brown at 75cm indicative of a relic topsoil. Impenetrable due to stone or bedrock at 95cm.	
				75	scl	pale gray	reddish brown & rare ochreous	cm->ab (<40)	<1										
				95	lms mixed mcl relic topsoil.	pale gray			<1										
380	372455	517561	F	28	scl	very dark brown			5-10				III	CL	3a	Medium	Undulating landscape with assorted hard stones likely originating from glacial moraine. Subsoil in topsoil in hill crests. Impenetrable due to stones at 60cm.		
				50	scl	reddish brown			5-10										
				60	scl	reddish brown			30-50										
382	372524	517364	PGR	29	msl	dark gray brown			3-5				no obvious spl	III	CL	3a	Light	Heavy slurry applications, Ab located at the top of the crest of hill, possible dune or sand hill moraine.	
				70	lms	dark yellowish brown			1-2										
				100	ms	pale brown	streaky black mn	fw>90	1-2										
383	372550	517450	PGR	36	msl	very dark brown			3-5				no obvious spl	III	CL	3a	Light	Ab located mid way up 7-11° slope. Saturated >80cm. Erosion risk due to gradient and soil texture, signs of gully where crop cover is poor.	
				50	lms	reddish brown			1-2										
				100	msl	gray brown	yellowish brown & light gray	cm	1-2										
384	372600	517600	PGR	26	zl(o)/pty	very dark brown			5-10				26	GW	Slope	4	Light	22° + slope with signs of slippage, severely poached containing water, saturated. Podzol soil	
				45	lms	light gray	ochre strong brown	cm	5-10										
				70	msl	yellowish brown			5-10										
				100	scl	yellowish brown	liquid slurry		5-10										
385	372748	517507	PGR	25	mcl	dark brown	pale brown	fw	1-2				25	60	GW	GW	3b	Medium	Adjacent to permanent wet area/ pond. Indistinct ts/ss boundary. gw at 60cm.
				60	mcl	reddish brown	ochre	fw	1-2										
				100	scl	reddish brown	yellow & pale brown	m	1-2										

BORE NO.	OS-GRID REF	OS-GRID REF	LAND-USE	DEPTH (cm)	TEXTURE	Soil Colour	MOTTLES			Stones			DEPTH TO GLEYING (cm)	DEPTH TO SPL (cm)	WETNESS-CLASS	ALC-LIMITATION	ALC	SOIL-TYPE	COMMENTS
						Munsell	Musell	Ab.	Total (%)	>2cm	>6cm	Type							
386	372778	517409	PGR	28	scl	dark gray brown	mn & fe	fw >22	1-2			ssst	22	no-obvious spl	III	CL	3a	Light-Medium	marginal scl/msl-topsoil. AB location near to field-entrance. Podzol-turning light-reddish brown-@50cm, 5cm band-of finer textured scl from 60cm and at 100cm. Wet/saturated >60 cm. Altitude 5m from 3b Climate threshold.
				100	lms	bleached light gray->pinkish gray	yellowish brown-distinct	fw	10-20			hd-ssst							
387	372900	517427	PGR	27	scl	dark reddish brown			3-5			ssst	28	75	III	CL	3a	Medium	Offset 5m to avoid historic trackway. Soil characteristics for these soils justify an ALC sub-grade 3a but they lie very close to the climatic limit to sub-grade 3b due to their altitude on the border between 3b and 3a climatic limitations.
				75	msl	reddish brown / red	pink & strong-brown & gray & mn-black	fw	3-5										
388	373000	517286	PGR	30	scl	very dark gray			3-5			ssst	40	no-obvious spl	III	CL	3a	Medium	10-15m from road-edge, 3m below road height, 7-11° slope top. Altitude 5m from 3b Climate threshold.
				70	scl	pale reddish brown	mn & fe, pale yellowybrown and light gray	cm/m	1-2			ssst							
				100	msl	pale reddish brown	yellowybrown and light gray		1-2			ssst							
389	373200	517150	PGR	30	msl (sl-e)	very dark grayish black			1-2			ssst	35	50	IV	W	3b	Light-Medium	Series of muck-heaps between previous boring. Likely podzol. Very wet at depth. Standing water across large areas and tractor-wheelings abundant.
				50	lms	light gray	yellowish brown & pale brown & grayish brown	cm	1-2			ssst							
				100	scl	dark reddish brown	yellowish brown	ab	1-2			ssst							
390	373300	517213	PGR	30	msl	dark gray brown			1-2			hd-ssst	40	60?	III	CL	3a	Light-Medium	In woodland shade -coniferous. Soil characteristics for these soils justify an ALC sub-grade 3a but they lie very close to the climatic limit to sub-grade 3b due to their altitude on the border between 3b and 3a climatic limitations.
				55	lms	dark reddish brown	mn light reddish-brown	fw	1-2			ssst							
				100	scl & sandy-lenses	light reddish brown													

BORE NO.	OS-GRID REF	OS-GRID REF	LAND-USE	DEPTH (cm)	TEXTURE	Soil Colour	MOTTLES			Stones			DEPTH TO GLEYING (cm)	DEPTH TO SPL (cm)	WETNESS-CLASS	ALC-LIMITATION	ALC	SOIL-TYPE	COMMENTS
						Munsell	Musell	Ab.	Total (%)	>2cm	>6cm	Type							
*	y																		
391	373300	517100	PGR	27	msl (sl-o)	very dark gray			1-2			ssst	35		III	CL	3a	Light-Medium	Ab located at the top of an embankments of a shallow sided valley. Surface layer is compacted, trafficked by tractors traversing to nearby muck heaps, wet underfoot and standing water across field. Abundant mottles above 60cm but no clear spl.
				75	msl	dark reddish brown	pale red and mn-black	em	1-2			ssst							
				100	scl	pale reddish brown			1-2			ssst							
392	373300	517000	PGR	27	szl (sl-o)	very dark gray			5-10			ssst	27	45	IV	W	3b	Medium-Heavy	Erosion risk due to light textured topsoil and 7-11° slope.
				40	scl	pale red	yellowish brown & light gray	em	5-10			ssst							
				100	hcl	reddish brown	strong brown & pale brown.	m	5-10			ssst							
393	373400	517200	PGR	30	msl (app sandy)	very dark brown			3-5			grvl			GW	GW	3b	Light	Saturated from 30cm.
				50	lms	gray			3-5										
				>50	liquid slurry														
394	373400	517000	PGR	27	msl (sl-o)	very dark gray			1-2			hd-ssst	60	60	III/IV	W	3a/3b	Light-Medium	Saturated at 70cm due to recent rain, temporary water table at 60cm. Clay content increasing with depth >80cm. 4-7° slope. Erosion risk as evident from rills in adjacent archeological pit run-off.
				60	lms	reddish brown			1-2			hd-ssst							
				100	scl	reddish brown	mn-black	fw	3-5			hd-ssst							
397	373520	517100	PGR	28	msl (app sandy)	very dark gray/ black			1-2			grvl			GW	GW	3b	Light	In woodland shade -coniferous- Saturated at 60cm, water table
				100	lms	pale brown	ochre large distinct	em	1-2			grvl							
399	373663	517027	PGR	26	msl	black			1-2			grvl	40		GW	GW	3b	Light-Medium	Located in woodland shade -coniferous- Saturated at 60cm, water table
				60	lms	light gray brown	brown and dark gray, fe & mn (black and strong brown)	em	1-2			grvl							
				90	msl & scl	light gray brown			1-2										
				100	scl	dark gray brown			1-2										

BORE NO.	OS-GRID REF	OS-GRID REF	LAND USE	DEPTH (cm)	TEXTURE	Soil Colour		MOTTLES			Stones			DEPTH TO GLEYING (cm)	DEPTH TO SPL (cm)	WETNESS CLASS	ALC LIMITATION	ALC	SOIL TYPE	COMMENTS
						Munsell	Musell	Ab.	Total (%)	>2cm	>6cm	Type								
*	y																			
400	373701	516728	PGR	51	msl	5yr 2.5/2				1-2			ssst	51		III	CL	3a	Light	Very dark/black topsoil with indistinguishable topsoil-subsoil boundary - flat area adjacent to warehouse development - therefore likely a flattened area of disturbance.
				100	lms	5yr 4/4	5yr 5/8	em	<1			ssst								
401	373769	516910	PGR	26	mcl/scl	dark gray brown				5-10			hd-ssst	26	35	IV	CL	3b	Medium-Heavy	7-11° slope, roots observed at 90cm.
				100	hel	dark reddish brown	gray, black mn-fe	em	5-10			hd-ssst								
403	373805	516696	PGR	31	scl	5yr 2.5/2	7.5yr 5/6	fw	1-2				ssst hdsst	41	41?	III or IV	CL	3a or 3b	Light-Medium	Offset 5m due to existing gravel field entrance. SLP confirmation requires pit for structural identification.
				41	msl → lms	5yr 4/4			1-2			ssst hdsst								
				80	scl	5yr 4/4	7.5yr 5/8 & 5/3	m	1-2			ssst hdsst								
				90	msl	5yr 4/4			1-2			ssst hdsst								
406	373920	516820	PGR	29	msl	dark grayish brown				3-5			hd-ssst	40	40	IV	GW	3b	Medium-Heavy	Located on 3-4m raised plateau above and 10-15m from carriageway, base of 7-11° slope. Wet from 30cm.
				40	scl	pinkish gray				3-5										
				100	hel	pinkish gray	black mn & fe, strong brown ochre	em → ab												
407	374000	516700	PGR	20	scl/msl	5yr 2.5/2	7.5yr 5/8	fw	1-2				ssst hdsst			GW	CL	3a	Medium	Ground water at 60cm, increasing clay content with depth. Indistinct topsoil/subsoil boundary.
				100	scl	5yr 4/4			3-5			ssst hdsst								
410	374200	516500	PGR	25?	5yr 3/3	scl				1-2			ssst	85		III	CL	3b	Light-Medium	Just off crest of the hill, base of 4-7° slope of hummocky landscape. Topsoil/subsoil boundary very indistinct. Moderated to 3b due to FCD >225 at 171m AOD.
				100	5yr 3/3	msl-scl	mn > 85 cm	fw	3-5			ssst								
412	374286	516585	PGR	25	scl	7.5yr 4/2	7.5yr 4/6	fw	1-2				ssst	49	70	III	W	3a or 3b	Medium	ALC grade debated due to 160m AOD on boundary of FCD >225
				49	scl	7.5yr 4/3	7.5yr 4/4 & 5/4	fw	3-5			ssst								
				70	scl	7.5yr 2/2	7.5yr 5/4	em	3-5			ssst								
				100	scl	5yr 5/6	5yr 5/8	ab	1-2			ssst								

BORE NO.	OS-GRID REF	OS-GRID REF	LAND USE	DEPTH (cm)	TEXTURE	Soil Colour		MOTTLES		Stones			DEPTH TO GLEYING (cm)	DEPTH TO SPL (cm)	WETNESS CLASS	ALC LIMITATION	ALC	SOIL TYPE	COMMENTS
						Munsell	Musell	Ab.	Total (%)	>2cm	>6cm	Type							
413	374300	516790	PGR	10	zel	dark grayish	ochre	cm faint	<1			ssst	10	35 (10)	V	GW	4	Heavy	Offset 10m south due to abundant wetness and rush area. Saturated from the surface, rushes dominate vegetation. Wet slurry in top 10cm. Receiving site in low lying basin. Impenetrable at 45cm due to rock.
				40	hel	dark grayish gley 1			<1		ssst								
				50	e	dark grayish gley 1			<1		ssst								
				100	scl wth pty inclusions <70cm	very light gray & dark brown			5-10		ssst								
414	374300	516700	PGR	29	scl	grayish brown			3-5		hd-ssst	29		III	Slope	4	Medium	22°+ slope limited.	
				80	scl	light grayish brown	light gray, yellowish brown	fw	3-5		hd-ssst								
415	374318	516511	PGR	28	scl	7Yr 3/2			1-2			ssst			III	CL	3a	Light-Medium	Mid 4-7° slope, faint indistinct dark greyish brown mottles but freely draining within 1m.
				100	msl/lms	7Yr 4/6			3-5		ssst								
417	374296	516308	PGR	25	msl (sl-e)	5YR 3/3			<1			ssst			III	CL	3a	Light	Offset 10m due to possible disturbance and field gateway on 3-4° slope.
				100	msl -> lms	5YR 5/6			3-5		ssst								
419	374400	516500	PGR	30	mel	2.5Y 4/1	7Yr 5/8 & mn	m	<1			ssst	30	35?	GW	GW	5	Medium	Adjacent to area of field dominated by rush. Very wet underfoot and poached. Surface water logging related to contours, AB at base of 3-4° slope. Clay content increasing with depth, likely clay below. Bright colourful olive green mottles.
				70	scl	7Yr 5/8	5Y 6/6	ab	3-5		ssst								
				100	scl	5Yr 5/6	5Yr 6/3	ab	<1		ssst								
428	374600	516200	PGR	27	mzel	2.5Y 3/2			<1			ssst	30	40	GW	F	4	Medium-Heavy	Adjacent to field gateway. Ground water from 50-60cm, distinct abundantly mottled and gleyed. Increasingly yellowish brown above 80cm.
				100	mel -> e	7.5YR 5/8	7.5YR 6/8 & 5/1 & 7/2 & 7/6	ab	<1		ssst								
425	374500	516200	marsh	29	mel (sl-e)	2.5yr 3/2	saturated		<1			ssst	?GW	?GW	GW	F	5	Medium	Ground water affected beyond 50cm, Saturation disguising any mottles. Positioned in area of field dominated by rushes and standing water.
				95	fscl	2.5yr 5/2	saturated		<1		ssst								
				100	scl	2.5yr 4/6	saturated		<1		ssst								

BORE NO.	OS-GRID REF	OS-GRID REF	LAND USE	DEPTH (cm)	TEXTURE	Soil Colour		MOTTLES			Stones			DEPTH TO GLEYING (cm)	DEPTH TO SPL (cm)	WETNESS CLASS	ALC LIMITATION	ALC	SOIL TYPE	COMMENTS
						Munsell	Musell	Ab.	Total (%)	>2cm	>6cm	Type								
424	374500	516300	PGR	24	hel	7.5Yr 4/3	7.5Yr 5/8	em	<1			ssst	24	35	IV	F	4	Heavy	Standing water in field, gleying between 24-35 but absent below, common ochre mottling in sandier red matrix.	
				35	hel	7.5Yr 5/2	gley 7/5pb & 7.5YR 7/8	ab	<1		ssst									
				100	hel/c/sc	10Yr 6/4	10Yr 5/8	m	<1		ssst									
422	374500	516500	PGR	25	hel	10Yr 4/3	7.5Yr 4/6	em	<1			ssst	26	35? Definitely at 55	IV	W	4	Medium-Heavy	Standing water in field, wet under foot. Obvious ground water not encountered.	
				40	hel	10Yr 5/3	7.5Yr 4/6	em	<1		ssst									
				55	sel	10Yr 5/3	2.5Yr 6/8 7.5Yr 5/6 & 6/2	m	<1		ssst									
				80	e with sandy lenses	10Yr 4/3	gley 7/5pb & 2.5YR 5/8	ab	<1		ssst									
				100	sel	10Yr 4/3	2.5Yr 6/8	em	<1		ssst									
429	374617	516421	PGR	28	mcl	2.5Y 3/2			1-2			28	36	IV	W	3b	Medium-Heavy	Offset due to field wet patch likely a result of adjacent archeology workings. Gleyed lacustrine clay at depth.		
				55	hel	2.5Y 4/2	2.5Y 5/6 & 7/3	ab	1-2											
				75	sel	10Yr 5/6	10Yr 7/6	m	3-5		gvl									
				100	e	gley 1.5/10y	gley 1.5/10y	ab	<1											
430	374700	516500	PGR	30	hel	10Yr 5/3	10Yr 4/6	ab	<1			15	35	IV	CL & F	4	Heavy	Moderately poached at surface, adjacent to rush vegetation and farm yard entrance		
				60	hel > e	10Yr 5/3	10Yr 6/8 & 5/1	ab	<1		ssst									
				100	pty l > p	5.5Yr 2.5/2			<1		ssst									
435	374790	516289	PGR	20	sel	7.5Yr 3/3			1-2			20		III	CL	3a	Medium	Clay content increases with depth. Around topsoil/Subsoil boundary navy blue and shiny black concretions, coal and basalt. Sandy lenses throughout. Mid 4-7 slope.		
				60	sel	5Yr 3/3	bleck	fw	3-5		lst									
436	374800	516400	PGR	30	mcl	7.5Yr 3/2	10Yr 4/6	em	<1			25		III	CL	3a	Medium	Better drained, red sandy variant subsoil		
				100	sel	7.5Yr 5/3	7.5Yr 5/6	em	<1		ssst									
437	374800	516200	PGR	25	fszl	7.5Yr 3/3			1-2			25		III	CL	3a	Medium	Clay content increasing up to 80cm, greater proportion of sandy lenses 80-90 cm.		
				100	sel	5Yr 4/4	7.5Yr 3/2 & mn	fw	3-5		lst									
440	374890	516290	PGR	24	(e) sel	v dk b	mn	em	1-2			45		II	CL	3a	Medium	Common manganese concretions at base of topsoil boundary. Impenetrable due to stones stone @55.		
				45	sel	reddish brown			3-5		ssst									
				55	mcl	reddish brown	dark greyish	fw	3-5		ssst									

BORE NO.	OS-GRID REF	OS-GRID REF	LAND-USE	DEPTH (cm)	TEXTURE	Soil Colour	MOTTLES			Stones			DEPTH TO GLEYING (cm)	DEPTH TO SPL (cm)	WETNESS-CLASS	ALC-LIMITATION	ALC	SOIL-TYPE	COMMENTS
						Munsell	Musell	Ab.	Total (%)	>2cm	>6cm	Type							
*	y																		
439	374885	516439	PGR	30	mcl	reddish brown	ochre-red & n<15	fw	1-2			hd-ssst	40	80	III	Slope	3b	Medium	Located at base of 11-16° slope
				80	mcl	reddish brown	mn faint pink and pale brown	fw	1-2		hd-ssst								
				100	mcl	pale red	mn faint pink and pale brown	em	1-2		hd-ssst								
443	374900	516000	PGR	19	scl				<1			ssst	25	40	IV	W	3b	Medium	Adjacent to wet area of standing water parallel to field boundary.
				40	mcl	7.5YR 4/3	mn & 7.5YR 6/6	fw	<1		ssst								
				60	hcl	7.5YR 6/6	mn & 7.5YR 5/8	em	<1		ssst								
				100	fsl				<1		ssst								
445	375000	516000	PGR	22	light scl	7.5Yr 3/3	7.5Yr 5/6 & 2/5 & mn	fw	1-2			ssst	20	45	III	CL	3a	Medium	SPL unlikely - pit confirmation. Soft weathered sandstones throughout forming ochreous mottling around sandy lenses.
				80	scl	7.5Yr 4/3 5YR 5/6	7.5Yr 6/8 & 5/1	com	1-2		ssst								
				100	fscl	5YR 5/6	2.5YR 5/8	fw	1-2		ssst								
447	375100	516065	PGR/ playing field	20	scl	7.5YR 4/3	7.5YR 4/6	fw	1-2			ssst	<10		GW	F	3a?	Medium	Ochreous mottling around roots in top 10cm, absent in the remainder of the topsoil. Saturated gw (?) below 55cm, mottles undistinguishable. The boundary between topsoil and subsoil indistinct.
				55	scl	10Yr 4/4	7.5YR 4/3	fw	1-2		ssst								
				80	scl	10Yr 4/4	Saturated	Saturated	10-20		ssst								
452	375200	515900	PGR/ playing field	28	fscl	7.5YR 4/4			1-2			ssst	60		III	CL	3a	Medium	Better drained profile field wet underfoot with standing water in places.
				100	fscl -> fsl	7.5YR 4/4	7.5YR 3/1 & 5/8	fw	1-2		ssst								
455	375300	515900	PGR	33	scl	10YR 5/1	5YR 4/6	em	1-2			hdsst	<10	35	IV	GW	3b	Medium	Standing water in historic wheelings. Ochreous mottling around roots in topsoil.
				100	mcl appr. sandy	10YR 6/6	2.5Y 7/1 & 5YR 4/6	m	1-2		hdsst								
457	375300	515600	PGR	26	scl	7.5YR 4/3			<1			ssst	30		III	CL	3a	Medium	Well drained to depth, faint mottling indistinct against red matrix. Raised sandier area adjacent to disused railway.
				60	msl	5YR 5/8			<1		ssst								
				100	scl	5YR 5/8	2.5YR 4/6	fw	<1		ssst								
460	375500	515700	PGR	30	scl	7.5 Yr 2.5/2			3-5			hdsst-ssst	50	none	III	CL	3a	Medium	Clay lenses above 90cm. Pale sandier variant immediately above.
				50	scl	5Yr 5/8	5YR 2.5/1	fw	3-5		hdsst-ssst								
				80	msl -> lms	5Yr 6/8			3-5		hdsst-ssst								
				100	scl	5Yr 5/8			3-5		hdsst-ssst								

BORE NO.	OS-GRID REF	OS-GRID REF	LAND USE	DEPTH (cm)	TEXTURE	Soil Colour		MOTTLES			Stones			DEPTH TO GLEYING (cm)	DEPTH TO SPL (cm)	WETNESS CLASS	ALC LIMITATION	ALC	SOIL TYPE	COMMENTS
						Munsell	Musell	Ab.	Total (%)	>2cm	>6cm	Type								
*	y																			
466	375600	515600	PGR	30	scl	7.5Yr 3/2			3-5			hdsst-ssst	40	none	III	CL	3a	Medium	Red matrix-digressing mottles, clay content increasing with depth.	
				70	scl	2.5YR 4/8			5-10			hdsst-ssst								
				100	mcl appr. sandy	2.5YR 4/8	5YR 6/6 & 5YR 2.5/1	em	3-5			hdsst-ssst								
469	375800	515500	PGR	15	scl	5YR 3/4			10-15	5-10	1-2	hd-r		none	III	MR	5	Medium	Disturbed by MOD-activity, poor agricultural use limited to grazing. Impenetrable at 60cm due to stones.	
				60	scl	2.5YR 4/8	7YR 2.5/1	fw	10-15	5-10	1-2	hd-r								
473	376010	515435	PGR	23	scl	5YR 3/3			3-5			hd-r	55	none	III	CL	3b	Medium	Confirm altitude, 3-4° slope.	
				55	scl	2.5Y 5/6	7YR 5/3	fw	5-10			hd-r								
				100	scl	2.5Y 5/6	5YR 6/8	m	5-10			hd-r								
474	376100	515380	PGR	23	scl	5YR 3/3			3-5			hd-r		none	III	CL	3b	Medium	Saturated at 60cm, evidence of a possible spring line.	
				100	msl	2.5Y 5/6			3-5			hd-r								
476	376200	515200	PGR	30	msl				5-10			hdsst-ssst	30	none	III	Gradient	4	Light	Marginal climatic limitation.	
				100	msl	10YR 6/8	7.5Yr 5/8 & 5/3	em	5-10			hdsst-ssst								
479	376313	515053	PGR	20	mzel app-s	7.5 Yr 3/4			1-2			hd-r		none	III	FR	3b	Light-Medium	AB located in a wet area of the flat field -standing water. ALC Moderated due to flood risk. Farmer says rarely floods, current water present for more than 4 days.	
				50	scl	7.5 Yr 5/6			1-2			hd-r								
				100	msl/lms	7.5 Yr 5/4			3-5			hd-r								
480	376400	515265	PGR	23	msl				3-5			hd-r	45	none	III	CL	3b	Light	Red clay lenses between 51-56cm -ungleyed.	
				51	msl	2.5Y 5/6			3-5			hd-r								
				100	msl	2.5Y 5/6	o-g	em	3-5			hd-r								
485	376600	515100	Rough	27	scl				1-2			hd-r	54	none	III	CL	3b	Medium	Top of steep embankment from previous quarry (?). Proportion of fine sediment increases above 80cm.	
				54	scl	2.5Y 5/6			1-2			hd-r								
				100	scl	2.5Y 5/6	2.5Y 5/8 & 5/2	em	1-2			hd-r								
487	376700	515100	Marsh	60	pty l/ o mzel				1-2			hd-r		none	GW	MR	5	Peat	AB located on a rough grazing plateau at the base of steep slope, possible historic quarry and adjacent to marsh land and water course. Area dominated by rushes. Soil saturated from surface.	

BORE NO.	OS-GRID REF	OS-GRID REF	LAND USE	DEPTH (cm)	TEXTURE	Soil Colour	MOTTLES		Stones			DEPTH TO GLEYING (cm)	DEPTH TO SPL (cm)	WETNESS CLASS	ALC LIMITATION	ALC	SOIL TYPE	COMMENTS	
						Munsell	Musell	Ab.	Total (%)	>2cm	>6cm								Type
496	377100	515000	PGR	31	msl	dark brown			1-2			hd-st	40?		III	FR	3b	Light	Lower subsoil, streaky yellow sand mixed with upper subsoil reddish brown, unlikely true mottling rather mixing of bleached sand and upper subsoil. Impenetrable at 75cm due to stone. Ab located to river bank and EA flood mapping show location within high risk flood zone – Flood risk and groundwater effects have been deemed sufficient to limit these soils to sub grade 3b.
				52	msl > lms	dark reddish brown	light reddish brown, mn, yellow	fw	1-2			hd-st							
				75	lms	pale brown	yellowish white, pale yellow, yellowish brown	ab	1-2			hd-st							
497	377188	515082	PGR	29	szl (sl-o)	dark brown			1-2			hd-st	40	III/Gw	GW	3a	Light	Wet above 55cm, saturated at 80cm – GW, on flat area adjacent to Lowgill Beck water course. Small rounded gravels flood plain? Impenetrable due to stones at 80cm. Flood risk and groundwater effects may be sufficient to limit these soils to sub grade 3b in some	
				55	lms	brown	pale brown, mn, pale red	em	1-2			hd-st							
				80	lms/ms	dark reddish brown	yellowish brown, yellow	em	5-10			hd-st							
498	377200	515200	PGR	31	scl	brown			1-2			hd-st	70	III	CL	3a	Light	Flat plateau on top of slope above flood plain adjacent to road. Grade 2 soils, 3a climate. Soil characteristics for these soils justify an ALC sub grade 3a but they lie very close to the altitudinal climatic limit to sub grade 3b.	
				70	msl	reddish brown			3-5			hd-st							
				100	fsl	pale reddish orange brown	mn	fw	3-5			hd-st							

BORE NO.	OS-GRID REF	OS-GRID REF	LAND USE	DEPTH (cm)	TEXTURE	Soil Colour	MOTTLES			Stones			DEPTH TO GLEYING (cm)	DEPTH TO SPL (cm)	WETNESS CLASS	ALC LIMITATION	ALC	SOIL TYPE	COMMENTS
						Munsell	Musell	Ab.	Total (%)	>2cm	>6cm	Type							
499	377300	515200	PGR	29	scl/zcl	dark brown			1-2			assorted-sm-hd-st	50		III	CL	3a	Light-Medium	Adjacent to water-course, not within-mapped flood risk-zone. Soil-characteristics for these soils justify an ALC sub-grade 3a but they lie very close to the altitudinal climatic limit to sub-grade 3b.
				70	msl/scl	dark reddish-brown	mn	fw	3-5			assorted-sm-hd-st							
				100	scl & sandy-lenses	pale reddish-brown	mn	fw	3-5			assorted-sm-hd-st							
500	377400	515200	PGR	15	mzcl	dark grayish brown			1-2			ssst	15	40	IV	CL	3b	Medium-Heavy	Adjacent to wet-area of field-entrance flat area-of field at base of 7-11° slope, hcl high-sand content, sandy clay gleyed at depth.
				40	scl & clay bands	grayish brown	dark gray, pale-brown	em	1-2			ssst							
				70	hcl	light grayish brown	gray, yellowish-brown, yellow	ab	1-2			ssst							
				100	clay with sandy-lenses	light gray	ochre and red	fw	1-2			ssst							
506	378050	515250	PGR	27	scl (sl-o)	dark brown	ochre	fw >20	3-5			hd-st	27	40	IV	CL+W	3b	Medium-Heavy	7-11° slope of south-of valley. Mottles-increasing in distinctness with depth.
				100	hcl	pale yellowish brown	yellow, light gray, mn, ochre strong brown	ab	10-20			hd-st							
509	378267	515195	PGR	25	mcl	dark brown			3-5			hd-st	35	50	IV	CL+W	3b	Medium-Heavy	Seasonal SPL if present. HCL-contained high sand content.
				50	hcl	pale reddish brown	pale brown, mn-black	em	3-5			hd-st							
				100	hcl	pale red	light red, yellow, mn	em	1-2			hd-st							
510	378469	515168	PGR	25	scl	dark reddish brown			<1			hd-ssst			III	CL+W	3a	Medium	Recently reseeded and annuals-sprayed off. Indistinct ts/ss-boundary, reduction in OM content at 25cm, small increase in paleness with depth. Grade 1 soil limited to 3b by climate.
				100	scl	dark brown			<1			hd-ssst							
513	378688	515018	PGR	29	scl	dark brown			1-2			hd-st	29	35	IV	CL+W	3b	Medium	Clay bands-containing abundant ochreous and manganese-mottling. Impenetrable at 70cm due to stones.
				70	scl & clay bands	reddish brown	yellow & mn black	ab	1-2			hd-st							

BORE NO.	OS-GRID REF	OS-GRID REF	LAND-USE	DEPTH (cm)	TEXTURE	Soil Colour	MOTTLES		Stones			DEPTH TO GLEYING (cm)	DEPTH TO SPL (cm)	WETNESS-CLASS	ALC-LIMITATION	ALC	SOIL-TYPE	COMMENTS	
						Munsell	Musell	Ab.	Total (%)	>2cm	>6cm								Type
514	378754	514932	PGR	30	szl (st-o)	dark reddish brown			3-5			hd-st	30	50	IV	CL+W	3b	Medium-Heavy	10m from road edge 5m above road level, road cut-out?
				50	mcl	dark red brown	mn & pale brown & light gray	m	3-5			hd-st							
				100	hcl	dark red brown	mn & pale brown & light gray	ab	5-10			hd-st							
515	378910	514839	PGR	30	e-zcl	very dark gray / black			<1			hd-st	65		Gw or III	CL+GW	3b	Medium	Likely flood plain due to unmottled surface and deep dark stoneless layers. Gw at 70cm. No flood risk according to EA flood models.
				65	fscl	dark brown			<1										
				100	scl	brown	pale brown i distinctly	fw	1-2			sm-r-gvl							

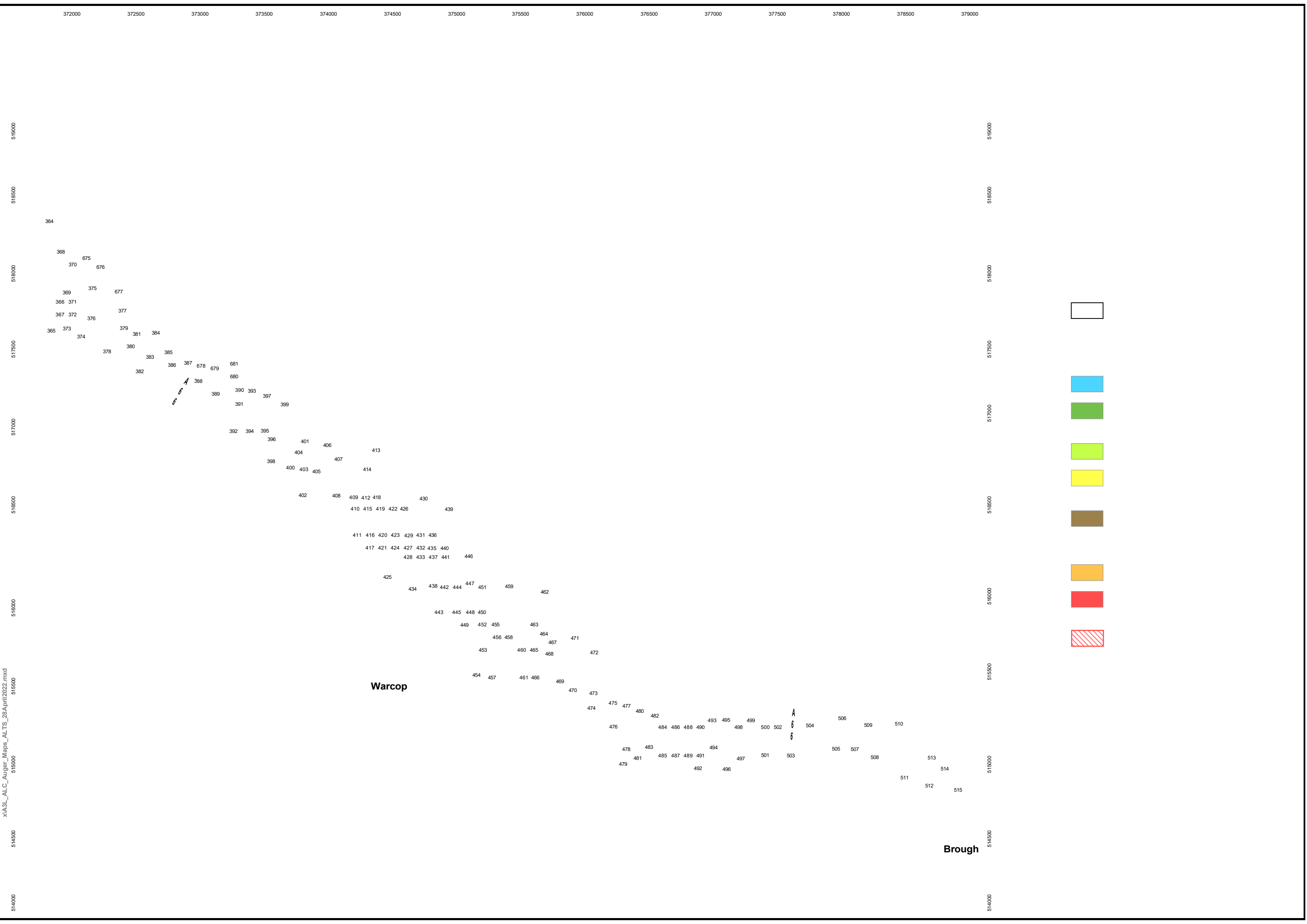
BORING-NUMBER	NGR	LAND-USE	DEPTH (cm)	Texture	Soil Colour	MOTTLES		STONES			DEPTH-TO-GLEYING (cm)	DEPTH-TO-SPL (cm)	WETNESS-CLASS	ALC Limitation	ALC	SOIL-TYPE	COMMENTS	
						Colour	Ab.	Total (%)	>2cm	>6cm								Type
398	NY73580, 16770	PGR	32	slt-org-mel	v-dk-br	ec >24cm	e	1-3		fw	set	35	35	4	CL & W	3b	md	Flattish, close to factory site boundary. Upper ss compact and SP, (ts very wet and ss only moist)
			80	sel	dk-rd-br	ye, rd & gr	e->ab	3-5		set								
			100	e	dk-red-br	ye, rd & gr	ab	1-3		set								
402	NY 673793, 16642	PGR	30	slt-org-mel	v-dk-br		e	3-5		fw	set	30	no clear SPL	2	CL	3a	lt/md	Subsoil relatively well drained
			60	mel	dk-rd-br	ye, rd & gr	e	3-5		set								
			100	mel	rd-br	ye rd & gr	e->ab	3-5		set								
405	NY 73897, 16718	PGR	35	slt-Org.-mel	v-dk-br			1-3		fw	set	35	no clear SPL	2	CL	3a	md	4-7° slope, close to the reinforced, (stone gabione) road embankment.
			90	mel & sel bands	v-dk-rd-br	gr & lt rd	ab	5-10		set								
			100	mel & gvl	v-dk-rd-br			50+		set & gz								
408	NY 74099, 16604	PGR	27	sel	dk-br			5-10%	com		set	30	45	4	CL, W & Gr	4	md	impenetrable below 80cm, 11-18° slope
			45	sel	yel-br	lt br & lt gr	f	3-5%		set								
			80	hel	ple-red-br	ye, lt rd & Mn/Fe	e	5-10%		set								
409	NY 74190, 16590	PGR	20	sel/mel	dk-br			5-10	com		set	25	no clear SPL	2	CL & Gr	3b	md	7-11 slope°, saturated SS below 45, impenetrable stones >60cm
			45	sel	dk-rd-br	ec & ye	e											
			60	sel	gr-br	ec & ye	e	50+		set								
411	NY 74202, 16405	PGR	22	mel	dk-br			5-10	com		set gvl & peb	none	none	2	CL & M Rel	3b	lt	4-7° slope as above, large badger set se of this boring
			70	lms & mel bands	dk-red-br			10-20		set peb								
			70+	lms & gvl				50+		set peb								
416	NY 74300, 16406	PGR	26	sel	v-dk-br			5-10	com		set peb	30	none	2	CL & Gr	3b	lt	7-11 slope°, complex micro-relief, glacial moraine
			45	mel	dk-ye-br	ec	e	10-20		set peb								
			100	lms	lt-ye-br			3-5		gvl								
418	NY 74374, 16590	PGR	30	sel	v-dk-br			3-5	fw		blue-shl & set	30	60	3	CL & W	3a	md	4-7° slope, saturated below 60cm
			45	sel	ye-br	lt rd	f	5-10		set								
			60	sel	lt-rd-br	ye & lt rd	e	3-5		set								
			100	sel	gr-br	ye, rd & gr	e	3-5		set								
420	NY 74400, 16405	PGR	29	mel / zycl	dk-gr	ec-dist	e	<1%	fw		set	0	60	4 GW	CL & W	3b	m/h	large areas of standing water, soil is gleyed to surface, water table at 40cm
			60	gritty sel	lt-gr-br	faint ec & ye	f	<1%		set								
			100	e	lt-gr	ec & ye	ab	<1%		set								
424	NY 74401, 16302	PGR/ RUSHES	15	hel	v-dk-gr-br	ec	ab	<1	fw		set	0	0	5 GW	W & Flood-Rsk	5	hvy	Probably lacustrine, very flat, flooded over majority of field, veg dominated by rush. Possibly non-Ag
			100	e	dk-gr	ec, ye, ol & lt-gr	ab	<1		set								
423	NY 74506, 16415	PGR	26	hel	v-dk-gr-br	ec	m	<1	fw		set	0	25	4	CL & W	4	hvy	Probable lacustrine origins. Below 60cm alternate narrow bands of e, ec and peat, repeating.
			60	e	dk-gr	ec, ye, ol & lt-gr	ab	<1		set								
			100	banded	see comments			<1		set								

BORING-NUMBER	NGR	LAND USE	DEPTH (cm)	Texture	Soil Colour	MOTTLES		STONES			DEPTH TO GLEYING (cm)	DEPTH TO SPL (cm)	WETNESS CLASS	ALC Limitation	ALC	SOIL-TYPE	COMMENTS	
						Colour	Ab.	Total (%)	>2cm	>6cm								Type
426	NY 75495, 16500	PGR	24	mel	v-dk-gr-br	ee	e	1-3		fw	set	24	45	4	CL & W	3b	m/h	Surface saturated with widespread standing surface water
			45	sel	dk-gr	ee & gr	ab	1-3			set							
			70	hel/c	ye-br	ee & gr	ab	3-5			set							
			80	e	ye-br	ee & gr	ab	5-10			set							
			100	sel	dk-gr-br	ee, gr & ye	ab	10-20			set							
427	NY 74602, 16310	PGR	26	sel/mel	v-dk-br	lt rd-br & Mn	e	1-3	fw		em-gvl	30	75	3	CL & W	3a	md	4-7° slope, very subtle ts/ss colour change. Saturated >70cm.
			75	sel	dk rd-br	lt rd-br & Mn	e	1-3			set							
			100	gritty hel	dk rd	lt rd-br & Mn	e	1-3			set							
431	NY 74706, 16404	PGR	25	mel	v-dk-gr-br	ee	e	1-3		fw	set	25	25	4	CL & W	3b	m/h	Gently undulating landscape, widespread standing surface water.
			60	hel/c	ye-br	lt gr, ye & ee	ab	1-3			set							
			100	e + fine peaty inclusions	v-dk-gr-br			1-3			set							
432	NY 4691, 16300	PGR	23	org-szl	v-dk-br	lt rd-br & Mn	e	1-3	fw		em-gvl	30	45?	3/4	CL & Gr	3b	md	7-11° slope, large glacial moraine on valley floor. Dark red colours in ss makes mottling and gleying hard to see. No clear SPL
			45	mel	dk rd-br	lt rd-br & Mn	e	1-3			set							
			100	sel	dk rd-br	lt rd-br & Mn	e	1-3			set							
433	NY 74702, 16210	PGR	28	sel	v-dk-br	lt rd-br & Mn	e	1-3	fw		em-gvl	30	60+	3	CL & Gr	4	md	side of moraine, 11-18° slope, as above re colors & SPL
			85	sel	dk rd-br	lt rd-br & Mn	e				set							
			100	gritty hel	dk rd-br	lt rd-br & Mn	e				set							
434	NY 74702, 16102	PGR	27	fsel	v-dk-br			1-3			set & qz	35	35	4	CL & W	3b	md	flat valley bottom, prob alluvial influence.
			35	fsel	dk rd-br			1-3			set							
			55	hel	dk rd-br	ye & Mn	e	1-3			set							
			95	bands of scl, fsel & fsel	dk rd-br	Mn	f	1-3			set							
			100+	e	dk-gr	ye & ee	ab	1-3			set							
444	NY 75000, 16100	PGR	30	sel	dk-br			ls <1%				30		3	CL & W	3a	med	flat ground, wet, saturated with coarse sandy lenses, impenetrable blw 80cm
			80	mel	ye-br	ye	f	ls <1%			set							
448	NY 75097, 16007	Amenity grass	29	fsel	br	ee	r	<1%			set	30	45	GW/4	CL & W	3b	m/h	very wet at surface, saturated > 65cm, NB unstable wet sand >65
			45	mel	lt-gr	ee & ye	e											
			65	hel	dk-gr	ee & ye	ab											
			100	mel/lms	dk-gr	ee & ye	ab											
449	NY 75105, 15900	PGR	26	msl	dk-br			3-5			gvl	30	60	3	CL & W	3a	lt/m	4-7° slope, subsoil too dark red to see mottles. Close to stream on the edge of the flood plain.
			60	mel	rd-br	ee	e	1-3			set							
			85	sel	dk rd-br	too red to tell		1-3			set							
450	NY 75200, 16000	Amenity grass	30	sel	br	ee	f	<1%				30	not found	GW/3	CL & W	3a	alluv	Impenetrable at 45cm. Flat floodplain, large areas of standing water
			45	fsel	lt-gr	ye, lt-gr & ee	e											
453	NY 75196, 15701	PGR	32	msl	vr-dk-br			<1%				30	none	3	CL & W	3a	md	Slightly raised area in comparison to rest of field
			60	msl > scl blw 60cm	rd-br	pale rd & lt br	e	5-10%			sed							

BORING-NUMBER	NGR	LAND-USE	DEPTH (cm)	Texture	Soil Colour	MOTTLES		STONES			DEPTH TO-GLEYING (cm)	DEPTH TO-SPL (cm)	WETNESS-CLASS	ALC Limitation	ALC	SOIL-TYPE	COMMENTS	
						Colour	Ab.	Total (%)	>2cm	>6cm								Type
454	NY75203, 15604	PGR	35 90 100	lms fel/fecl lfs	dk-br dk-rd-br lt-br	black Mn	e	<1%			gvl	35	none	GW/3	CL & W	3a	lt	Slightly undulating with standing water in low lying area wet below 50cm
456	NY 75308, 15803	PGR	28 40 70 100	zyl mel hel fecl	dk-rd-br rd-ye ye-br gr	ee ee, gr, rd, Mn	e ab	<1 1-3 1-3 1-3	f		est & qz est est est	28	40	4 GW	CL, W & Flood Risk	3b	alluv	Flood plain. Common, localised flooding and surface ponding, sev gleyed / permanently waterlogged below 70, Ground Water
465	NY 75600, 15700	PGR	32 60 100	org-szl lms lms / mel	v-dk-br pale-rd pale-rd			1-3 1-3 1-3	fw		est est est	60	60?	3	CL & W	3a	lt	near flat, close to the road. Dark reddish colours in ss make mottling hard to see
468	NY 75700, 15600	PGR	30 60 100	org-szl mel sel	v-dk-br pale-rd pale-rd	dk-rd-br dk-rd-br	f ab	1-3 3-5 3-5	fw		est est est	30	60	3	CL & W	3a	lt/m	4-7° slope
470	NY 70500, 10400	PGR	32 60	lms lms	dr-br lt-rd			5-10 5-10 5-10	com		est, gvl est est	none	none	4	CL	3a	lt	Disturbed, severe micro relief interspersed with tarmac/concrete
475	NY 76200, 15337	PGR	26 60	org-mel lms/mel	v-dk-br rd-br			3-5 3-5	fw		est, gvl est	none	none	4	CL	3a	lt	Top of hill, moderately severe micro-relief, impenetrable stone at 60cm.
478	NY 76300, 15155	PGR	28 80 100	org-lms lms sel + hel	v-dk-br lt-br rd	ee & gr gr	m e	1-3 1-3 1-3	f		est est est	30	80	3	CL, W & Gr	4	lt	Limited by severe slope, 11-18° although farmer is clearly spreading slurry. Faint mottles in lower SS barely visible due to red colour.
482	NY 76500, 15235	PGR	24 50 60	org-mel lms lms	v-dk-br ye-br ds-rd			1-3 3-5 20+	fw	fw	gvl gvl gvl	50		4	CL	3a	lt	4-7° slope, very faint, subtle mottling in lower SS. Impenetrable stone at 60cm
483	NY 76500, 15100	PGR	28 100	org-mel lms	v-dk-br pale-br	lge-ee-streake & Mn/Fe	e	1-3 1-3	fw	fw	mx mx	40		2	CL & Gr	4	lt	Limited by severe slope, 11-18°
486	NY 76700, 15200	PGR	26 100	org-mel lms	v-dk-br dk-br	ee & gr	e	5-10 3-5	fw	fw	mx est	50		2	CL & Gr	3b	lt	Limited by moderate slope, 7-11°

BORE-NO.	OS-GRID REF	LAND USE	DEPTH (cm)	TEXTURE	Soil Colour			MOTTLES			Stones			DEPTH-TO-GLEYING (cm)	DEPTH-TO-SPL (cm)	WETNESS-CLASS	ALC-LIMITATION	ALC	SOIL-TYPE	COMMENTS
					Munsell	Munsell	Ab.	Total	>2cm	>6cm	Type									
477		PGR	0-23	msl	7.5YR 4/3			3-5			hdset-gr	65	No-SPL	II	CL	3b	Light-Medium	Check climate @ 173m AOD. Wet >60cm likely springs in area due to permeable soils		
			23-65	msl	2.5YR 5/6	7.5YR 5/3	e	5-10		hdset										
			65-100	sel	2.5YR 4/6	7.5 YR 4/4 Mn	e	5-10		hdset esst										
484		PGR	0-20	msl	7.5 YR 4/4			5-10			hdset grvl	>70	No-SPL	I	CL	3b	Light	Stony at base of topsoil. Check climate @ 168m AOD - 3b. AOD. Freely drained		
			20-45	lms	7.5YR 5/8			1-2		hdset hr										
			45-70	lms	5YR 5/6	7.5YR 4/4	f	3-5		hdset hr										
481		PGR	0-23	msl(sl-o)	7.5YR 4/4			3-5			hdset q-gr	>70	No-SPL	I	GR > 11°	4	Light	Variable microrelief - locally steep > 11°		
			23-60	lms	7.5YR 5/6	10YR 4/4		5-10		hdset esst-q										
			60-100	lms	7.5 YR 5/3			10-15		hdset esst-q										
461		PGR	0-24	lms	7.5YR 4/3			3-5			hdset-gr	70	No-SPL	II	CL	3a	Light-Medium	Check climate limitation @ 150-AOD		
			24-45	lms	7.5YR 5/6			3-5		hdset esst-gr										
			45-100	sel	10R 5/6	10YR 5/2	e	3-5		hdset q-gr										
458		PGR	0-30	sel	10YR 3/3			3-5			hdset hr	30	55	IV	WT	3b	Medium-Heavy	Alluvial boring offset 15m to south due to stream. Pit nearby on exposed bank of watercourse		
			30-55	sel	10YR 6/2	10YR 6/8	e	3-5		hdset hr-gr										
			55-100	mel/hel	10YR 7/2	10 YR 6/8	ab	3-5		hdset hr										
494		PGR	0-27	msl	5YR 3/4			3-5			hdset grvl-q	80	No-SPL	I	CL	3b	Light-Medium	Check climate limitation. Boring offset 10m due to slight cable reading. Stony at base of topsoil		
			27-60	msl	5YR 5/8			5-10		hdset grvl										
			60-80	msl	5YR 6/6			5-10		hdset grvl										
			80-100	sel	2.5 YR 5/6	2.5YR 7/2		5-10		hdset grvl-q										
491		PGR	0-28	msl	2.5 YR 4/3			3-5			hdset grvl-q-hr	80	No-SPL	III	CL	3b	Light-Medium	Check climate 3a soils. Steep slope to south - possible old quarry/restored? Grade 4		
			28-60	msl	5YR 5/6	7.5YR 3/3	e	5-10		hdset grvl-q-hr										
			60-80	msl	5YR 6/3			5-10		hdset grvl-q-hr										
			80-100	sel	2.5 YR 5/6	2.5 YR 7/2	m	5-10		hdset grvl-q-hr										
488		PGR	0-30	msl	5 YR 3/4			3-5			hdset grvl-q	30	No-SPL	I	CL	3b	Medium-Heavy	improed drainage on upslope 4-5° S 3a soils check climate rabbit burrows		
			30-55	lms	5YR 5/4	7.5 YR 4/4	e	3-5		hdset grvl-q										
			55-100	lms	5YR 5/8	10YR 3/3	ab	3-5		hdset grvl-q										
493		PGR	0-28	msl	5YR 3/4			3-5			hdset grvl-q	55	No-SPL	I	CL	3b	Light	Improved drainage on upslope 4-5° S. 3a soils but check check climate. Rabbit burrows or poss badger impen >75cm due to stones		
			28-55	lms	5YR 5/6			3-5		hdset grvl-q										
			55-75	lms	2.5 YR 5/6	2.5 YR 5/2	e	5-10		hdset grvl-q										

Auger	Depth (cm)	Soil Profile									Agricultural Land Classification						Notes
		Colour	Texture	Mottling	SPL	CaCO ₃	Stones (%)			Notes	(°)	W-C	WE grade	DR grade	Overall grade	Limit(s)	
							Total	>2cm	>6cm								
675	0-28	Rd-Br	CSL	-	-		0										0
	28-51	Wk-Rd	CSL	xxx	no		1			2							
	51-78	Rd-Br	CSL	xxx	no		1			2							
	78-100	Wk-Rd	SCL	xxx	no		3			2							
676	0-27	Rd-Br	LCS	-	-		0										0
	27-70	Rd-Br	LCS	xx	no		0										
	70-100	Rd-Br	CS	xxx	no		0										
677	0-30	Br	CSL	-	-		0				Near brow of hill						Near brow of hill
	30-48	Rd-Br	CSL	xx	no		1			2							
	48-74	Rd-Br	CSL	xx	no		1			2							
	74-100	Li-Rd-Br	CSL	xxx	no		1			2							
678	0-29	Rd-Gr	CSL	-	-		2			2	Variable slope						Variable slope
	29-78	Li-Rd-Br + Rd-Gr	SCL	xxx	no		2			2							
	78-87	Rd-Br	SCL	xxx	no		5			2	Impenetrable due to stone at 87cm						
679	0-39	Dk-Rd-Gr	CSL	-	-		3			2	Undulating microrelief						Undulating microrelief. Reeds present at edge of field wet area.
	39-78	Rd-Br + Rd-Gr	CSL	xxx	no		2			2	Reeds present at edge of field wet area.						
	78-100	Rd-Br	CSL	xxx	no		6			2							
680	0-36	Dk-Rd-Gr	CSL	-	-		5			2	Undulating microrelief						Undulating microrelief
	36-64	Rd-Br	CSL	xxx	no		5			2							
681	0-38	Dk-Rd-Gr	CSL	-	-		3			2	Undulating microrelief						Undulating microrelief
	38-78	Li-Rd-Br + Rd-Gr	LCS	xxx	no		3			2							
	78-100	Rd-Br	CSL	xxx	no		1			2							



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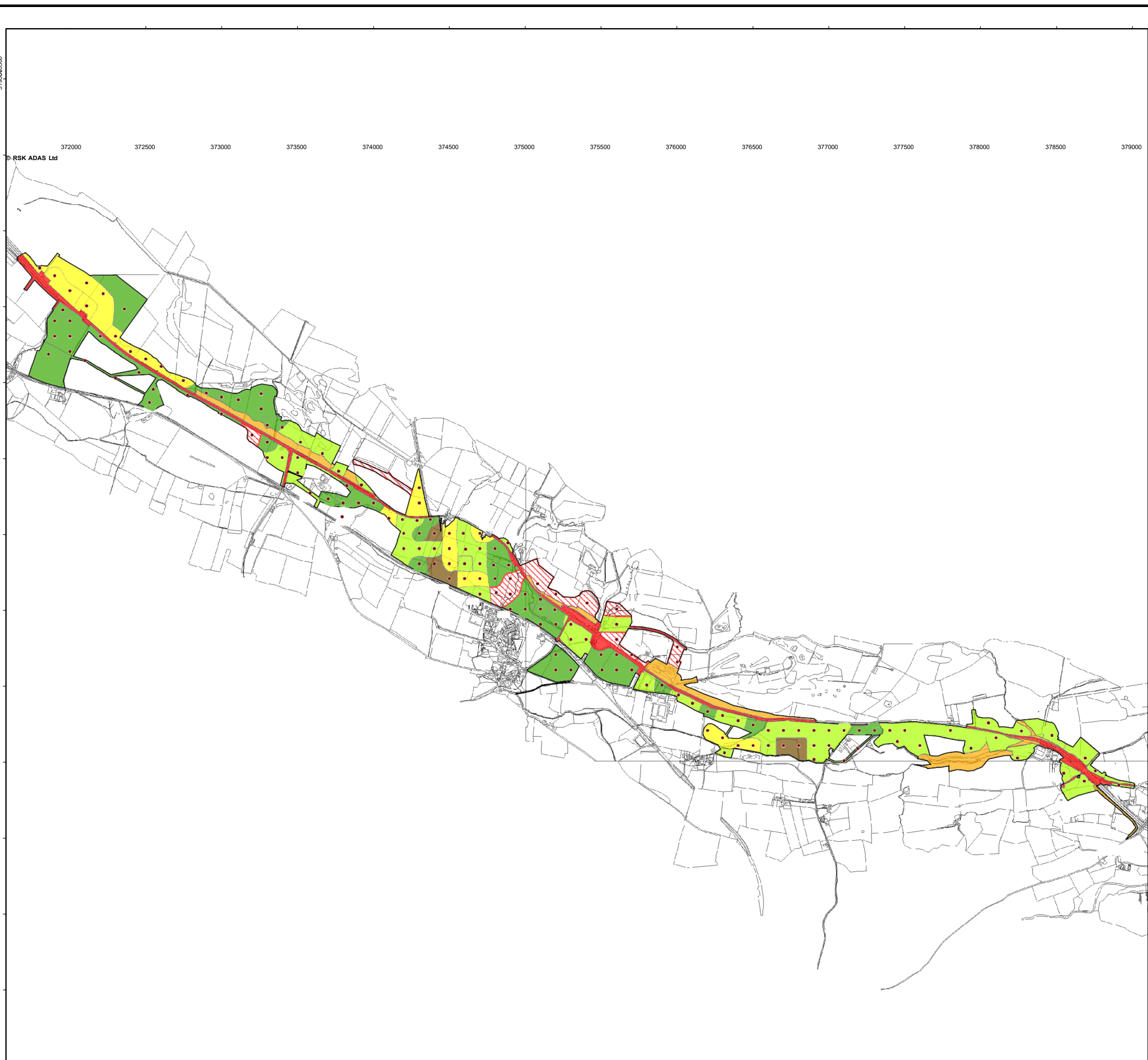
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Warcop

Brough






Highways England

A66 Northern Trans-Pennine

1050859

Appleby to Brough Agricultural Land Classification (ALC) Survey Results



- Order Limits
- Auger locations
- ALC**
- 2
 - 3a
 - 3b
 - 4
 - 5
 - Non-ag
 - Urban
 - Not surveyed

Drawn by Paul Taylor 29/04/2022, Verified by John Grylls 29/04/2022

0 100 200 300 400

Metres

Scale: 1:25,000 at A3 size

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Auger	Depth (cm)	Colour	Texture	Mottling	SPL	Stones (%)			Notes	Depth to gleying (cm)	Depth to spl (cm)	W C	WE grade	Overall grade	Limit(s)	Notes
						Total	>2cm	>6cm Litho'								
521	0 - 26	V Dk Gr Br	MZCL	-	-				organic	26	35	IV	3b	3b	WE	3°
	26 - 35	Br	MCL	xxx	no	2		2								
	35 - 68	Gr	HCL	xxx	yes	1		2								
	68 - 102	Gr	C	xxx	yes	1		2								
526	0 - 30	Dk Gr Br	MZCL	-	-	2		2	HCL in places	30	30	IV	3b	3b	WE	4°
	30 - 102	Gr	C	xxx	yes	2		2								
529	0 - 23	Dk Gr Br	MZCL	-	-	1		2	high water table, very wet at surface		23	IV	3b	3b	WE	high water table, very wet at Surface 5°
	23 - 100	Gr	C	xxx	yes	6		2								
531	0 - 29	Dk Gr Br	MZCL	-	-	2		2	organic	29	38	IV	3b	3b	WE	4°
	29 - 38	Br	HCL	xxx	no	3		2								
	38 - 100	Pl Br	HCL	xxx	yes	5		2								
532	0 - 22	Br	MZCL	-	-	2		2	organic disturbed	22	38	IV	3b	3b	WE	9°
	22 - 38	Br	HCL	xxx	no	2		2								
	38 - 102	Gr	HCL	xxx	yes	2		2								

BORING NUMBER	DEPTH (cm)	Texture	Soil Colour	MOTTLES		STONES				DEPTH TO GLEYING (cm)	DEPTH TO SPL (cm)	WETNESS CLASS	ALC	SOIL TYPE	COMMENTS
			Munsell	Munsell	Ab.	Total	>2cm	>6cm	Type						
516	25	mcl	10YR4/2							65	65	III	3b		FCD 227 (NY986 135) augered to 85cm
	58	mcl	10YR4/3	10YR5/6	f										
	65	hcl	10YR5/3	10YR5/6	m	10	10	hr							
	120	c	10YR5/3	10YR5/6	M										
517	30	mcl	10YR3/3							30	60	IV	3b		
	50	hcl	10RY5/3	10YR5/6	c	10	10	hr							
	60	c	10YR5/2	10YR5/6	c										
518	30	mcl	10YR3/2							30	>80	III	3b		weathered sandstone: auger stopped at 40cm stone.
	40	hcl	10YR5/3	10YR5/6	c	10		ssst							
	120	hcl	10YR5/3	10YR5/6	c										
519	30	mcl	10YR3/1							40	40	IV	3b		assume SPL in hcl
	40	mcl	10YR4/3												
	90	hcl	2.5Y4/2	10YR5/6	c	5	5	hr							
	120	hcl													
520	15	mcl	10YR3/2							38	60	IV	3b		stone at 60cm
	38	mcl	10YR3/2	10YR5/6	m										
	60	hcl	10YR4/1	10YR5/6	m	10		hr							
	120	hcl													

BORE NO.	DEPTH (cm)	TEXTURE	Soil Colour	MOTTLES		Stones				DEPTH TO GLEYING (cm)	DEPTH TO SPL (cm)	WETNESS CLASS	ALC LIMITATION	ALC	SOIL TYPE	COMMENTS
			Munsell	Munsell	Ab.	Total	>2cm	>6cm	Type							

523	0-23	scl (sl o)	10YR 3/3			1-2	1-2	1-2	hdsst ssst	23	60	IV	CL	3b	Medium	Wet/saturated > 60cm
	23-40	scl	10YR 6/2	7.5YR 5/6	m	1-2			hdsst ssst							
	40-60	msl	10YR 7/4	10YR 6/8	ab	1-2			hdsst ssst							
	60-100	hcl	10YR 6/1	10YR 6/8	ab	1-2			hdsst ssst							
525	0-22	mzcl	10YR 3/4	7.5YR 5/6	c	3-5	1-2	1-2	hdsst ssst	15	55	IV	CL	3b	Medium-Heavy	Pronounced rigg and furrow to centre & west. Microrelief limiting to min 3b
	22-55	mcl	10YR 4/4	10YR 6/6	c	3-6			hdsst ssst							
	55-100	hcl	10YR 6/4 Mn	10YR 6/8	m	3-7			hdsst ssst							
530	0-12	mzcl (sl o)	10YR 3/3	7.5YR 5/6	c	3-5	1-2	1-2	hdss ssst	15	35	IV	CL	3b	Medium-Heavy	Shallow rigg & furrow. FYM applied recently. A2 topsoil 15-28cm
	12-28	scl	10YR 4/6	10YR 5/2	m	3-6			hdsst grvl							
	28-40	scl	10YR 6/2	10YR 5/4	ab	3-7			hdsst grvl							
	40-90	hcl	10YR 7/2	10YR 5/6	ab	3-8			hdsst grvl							

BORING NUMBER	DEPTH (cm)	Texture	Soil Colour	MOTTLES			STONES			DEPTH TO GLEYING (cm)	DEPTH TO SPL (cm)	WETNESS CLASS	ALC Limitation	ALC	SOIL TYPE	COMMENTS
			Munsell	Munsell	Ab.	Total (%)	>2cm	>6cm	Type							
522	24	hum zycl	bl	oc	r	1-2		fw	sst gvl	35	50	IV	CL + W	3b	m/h	slightly raised area, near flat, bounded by roads on 2 sides. common small coal and shale below 80cm
	35	mcl	dk gr br	oc	f	5-10			sst& shl							
	50	mcl	gr br	oc gr	f	3-5			sst							
	100	c	gr	oc gr	ab	3-5			sst, shl & cl							
524	25	org zycl	v dk gr br	oc	r	3-5		fw	sst	25	50	IV	CL + W	3b	m/h	flattish, possibly disturbed in the topsoil, 20m from A66 fence
	50	mcl	gr br	oc	c	5-10			sst							
	90	hcl	gr	oc, ye & lt gr	ab	5-10			sst							
528	25	org fscl	v dk gr br	oc	r	1-2		fw	sst	25	40	IV	CL + W	3b	m/h	flat, below 70cm com weathered sandstone, with shale & coal
	40	mcl	gr br	oc, ye & lt gr	c	3-5			sst							
	100	hcl	gr & v dk gr	oc, ye & lt gr	ab	1-2->5-10 > 70cm			w sst							

BORING NUMBER	NGR	LAND USE	DEPTH (cm)	Texture	Soil Colour	MOTTLES			STONES			DEPTH TO GLEYING (cm)	DEPTH TO SPL (cm)	WETNESS CLASS	ALC	SOIL TYPE	COMMENTS		
					Munsell	Munsell	Ab.	Total	>2cm	>6cm	Type								
516	398760 513589	PGR	25	mcl	40YR4/2													FCD 227 (NY986 135) augered to 85cm	
			58	mcl	40YR4/3	40YR5/6	f												
			65	hcl	40YR5/3	40YR5/6	m	40	40		hr		65	65	III	3b			
			120	e	40YR5/3	40YR5/6	M												
517	398854 513431	PGR	30	mcl	40YR3/3														
			50	hcl	40YR5/3	40YR5/6	e	40	40		hr		30	60	IV	3b			
			60	e	40YR5/2	40YR5/6	e												
			120	e	40YR5/2	40YR5/6	e												
518	399028 513679	PGR	30	mcl	40YR3/2												weathered sandstone: auger stopped at 40cm stone.		
			40	hcl	40YR5/3	40YR5/6	e	40			ssst		30	>80	III	3b			
			120	hcl	40YR5/3	40YR5/6	e												
519	399200 513735	PGR	30	mcl	40YR3/4												assume SPL in hcl		
			40	mcl	40YR4/3														
			90	hcl	2.5Y4/2	40YR5/6	e	5	5		hr		40	40	IV	3b			
			120	hcl															
520	399360 513802	PGR	15	mcl	40YR3/2												stone at 60cm		
			38	mcl	40YR3/2	40YR5/6	m												
			60	hcl	40YR4/4	40YR5/6	m	40			hr		38	60	IV	3b			
			120	hcl															

BORE NO.	OS GRID-REF	LAND USE	DEPTH (cm)	TEXTURE	Soil Colour	MOTTLES			Stones			DEPTH TO GLEYING (cm)	DEPTH TO SPL (cm)	WETNESS CLASS	ALC LIMITATION	ALC	SOIL TYPE	COMMENTS	FCD	DATE
					Munsell	Munsell	Ab.	Total	>2cm	>6cm	Type									

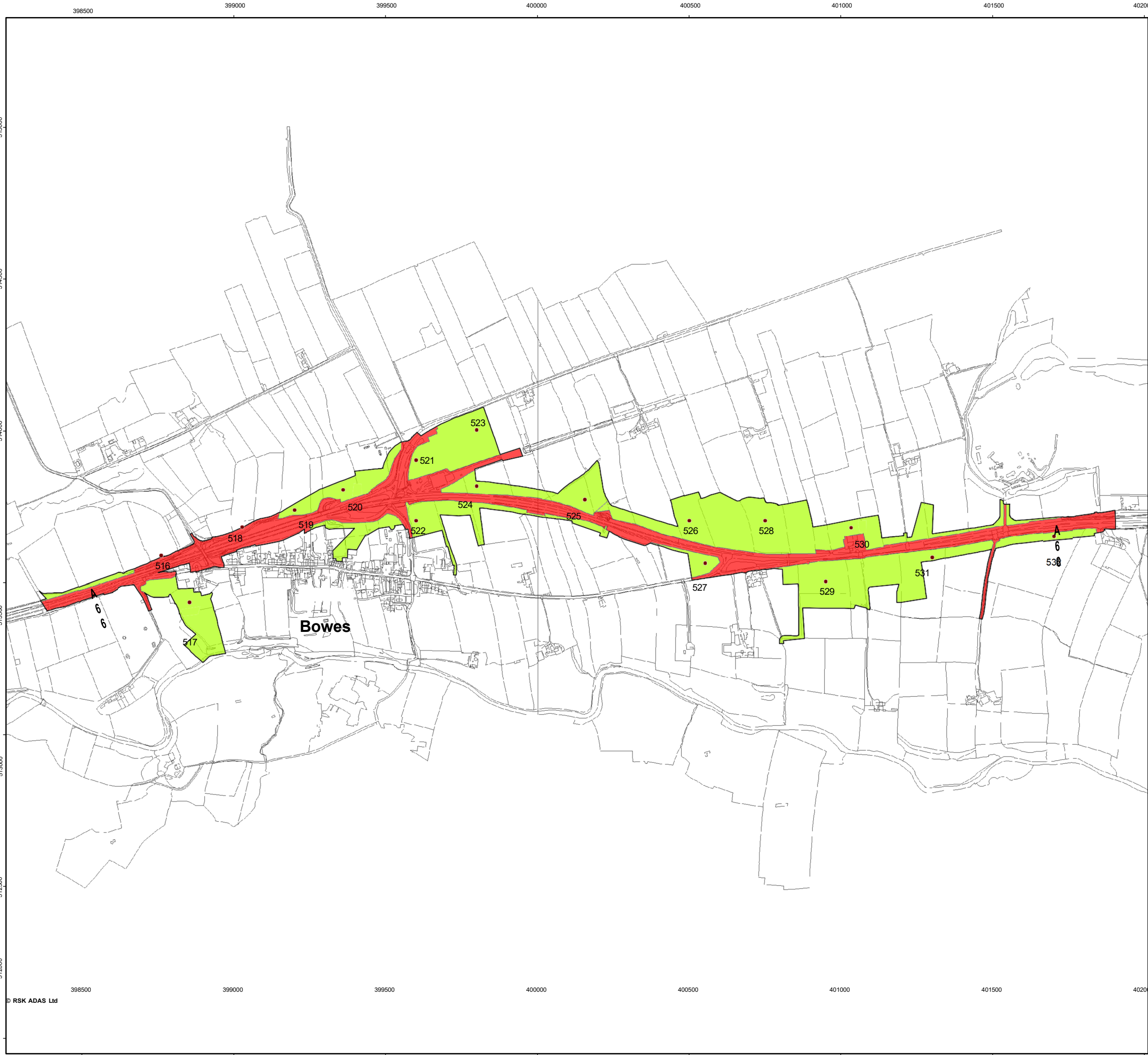
523	PGR	0-23	scl (sl-e)	10YR 3/3		1-2	1-2	1-2	hdsst-ssst	23	60	IV	CL	3b	Medium	Wet/saturated > 60cm	223-227	07/02/2022	
		23-40	sel	10YR 6/2	7.5YR 5/6	m	1-2		hdsst-ssst										
		40-60	mel	10YR 7/4	10YR 6/8	ab	1-2		hdsst-ssst										
		60-100	hcl	10YR 6/4	10YR 6/8	ab	1-2		hdsst-ssst										
525	PGR	0-22	mzel	10YR 3/4	7.5YR 5/6	e	3-5	1-2	1-2	hdsst-ssst	15	55	IV	CL	3b	Medium-Heavy	Pronounced rigg and furrow to centre & west. Microrelief limiting to min 3b	223-227	07/02/2022
		22-55	mel	10YR 4/4	10YR 6/6	e	3-6		hdsst-ssst										
		55-100	hcl	10YR 6/4 Ma	10YR 6/8	m	3-7		hdsst-ssst										
530	PGR	0-12	mzel (sl-e)	10YR 3/3	7.5YR 5/6	e	3-5	1-2	1-2	hdsst-ssst	15	35	IV	CL	3b	Medium-Heavy	Shallow rigg & furrow. FYM applied recently. A2 topsoil 15-28cm	223-227	07/02/2022
		12-28	sel	10YR 4/6	10YR 5/2	m	3-6		hdsst-grvl										
		28-40	sel	10YR 6/2	10YR 5/4	ab	3-7		hdsst-grvl										
		40-90	hcl	10YR 7/2	10YR 5/6	ab	3-8		hdsst-grvl										












BORING-NUMBER	NGR (actual)	LAND-USE	DEPTH (cm)	Texture	Soil Colour	MOTTLES			STONES			DEPTH-TO GLEYING (cm)	DEPTH-TO SPL (cm)	WETNESS-CLASS	ALC Limitation	ALC	SOIL-TYPE	COMMENTS
						Munsell	Munsell	Ab.	Total (%)	>2cm	>6cm							
522	99600, 13700	PGR	24	hum-zyel	bl	ee	f	1-2		fw	est gvl	35	50	4	CL+W	3b	m/h	slightly raised area, near flat, bounded by roads on 2 sides. common small coal and shale below 80cm
			35	mel	dk-gr-br	ee	f	5-10			est & chl							
			50	mel	gr-br	ee-gr	f	3-5			est							
			100	e	gr	ee-gr	ab	3-5			est, chl & cl							
524	99800, 13815	PGR	25	erg-zyel	v-dk-gr-br	ee	f	3-5		fw	est	25	50	4	CL+W	3b	m/h	flattish, possibly disturbed in the topsoil, 20m from A66 fence
			50	mel	gr-br	ee	e	5-10			est							
			90	hel	gr	ee, ye & lt-gr	ab	5-10			est							
528	00750, 13700	PGR	25	erg-fsel	v-dk-gr-br	ee	f	1-2		fw	est	25	40	4	CL+W	3b	m/h	flat, below 70cm com weathered sandstone, with shale & coal
			40	mel	gr-br	ee, ye & lt-gr	e	3-5			est							
			100	hel	gr & v-dk-gr	ee, ye & lt-gr	ab	1-2 > 5-10 > 70cm			w-est							

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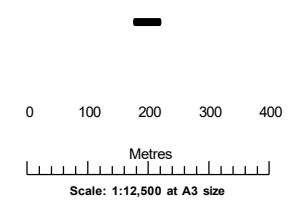
A66 Northern Trans-Pennine

Bowes Bypass Agricultural Land Classification (ALC) Survey Results



-  Order Limits
-  Auger locations
- ALC**
-  2
-  3a
-  3b
-  4
-  5
-  Non-ag
-  Urban
-  Not surveyed
- 

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Appendix 6: Cross Lanes to Rokeby - Auger boring descriptions and ALC map

Auger Boring Descriptions

BORE NO.	LAND USE	DEPTH (cm)	TEXTURE	Soil Colour	MOTTLES			Stones			DEPTH TO GLEYING (cm)	DEPTH TO SPL (cm)	WETNESS CLASS	ALC LIMITATION	ALC	SOIL TYPE	COMMENTS
				Munsell	Munsell	Ab.	Total (%)	>2cm	>6cm	Type							
535	PGR	28	zl (sl o)	10Yr 3/2			<1			ssst	24	35	IV	W	3b	Medium	Adjacent to watercourse, field saturated underfoot. Soil wetness due to surface water rather than ground water. Sandy lenses due to soft weathered sandstone in fscl, impenetrable at 70cm due to a stone but likely heavier at depth.
		45	mcl	10Yr 4/3	10Yr 4/1 & 6/6	ab	1-2			ssst							
		65	fscl	7.5Yr 5/3	7.5Yr 5/1 & 5/8 & 3/1	ab	3-5			ssst							
		70	hcl	7.5Yr 4/1	7.5Yr 5/1 & 5/8 & 3/1	ab	3-5			ssst							
538	PGR	27	zcl	10Yr 3/2	7.5yr 2.5/1 <25	fw	1-2			ssst	25	35	IV	W	3b	Medium	Clay content increasing with depth, a band of medium sand around 50cm. Increasing content of fine material above, manganese mottles >70cm
		45	mcl	7.5Yr 4/3	7.5Yr 4/1 & 5/8		1-2			ssst							
		55	scl	7.5Yr 4/3	7.5Yr 4/1 & 5/8		1-2			ssst							
		100	fscl-> hcl	7.5Yr 4/3	7.5Yr 4/1 & 5/8 & 2.5/1	cm faint <70	1-2			ssst							

Bore No.	Depth (cm)	Colour	Texture	Mottling	SPL	Stones (%)			Notes	Depth to Gleying (cm)	Depth to spl (cm)	W C	ALC	Overall grade	Limit(s)	COMMENTS
						Total	>2cm	>6cm								
536	0 - 33	Br	MZCL	-	-	1		1		33	33	IV	3b	3b	WE	
	33 - 102	Br + Gr	HCL	xxx	yes	3		1								
537	0 - 29	Br	MZCL	-	-	1		1		29	29	IV	3b	3b	WE	
	29 - 56	Gr + Br	HCL	xxx	no	1		1								
	56 - 102	Gr	C	xxx	yes	1		1								
579	0 - 28	Br	MZCL	-	-	2		2		28	28	IV	3b	3b	WE	disturbed, mixing between layers, variable slope, standing water nearby,
	28 - 56	V Dk Gr + Gr	MCL	xxx	no	4		2	subsoil/topsoil mix?							
	56 - 100	Gr	HCL	xxx	yes	5		2								

BORE No.	DEPTH (cm)	Texture	Soil Colour	MOTTLES		STONES				DEPTH TO GLEYING (cm)	DEPTH TO SPL (cm)	WETNESS CLASS	ALC Limitation	ALC	SOIL TYPE	COMMENTS
			Colour	Ab.	Total (%)	>2cm	>6cm	Type								
539	24	mcl	v dk gr br	oc	f	1-3	fw		ssst	35	50	4	CL & W	3b	m/h	4-7° slope soft, weathered sandstone in upper ss
	34	mcl	ye br	oc, lt gr & ye	c	3-5			ssst							
	50	hcl->c	dk gr	oc, lt gr & ye	ab	5-10			ssst							
	100	c	v dk gr	oc & ye	ab	5-10			ssst							
542	26	mcl	v dk gr br	oc	f	1-3	fw		ssst	32	50	4	CL & W	3b	m/h	4-7° slope, has been used for free-range pigs and poultry, soft weathered sandstones in upper SS
	32	mcl	ye br	oc, lt gr & ye	c	1-3			ssst							
	50	hcl->c	dk gr	oc, lt gr & ye	ab	5-10			ssst							

	100	c	v dk gr	oc & ye	ab	5-10			sst										
543	26	mcl	v dk gr br			1-3	fw		sst	30	50	4	CL & W	3b	m/h	Near flat, soft weathered sandstone in upper ss, >50% stone >70cm, impenetrable >75cm			
	50	hcl	ye br	oc & ye	ab	3-5			sst										
	75	hcl->c	v dk gr	oc, lt gr & ye	ab	5-10			sst										
20m W of 544	30	zycl	dk gr br	oc	^c >20cm	1-3	fw		sst	30	50	4		3b	m/h	4-7° slope, has been used for free-range pigs and poultry. impenetrable stone at 85cm			
	50	mcl	lt br	oc, lt gr & ye	c	3-5			sst										
	85	hcl->c	v dk gr	oc & ye	ab	5-10			sst										

BORE NO.	OS GRID REF	OS GRID REF	LAND USE	DEPTH (cm)	TEXTURE	Soil Colour	MOTTLES			Stones			DEPTH TO GLEYING (cm)	DEPTH TO SPL (cm)	WETNESS CLASS	ALC LIMITATION	ALC	SOIL TYPE	COMMENTS	DATE
						Munsell	Munsell	Ab.	Total (%)	>2cm	>6cm	Type								
535	404500	513650	PGR	28	zl(-sl-e)	10Yr 3/2			<1			ssst	24	35	IV	W	3b	Medium	Adjacent to watercourse, field saturated underfoot. Soil wetness due to surface water rather than ground water. Sandy lenses due to soft weathered sandstone in fscl, impenetrable at 70cm due to a stone but likely heavier at depth.	21/02/2022
				45	mcl	10Yr 4/3	10Yr 4/1 & 6/6	ab	1-2			ssst								
				65	fscl	7.5Yr 5/3	7.5Yr 5/1 & 5/8 & 3/1	ab	3-5			ssst								
				70	hcl	7.5Yr 4/1	7.5Yr 5/1 & 5/8 & 3/1	ab	3-5			ssst								
538	404700	513650	PGR	27	zel	10Yr 3/2	7.5yr 2.5/1 <25	fw	1-2			ssst	25	35	IV	W	3b	Medium	Clay content increasing with depth, a band of medium sand around 50cm. Increasing content of fine material above, manganese mottles >70cm	21/02/2022
				45	mcl	7.5Yr 4/3	7.5Yr 4/1 & 5/8		1-2			ssst								
				55	sel	7.5Yr 4/3	7.5Yr 4/1 & 5/8		1-2			ssst								
				100	fscl->hcl	7.5Yr 4/3	7.5Yr 4/1 & 5/8 & 2.5/1	em faint <70	1-2			ssst								

Auger	Depth (cm)	Colour	Texture	Mottling	Soil Profile					Notes	Agricultural Land Classification					Notes
					SPL	CaCO ₃	Stones (%)				Limit(s)	W-C	WE grade	DR grade	Overall grade	
							Total	>2cm	>6cm							
536	0-33	Br	MZCL	-	-	1			1	7	IV	3b		3b	WE	0
	33-102	Br+Gr	HCL	xxx	yes	3			1							
537	0-29	Br	MZCL	-	-	1			1	7	IV	3b		3b	WE	0
	29-56	Gr+Br	HCL	xxx	no	1			1							

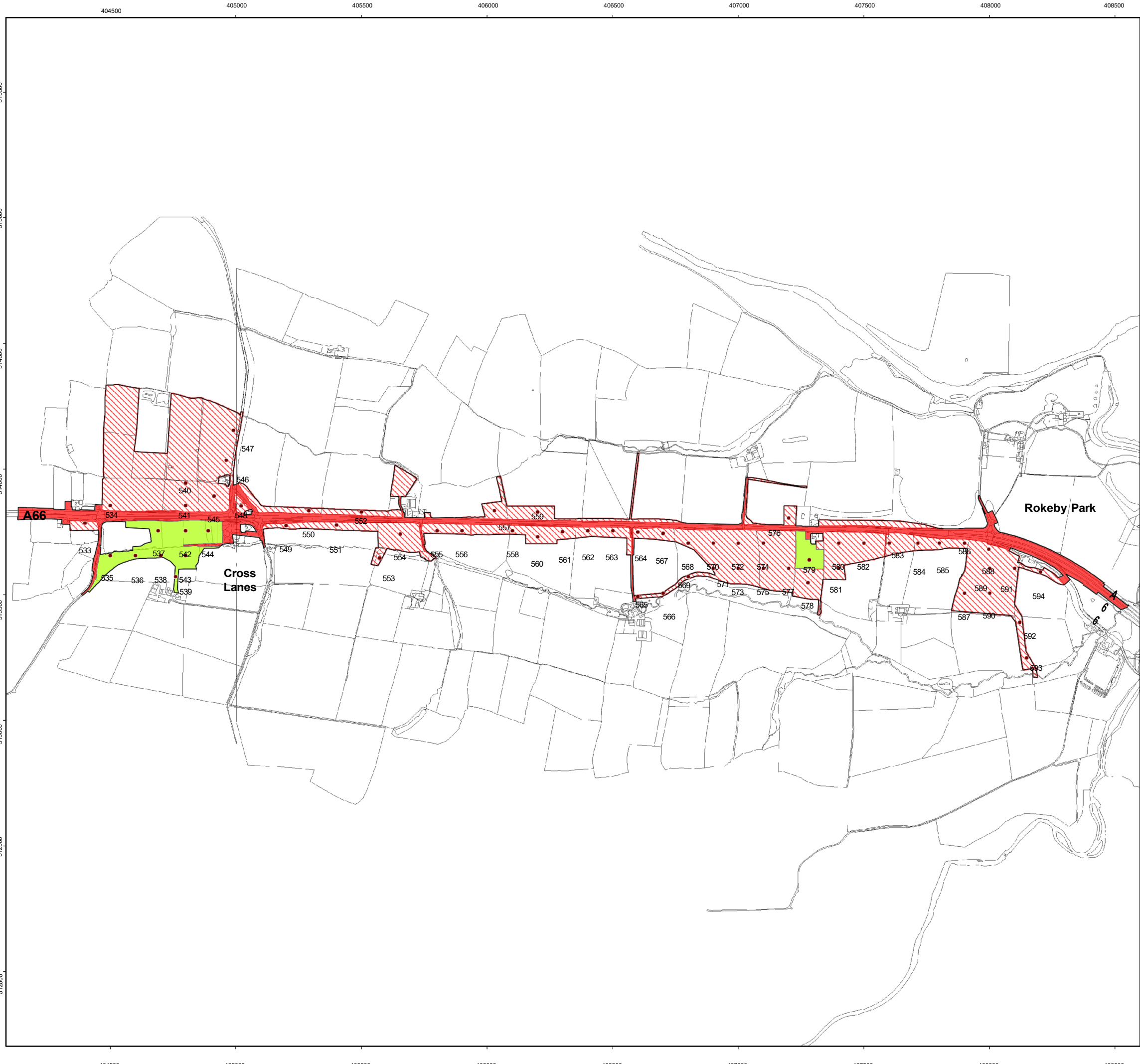
	56-102	Gr	C	xxx	yes	1		1								
579	0-28	Br	MZCL	-	-	2		2	subsoil/topsoil mix?	4	IV	3b	3b	WE	disturbed, mixing between layers, variable slope, standing water nearby, paddock near house	
	28-56	V-Dk-Gr+Gr	MCL	xxx	no	4		2								
	56-100	Gr	HCL	xxx	yes	5		2								

BORING-NUMBER	NGR (actual)	LAND-USE	DEPTH (cm)	Texture	Soil Colour	MOTTLES		STONES				DEPTH TO GLEYING (cm)	DEPTH TO SPL (cm)	WETNESS-CLASS	CL & W	ALC	SOIL-TYPE	COMMENTS
						Colour	Ab.	Total (%)	>2cm	>6cm	Type							
539	NZ 04762, 13582	PGR	24	mel	v-dk-gr-br	ee	f	1-3	fw		set	35	50	4	CL & W	3b	m/h	4-7° slope soft, weathered sandstone in upper ss
			34	mel	ye-br	ee, lt-gr & ye	e	3-5		set								
			50	hel > e	dk-gr	ee, lt-gr & ye	ab	5-10		set								
			100	e	v-dk-gr	ee & ye	ab	5-10		set								
542	NZ 04800, 13770	PGR/ Outdoor pigs	26	mel	v-dk-gr-br	ee	f	1-3	fw		set	32	50	4	CL & W	3b	m/h	4-7° slope, has been used for free range pigs and poultry, soft weathered sandstones in upper SS
			32	mel	ye-br	ee, lt-gr & ye	e	1-3		set								
			50	hel > e	dk-gr	ee, lt-gr & ye	ab	5-10		set								
			100	e	v-dk-gr	ee & ye	ab	5-10		set								
543	NZ 04805, 13659	PGR	26	mel	v-dk-gr-br			1-3	fw		set	30	50	4	CL & W	3b	m/h	Near flat, soft weathered sandstone in upper ss, >50% stone >70cm, impenetrable >75cm
			50	hel	ye-br	ee & ye	ab	3-5		set								
			75	hel > e	v-dk-gr	ee, lt-gr & ye	ab	5-10		set								
20m W of 544	NZ 04874, 13755	PGR/ Outdoor pigs	30	zyel	dk-gr-br	ee	e >20cm	1-3	fw		set	30	50	4		3b	m/h	4-7° slope, has been used for free range pigs and poultry, impenetrable stone at 85cm
			50	mel	lt-br	ee, lt-gr & ye	e	3-5		set								
			85	hel > e	v-dk-gr	ee & ye	ab	5-10		set								

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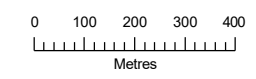
A66 Northern Trans-Pennine

Cross Lanes to Rokeby Agricultural Land Classification (ALC) Survey Results



- Order Limits
- Auger locations
- ALC**
 - 2
 - 3a
 - 3b
 - 4
 - 5
 - Non-ag
 - Urban
 - Not surveyed

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Appendix 07: Stephen Bank to Carkin Moor - Auger boring descriptions and ALC map

Auger Boring Descriptions

BORING NUMBER	DEPTH (cm)	Texture	Soil Colour	MOTTLES		STONES			DEPTH TO GLEYING (cm)	DEPTH TO SPL (cm)	WETNESS CLASS	ALC Limitation	ALC	SOIL TYPE	COMMENTS
			Munsell	Munsell	Ab.	Total (%)	>2cm	>6cm							
595	12	fib lp	bl			<1			12	12	5	W	non-ag	bog	low-lying, felled woodland. waterlogged, wet carr
	55	pl	bl												
	100	c	dk gr												
596	30	mcl	v dk gr br			5-10	few	sst & lst	30	30	4	CL & W	3b	m / h	<20m from A66
	100	hcl	gr	lt gr, ye, oc, & Mn/Fe	ab	3-5		sst							
597	30	mcl	v dk gr br			5-10	few	few	30	55	4	CL & W	3b	m / h	slightly better drained upper SS
	55	mcl/scl	gr	lt gr, oc, & ye	c	3-5		sst & lst							
	70	hcl->c	gr	lt gr, oc, & ye	ab	3-5									
598	29	mcl	10YR 4/3			5-10		ssst	29	35 or 60?	III or IV	W	3b or 3a	Medium-Heavy	Better drained profile relative to AB599. Transitional boring to better drained AB597.
	60	scl	7.5YR 6/8 & 5/4	7.5YR 5/1	com	1-2		ssst							
	100	hcl appr. sandy	7.5YR 4/3	7.5YR 5/1 5/8 8/3	ab	1-2		ssst							
599	24	mcl	10YR 4/2			5-10		ssst	24	35	IV	W	3b	Medium-Heavy	OC mottling around soft sand stones. Soft weathered sandstone gravels above 50cm. Impenetrable due to stones at 65cm.
	50	hcl & sandy lenses	10YR 4/3	7.5YR 5/8 7/8 4/1 6/1 & 10YR 4/1	ab	5-10		ssst							
	65	mcl & sandy lenses	10YR 4/3	10YR 4/1	m	10-20		sst gvl							
601	27	mcl	7.5YR 3/2	7.5YR 4/4	fw	5-10		ssst	28	35	IV	W	3b	Medium-Heavy	Offset due to proximity of muck heap. Sandy loam texture resulting from soft weathered ssst. Increasing manganese mottles below 80cm.
	100	hcl & sandy lenses	7.5YR 4/2	7.5YR 5/8 7/8 & 4/1 & 6/1 10YR 4/1	ab	5-10		ssst							
610	22	mcl	dk gr br			3-5	few	few	45	45	4	CL & W	3b	m/h	4-7° slope, mottling in upper SS very faint, common weathered sandstone in SS.
	45	hcl	dk br	ye & gr	c	3-5		sst							
	100	c	br	oc, ye & gr	c	3-5		sst							
611	0-23	mcl	10YR 3/2			3-5	1-2	1-2	30	42	IV	W	3b	Medium-Heavy	Slightly organic topsoil to 15cm. Very slightly improved upper subsoil drainage to 35cm
	23-42	hcl	10YR 4/4	10YR 5/2 6/6 Mn	ab	3-5		hdsst grvl							
	42-100	c	10YR 6/2	7.5YR 5/6 10YR6/1	ab	3-5		hdsst ssst							
612	0-23	mcl	10YR 3/2	7.5YR 5/6	fw	3-5	1-2	1-2	20	35	IV	W	3b	Medium-Heavy	Very strongly gleyed clay @45cm - dk bluish grey to v dk grey. Less stony at depth
	23-45	hcl	10YR 5/3	10YR 5/2 6/6 Mn	ab	5-10		hdsst ssst							
	45-100	c	G2 3/1	10YR 6/6	m	1-2		hdsst ssst hr							
613	40	mcl	v dk gr br			3-5		few	40	65	3	CL & W	3a	m/h	Near flat at top of hill, unusual TS depth, right in corner of field so possibly disturbed
	65	mcl	ye br	oc, gr & Mn/Fe	c	5-10		sst							
	100	hcl	dk gr br	lt gr & ye	ab	5-10		sst							

BORING NUMBER	DEPTH (cm)	Texture	Soil Colour	MOTTLES		STONES				DEPTH TO GLEYING (cm)	DEPTH TO SPL (cm)	WETNESS CLASS	ALC Limitation	ALC	SOIL TYPE	COMMENTS
			Munsell	Munsell	Ab.	Total (%)	>2cm	>6cm	Type							
614	0-26	mcl (o)	10YR 3/2	7.5YR 5/6 Mn	r	3-5	1-2	1-2	hdsst grvl ssst	65	no SPL	II	W	3a	Medium	Stonier with improved drainage on upslope. See pit description
	26-65	sl	10YR 4/4	10YR 5/6 Mn	f	5-10			hdsst grvl ssst							
	65-100	scl	10YR 5/3	10YR 5/2 6/6 Mn	c	5-10			hdsst ssst zst							
615	33	mcl	10Yr 4/4			1-2				33	50	IV	W	3b	Medium-Heavy	Adjacent to road and site of archaeological pit. Relief beginning to rise in 3-4 ° slope. Impenetrable at 80cm due to stone. Surface stone content 3-5
	65	hcl	10YR 4/4	7.5r 5/8 & (10yr 3/1 >55)	mn >55	1-2										
	80	c	10YR 3/3	10yr 2/1 (&7/8 weathered ssst)	ab	3-5			ssst gravels							
616	31	hcl	v dk gr br			1-3	few	few	ssst & lst	32	55	4	CL & W	4	hvy	4-7° slope. Technically ALC grade 4 but being farmed at a higher standard, at least partially due to field drains. Clay tile at 75 cm.
	55	hcl	ye br	oc, rdye & lt gr	ab	1-3			ssst & lst							
	75	c	dk gr	oc & ye	ab	5-10			ssst							
617	0-25	mcl/hcl	10YR 3/2			5-10	3-5	1-2	hdst ssst lst	45	65	II	W	3a	Medium	
	25-65	hcl	10YR 4/4	10YR 5/6 Mn	fw	5-10			hdsst grvl chk							
	65-100	hcl	10YR 5/2	10YR 5/2 6/8	m	5-10			hdsst ssst							
618	33	hcl	10Yr 3/2			1-2				33	35	IV	W	4	Heavy	Satellite imagery indicating an area of previous possible disturbance? very dark grey/black >80cm, reduced ochreous mottling. Impenetrable due to stone at 90cm.
	55	hcl	10YR 4/3	10YR 5/8 &6/1	m-> ab	1-2										
	90	hcl & sandy lenses	10YR 4/4	10YR 5/8 &7/8 & 3/1	ab	3-5			ssst gravels							
619	28	mcl	dk gr br			5-10		com	ssst & lst	28	35	4	CL & W	3b	m/h	flattish, weathered sandstone in subsoil
	100	hcl - c	lt gr & ye	oc & ye	ab	5-10			ssst & lst							
620	28	mcl	dk gr br			3-5		com	lst & sst	28	35	4	CL & W	3b	m/h	stones becoming common below 70, impenetrable stone at 90
	100	c	gr	ye & ol	ab	3-5			ssst							
621	38	hcl	dk gr br	oc	r	3-5		com	ssst	45	45	4	CL & W	4	hvy	flattish area
	45	c	gr br	ye + ol	ab	3-5			ssst							
	100	hcl	gr	oc, lt gr & ye	ab	3-5			ssst							
622	0-26	hcl	10YR 4/3			5-10	3-5	1-2	hdsst lst q p	28	35	IV	W	4	Heavy	Marginally lighter topsoil 5-10% subsoil in topsoil
	26-50	hcl	10YR 5/2	7.5YR 5/6 Mn	m	3-5			hdsst grvl q							
	50-100	c	2.5YR 4/4	10YR 5/2 6/6 Mn	ab	3-5			hdsst grvl ssst							
623	0-25	hcl	10YR 3/3			5-10	3-5	1-2	hdsst hr lst	25	35	IV	W	4	Heavy	Marginally lighter topsoil
	25-60	hcl	10YR 5/2	10yr 5/4 6/6 Mn	ab	5-10			hdsst ssst q							
	60-100	c	10YR 5/1	10YR 7/1	ab	3-5			hdsst ssst							
624	0-27	hcl/mcl	10YR 3/3			3-5	1-2	1-2	hdsst hr lst	55	55	III	W	3b	Medium-Heavy	Improved upper subsoil drainage strong mn mottles 50-55 marginal 3a
	27-55	mcl	10YR 4/4	10YR 6/6	f	3-5			hdsst ssst							
	55-100	hcl	10YR 5/3	75YR 5/6 Mn	m	3_5			hdsst ssst							
625	0-28	hcl	10YR 4/3			3-5	1-2	1-2	hdsst ssst	28	35	IV	W	4	Heavy	Few large sandstones in topsoil to 200mm size
	28-40	hcl	10YR 5/4	10YR 6/6 Mn	ab	5-10			hdsst ssst							
	40-100	c	10YR 5/2	10YR 7/1 Mn	ab	3-5			hdsst sst							
626	0-30	hcl	10YR 3/3			3-5	1_2	1-2	hdsst	30	40	IV	W	4	Heavy	Heavy topsoil. Grade 4 slightly harsh but to guidance as heavy topsoil and WC4
	30-40	hcl	10YR 5/3	10YR6/1 Mn	ab	5-10			hdsst ssst							

BORING NUMBER	DEPTH (cm)	Texture	Soil Colour	MOTTLES		STONES				DEPTH TO GLEYING (cm)	DEPTH TO SPL (cm)	WETNESS CLASS	ALC Limitation	ALC	SOIL TYPE	COMMENTS
			Munsell	Munsell	Ab.	Total (%)	>2cm	>6cm	Type							
	40-100	hcl	10YR 5/2	10YR 6/6 Mn	ab	5-10			hdsst ssst							
627	0-27	hcl	7.5YR 4/3			1-2	1-2	1-2	hdsst	27	38	IV	W	4	Heavy	Stony topsoil on eastern headland- field stone pickings?. Good earthworm numbers
	27-38	hcl	10YR 5/4	7.5YR 5/6 Mn	ab	5-10			hdsst ssst							
	38-100	c	10YR 5/2	10YR 6/1 Mn	ab	3-5			hdsst ssst							
630	24	org cycl	dk gr br			3-5			sst	24	40	4	CL & W	3b	m/h	weathered sandstone in ss
	40	hcl	lt gr & ye	gr & ye	ab	3-5			sst							
	100	hcl/c	dk gr, oc & ye	oc, gr & ye	ab	5-10			sst, shl & cl							
631	0-27	mcl	10YR 4/3			3-5	1-2	1-2	hdsst hr gr	27	36	IV	W	3b	Medium-Heavy	Rare large and v large hdsst in topsoil to 150mm size. Moderate slope 3-4° W
	27-45	c	10YR 6/2	10YR 6/6 6/8	ab	3-5			hdsst ssst							
	45-100	hcl	10YR 6/6	10YR6/1 6/6 Mn	ab	3-5			hdsst ssst							
632	29	scl	dk gr br			3-5			sst	29	35	4	CL & W	3b	m/h	weathered sandstone in ss
	60	hcl	lt gr & ye	gr & yel	ab	3-5			sst							
	100	hcl/c	dk gr, oc & ye	oc, gr & ye	ab	5-10			sst, shl & cl							
633	30	mcl	dk gr br			3-5			sst	30	35	4	CL & W	3b	m/h	boring adjusted northwards to avoid road, field headland. weathered sandstone in ss
	50	hcl	lt gr & ye	gr & ye	ab	3-5			sst							
	100	hcl/c	dk gr, oc & ye	oc, gr & ye	ab	5-10			sst, shl & cl							
634	0-28	mcl	10YR 3/3			3-5	1-2	1-2	hdsst hdlst hr	30	43	IV	W	3b	Medium-Heavy	Poorer drainage at base of slope - 3-4 SSW
	28-43	mcl	10YR 6/4	7.5YR 6/8 Mn	c	3-5			hdsst lst							
	43-80	c	10YR5/3	10YR 6/2 6/6	ab	3-5			hdsst lst							
635	0-23	hcl	10YR 4/3			1-2	1-2	1-2	hdsst grvl	23	35	IV	W	4	Heavy	Wetter at bottom of slope adjacent woodland. Heavy topsoil
	23-35	hcl	10YR 5/2	10YR 6/6	ab	1-2			hdsst ssst							
	35-100	c	2.5Y 4/3	10YR 6/2	ab	1-2			hdsst ssst							
636	30	hcl	dk gr br			3-5			sst	30	35	4	CL & W	4	hvy	v dk gr in ss with common soft weathered sandstone. Impenetrable stone at 70
	70	hcl/c	dk gr, oc & ye	oc, gr & ye	ab	5-10			sst, shl & cl							
637	30	mcl	dk gr br			3-5			sst	30	35	4	CL & W	3b	m/h	weathered sandstone in ss
	50	hcl/c	lt gr & ye	gr & ye	ab	3-5			sst							
	100	hcl/c	dk gr, oc & ye	oc, gr & ye	ab	5-10			sst, shl & cl							
638	30	hcl	dk gr br			3-5			sst	30	35	4	CL & W	4	hvy	ts wet and gleyed, weathered sandstone in ss,
	100	hcl/c	dk & lt gr	oc, ye & gr	ab	3-5			sst							
640	0-30	mcl	10YR 3/3			1-2	1-2	1-2	hdsst q shz	30	70?	III	W	3a	Medium	Less tony silty profile to depth
	30-65	mzcl	10YR 7/4	7.5YR 5/6	ab	1-2			hdsst sssr grvl							
	65-100	mzcl	10YR 8/6	7.5YR 6/8 Mn	ab	1-2			hdsst grvl							
641	0-27	hcl	10YR 4/4			1-2	1-2	1-2	hdsst grvl	27	70	III	W	3b	Medium-Heavy	Sandy very pale yellow upper subsoil strongly gleyed but not SPL. Heavy topsoil
	27-70	scl	2.5Y 7/2	7.5YR 5/6	ab	1-2			hdsst ssst							
	70-100	hcl	2.5Y 7/3	10YR 6/6	ab	1-2			hdsst ssst							
642	30	hcl	dk gr br			3-5			sst	30	35	4	CL & W	4	hvy	ts wet and gleyed, weathered sandstone in ss, impenetrable stone at 70
	50	c	oc, ye & lt gr	oc & ye	ab	3-5			sst							
	70	hcl/c	v dk gr & ye	oc, ye & gr	ab	3-5			sst & shl							
643	0-22	hcl	10YR 4/4			3-5	1-2	1-2	hdsst grvl q	23	35	IV	W	4	Heavy	Rare large hard ssts in topsoil to 150mm Suze
	22-50	hcl	10YR 5/3	10YR 6/6	ab	3-5			hdsst grvl q							

BORING NUMBER	DEPTH (cm)	Texture	Soil Colour	MOTTLES		STONES				DEPTH TO GLEYING (cm)	DEPTH TO SPL (cm)	WETNESS CLASS	ALC Limitation	ALC	SOIL TYPE	COMMENTS
			Munsell	Munsell	Ab.	Total (%)	>2cm	>6cm	Type							
	50-100	c	10YR 5/2	7.5YR 5/6 Mn	ab	3-5			hdsst sst c							
644	30	mcl	dk gr br			3-5			sst	30	35	4	CL & W	3b	m/h	shallow valley feature, soft weathered sst and shale in ss
	45	hcl	gr	oc & gr	c	3-5			sst & shl							
	100	hcl/c	gr & v dk gr/bl	oc & ye	ab	10-20			sst, shl & cl							
646	0-28	hcl	10YR 4/4			1-2	1-2	1-2	hdsst	28	35	IV	W	4	Medium-Heavy	Soft sandstone fragments in lower subsoil
	28-42	hcl	10YR 5/3	10YR 5/6	ab	1-2			hdsst grvl							
	42-100	c	10YR 5/2	10YR 5/6	ab	1-2			ssst							
647	0-32	mcl	10YR 4/4			3-5	1-2	1-2	hdsst sst	32	65	III	W	3a	Medium-Heavy	Slightly improved drainage on elevated area of field Impen @65
	32-65	hcl	10YR 5/2	7.5YR 5/6 Mn	c	3-5			hdsst							
	65-100	c	10YR 5/3	7.5YR 5/6 Mn	ab	1-2			hdsst							
648	35	hcl	dk gr br			3-5			sst	35	35	4	CL & W	4	hvy	ts wet and gleyed, weathered sandstone in ss
	60	c	dk gr	ye & gr	ab	3-5			sst & shl							
	100	hcl/c	v dk gr br	oc, ye & lt gr	ab	10-20			sst, shl & cl							
649	0-23	mcl/hcl	10YR 3/3			3-5	1-2	1-2	hdsst grvl	23	35	IV	W	4	Heavy	Rare large hard ssts in topsoil to 150mm size
	23-50	hcl	10YR 5/6	10YR 6/6 5/1	ab	3-5			hdsst grvl							
	50-100	c	10YR 5/4	10YR 5/2 6/8	ab	3-5			hdsst grvl							
650	33	hcl	dk gr br			3-5			sst	33	35	4	CL & W	4	hvy	ts wet and gleyed, weathered sandstone in ss, impenetrable stone at 65
	50	c	dk gr	oc, ye & gr	ab	3-5			sst							
	65	hcl/c	v dk gr br	ye & gr	ab	5-10			sst & shl							
651	0-24	m/hcl	10YR 4/4			1-2	1-2	1-2	hdsst grvl q	26	35	IV	W	3b	Medium-Heavy	Marginally lighter topsoil. 5-10% subsoil in topsoil
	26-45	hcl	10YR 6/2	7.5YR 5/6 10YR 6/1	ab	1-2			hdsst sst							
	45-100	c	10YR 5/3	7.5YR 5/6 Mn	ab	1-2			hdsst sst							
652	30	hcl	v dk gr br	none		3-5		fw	lst	30	40	4	CL & W	4	hvy	moved to grid square corner, impenetrable stone at 80
	35	hcl	gr	fe Mg	ab	5-10			lst & sst							
	100	hcl	lt gr	oc and yell	ab	5-10			lst & sst							
653	29	hcl	dk gr br	none		3-5		fw	sst	30	35	4	CL & W	4	hvy	weathered sst, below 60 new
	60	hcl	lt gr	oc, Mn & ye	ab	3-5			sst							
	100	c	gr	lt br & oc	ab	3-5			sst							
654	29	mcl/scl	v dk gr br			3-5		fw	sst & lst	35	35	4	CL & W	3b	m/h	bottom of slope, as above, impenetrable stone at 70cm
	45	gritty hcl	rd br	oc & ye	ab	3-5			sf sst							
	70	hcl	dk gr/ bl	oc & ye	ab	5-10			hd & sf sst							
655	26	hcl	v dk gr br			3-5		fw	sst	25	35	4	CL & W	4	hvy	25 m from A66, weathered sst in ss
	45	hcl	lt gr	oc, ye & Fe/Mn	ab	3-5			sf sst							
	100	c	dk gr	oc & ye	ab	5-10			hd & sf sst							
657	50	mcl	v dk gr br			3-5			sst				CL & W	3a	Dist.	Topsoil-like material to depth? impenetrable stone at 50cm. 3 different locations tried with a 10m radius with the same result.
		stones + mcl	dk gr br	oc & ye	r	10+			sst							
658	28	mcl?	v dk gr br			3-5		fw	sst	28	35	4	CL & W	3b	m/h	soft weathered sst in ss
	50	c	lt gr	oc & ye	ab	5-10			sst							
	100	c / hcl	dk gr	lt gr & ye	c	20+			red sst							
659	0-35	mcl/hcl	10YR3/3			3-5	1-2	1-2	hdsst	35	62	III	W	3b		

BORING NUMBER	DEPTH (cm)	Texture	Soil Colour	MOTTLES		STONES				DEPTH TO GLEYING (cm)	DEPTH TO SPL (cm)	WETNESS CLASS	ALC Limitation	ALC	SOIL TYPE	COMMENTS
			Munsell	Munsell	Ab.	Total (%)	>2cm	>6cm	Type							
	35-62	scl	10YR5/3	10YR 5/2 6/6	ab	3-5			hdsst vsst						Medium-Heavy	Deeper topsoil. Sandier upper subsoil strongly gleyed throughout and marginal SPL. Borderline hcl topsoil so grade as 3b
	62-100	c	10YR6/2	10YR 6/1 Mn	ab	3-5			hdsst lst							
661	0-35	mcl	10YR 4/3			3-5	3-5		hdsst grvl p g	35	80	III	W	3a	Medium	Sandy colluvium at base of slope. Strongly gleyed grey sandy subsoil >60cm. Likely receiving area for upslope run off - vert wet to south of boring
	35-60	scl	10YR 5/3	10YR 6/6 7/1	ab	1-2		hdsst ssst hdlst								
	60-80	msl	10YR 5/1	7.5YR 5/6 Mn	ab											
	80-100	hcl	10YR 5/2	7.5YR 5/6 10YR 7/1	ab	3-5		hdsst								
663	28	mcl	2.5Y 3/1	7.5YR 5/8	fw	3-5			ssst	<10	35	IV	W	3b	Medium-Heavy	Field moist underfoot. Mottles increasingly dark blue grey below 60cm. Impenetrable to auger due to stones at 85cm.
	85	hcl & sand lenses	2.5Y 5/3	7.5YR 5/8 & 5/1 & 2.5/1 & 10R 4/8	m	3-5		ssst								
664	0-30	m/hcl	10YR 4/3			3-5	1-2	1-2	hdsst hr lst	30	35	IV	W	3b	Medium-Heavy	Marginal 4 if heavy topsoils. 3b more likely
	30-60	hcl	10YR 6/2	10YR 7/1 Mn	ab	3-5		hdsst ssst								
	60-100	hcl	10YR 5/3	10YR 7/2 Mn	ab	3-5		hdst ssst								
666	30	mcl	dr gr br			1-3%		r	sst	30	45	4	CL & W	3b	m / h	7-11° degrees slope, wet at 80cm
	45	mcl	lt gr	ye & lt br	c	3-5%			sst							
	100	hcl	dr gr br	oc & gr	c	3-5%			sst							

Auger	Depth (cm)	Colour	Texture	Mottling	SPL	Stones (%)			Notes	Depth to Gleying (cm)	Depth to Spl (cm)	W C	WE grade	Overall grade	Limit(s)	Notes
						Total	>2cm	>6cm								
600	0 - 33	Br	MZCL	-	-	1		2	sandy in places	33	33	IV	3b	3b	WE	
	33 - 53	Gr	HCL	xxx	borderline	2		2								
	53 - 103	Gr	C	xxx	yes	1		2								
602	0 - 25	Dk Yl Br	MCL	-	-	5		2		25	25	IV	3b	3b	WE	variable slope over distance 8° degree slope
	25 - 44	Gr	HCL	xxx	yes	4		2								
	44 - 100	Gr	HCL	xxx	yes	8		2								
603	0 - 20	Dk Gr Br	MCL	-	-	8		2		20	20	IV	3b	3b	WE	4°
	20 - 48	Gr	C	xxx	yes	8		2								
	48 - 100	Gr	C	xxx	yes	5		2								
604	0 - 24	Br	MCL	-	-	8		2	SBS 80cm	24	42	IV	3b	3b	WE	3°
	24 - 80	Gr + Br	HCL	xxx	yes	8		2								
605	0 - 32	Dk Yl Br	SCL	-	-	3		1		32	32	III - IV	3a - 3b	3a - 3b	WE	3°
	32 - 54	V Pl Br	SCL	xxx	no	3		1								
	54 - 100	Gr	HZCL	xxx	yes	3		1								
606	0 - 22	Br	MZCL	-	-	1		1		22	22	IV	3b	3b	WE	variable slope 8° slope
	22 - 41	Li Gr	HCL	xxx	borderline	1		1								
	41 - 83	Pl Br + Gr	HCL	xxx	yes	0										
	83 - 100	Br	MCL	xxx	yes	2		1								
607	0 - 31	Dk Gr Br	MZCL	-	-	1		1		31	31	IV	3b	3b	WE	variable slope 5° overall
	31 - 51	Yl Br + Gr	MCL	xxx	no	3		1								
	51 - 78	Br + Gr	HCL	xxx	yes	3		1								

Auger	Depth (cm)	Colour	Texture	Mottling	SPL	Stones (%)			Notes	Depth to Gleying (cm)	Depth to Spl (cm)	W C	WE grade	Overall grade	Limit(s)	Notes
						Total	>2cm	>6cm								
608	78 - 100	Gr	C	xxx	yes	3			1							
	0 - 31	Br	MCL	-	-	2			1	31	31	IV	3b	3b	WE	5°
	31 - 74	Gr	C	xxx	yes	1			2							
609	74 - 102	Gr	C	xxx	yes	1			1							
	0 - 30	Dk Gr Br	MZCL	-	-	1			1	30	30	IV	3b	3b	WE	variable slope 6°
	30 - 52	Br	MCL	xxx	no	5			1							
	52 - 78	Gr	HCL	xxx	yes	3			1							
78 - 100	Gr	C	xxx	yes	3			1								
660	0 - 40	Br	MCL	-	-	2			2	40	40	IV	3b	3b	WE	variable slope 5°
	40 - 51	Br	HCL	xxx	yes	5			2							
	51 - 102	Gr Br	HCL	xxx	yes	6			2							
662	0 - 31	Br	MCL	-	-	2			2	31	31	IV	3b	3b	WE	3°
	31 - 71	Gr Br	HCL	xxx	yes	1			2							
	71 - 102	Dk Gr Br	HCL	xxx	yes	2			2							
665	0 - 33	Br	HCL	-	-	3			2	33	33	IV	3b	3b	WE	4°
	33 - 76	Br	HCL	xxx	yes	8			2							
	76 - 100	Gr Br	HCL	xxx	yes	8			2							
667	0 - 33	Br	MCL	-	-	1			1	50	50	IV	3b	3b	WE & GR	
	33 - 50	Br	MCL	o	no	1			1							
	50 - 100	Gr	SCL	xxx	yes	2			1							
668	0 - 35	Br	MCL	-	-	0				35	35	II	2	2	CL	5°
	35 - 60	Br	MCL	o	no	0										
	60 - 100	Pl Br	MCL	xx	no	0										
682	0 - 27	Br	MCL	-	-	2			2	27	27	IV	3b	3b	WE	2°
	27 - 42	Gr	HCL	xxx	yes	2			2							
	42 - 70	Gr	C	xxx	yes	2			2							
683	0 - 27	Br	MCL	-	-	2			2	27	27	IV	3b	3b	WE	6°
	27 - 46	Gr	HCL	xxx	no	4			2							
	46 - 100	Gr	HCL	xxx	yes	4			2							
684	0 - 30	Br	MCL	-	-	3			2	30	30	IV	3b	3b	WE	6°
	30 - 53	Gr	HCL	xxx	no	4			2							
	53 - 100	Gr + Br	HCL	xxx	yes	4			2							
685	0 - 27	Gr Br	M-HCL	-	-	1			2	27	27	IV	3b	3b	WE	4°
	27 - 53	Gr	HCL	xxx	no	2			2							
	53 - 100	Gr + Gr	C	xxx	yes	4			2							
686	0 - 29	Gr Br	HCL	-	-	2			2	29	29	III	3b	3b	WE	4°
	29 - 61	Li Yl Br	SCL	xxx	no	2			2							
	61 - 100	Gr	C	xxx	yes	2			2							
687	0 - 30	Gr Br	MCL	-	-	1			2	30	30	IV	3b	3b	WE	4°
	30 - 51	Gr	HCL	xxx	no	2			2							
	51 - 100	Gr	C	xxx	yes	5			2							
688	0 - 32	Br	MCL	-	-	1			2	32	32	IV	3b	3b	WE	0°
	32 - 45	Li Ol Br	HCL	xxx	yes	3			2							
	45 - 100	Gr	HCL	xxx	yes	5			2							

Auger	Depth (cm)	Colour	Texture	Mottling	SPL	Stones (%)			Notes	Depth to Gleying (cm)	Depth to Spl (cm)	W C	WE grade	Overall grade	Limit(s)	Notes
						Total	>2cm	>6cm Litho'								
689	0 - 32	Gr Br	HCL	-	-	1		2	Impenetrable due to stone at 66cm.	32	32	IV	4	4	WE	2°
	32 - 46	Gr	HCL	xxx	yes	1		2								
	46 - 66	Gr	C	xxx	yes	3		2								
690	0 - 32	Dk Gr Br	HCL	-	-	1		2	Impenetrable by stones at 84cm.	32	32	IV	4	4	WE	Undulating microrelief 4°
	32 - 84	Gr Br + Gr	HCL	xxx	yes	2		1								
691	0 - 32	Dk Gr Br	MZCL	-	-	1		2	Sandy	32	32	IV	3b	3b	WE	Variable slope, rolling field 4°
	32 - 68	Li Gr	HCL	xxx	yes	2		2								
	68 - 100	Bu Gr	C	xxx	yes	2		2								
692	0 - 32	Gr Br	MZCL	-	-	1		2	Sandy	32	32	IV	3b	3b	WE	Variable slope across field 4°
	32 - 53	Gr	HCL	xxx	no	1		2								
	53 - 100	Gr	C	xxx	yes	0										
693	0 - 28	Dk Gr Br	MZCL	-	-	1		2		28	28	IV	3b	3b	WE	Slope variable . over distance 4°
	28 - 45	Gr	C	xxx	yes	1		2								
	45 - 100	Gr	C	xxx	yes	1		2								

BORING-NUMBER	NGR (actual)	LAND-USE	DEPTH (cm)	Texture	Soil Colour	MOTTLES		STONES			DEPTH TO GLEYING (cm)	DEPTH TO SPL (cm)	WETNESS CLASS	ALC Limitation	ALC	SOIL-TYPE	COMMENTS	
					Munsell	Munsell	Ab.	Total (%)	>2cm	>6cm								Type
595	NZ 12187, 10295	wet carr, reeds, NON-AG	12	fib lp	bl			<1				12	12	5	W	non-ag	bog	low lying, felled woodland-waterlogged, wet carr
			55	pl	bl													
			100	e	dk gr													
596	NZ 12500, 10492	WAW	30	mel	v dk gr br			5-10		few	sst & lst	30	30	4	CL & W	3b	m/h	<20m from A66
			100	hel	gr	lt gr, ye, oc, & Mn/Fe	ab	3-5		sst								
597	NZ 12600, 10450	WAW	30	mel	v dk gr br			5-10	few	few	sst & lst	30	55	4	CL & W	3b	m/h	slightly better drained upper-SS
			55	mel/scl	gr	lt gr, oc, & ye	e	3-5		sst & lst								
			70	hel > e	gr	lt gr, oc, & ye	ab	3-5										
598		WAW	29	mel	10YR 4/3			5-10			ssst	29	35 or 60?	III or IV	W	3b or 3a	Medium-Heavy	Better drained profile relative to AB599. Transitional boring to better drained AB597.
			60	scl	7.5YR 6/8 & 5/4	7.5YR 5/1	com	1-2			ssst							
			100	hel appr-sandy	7.5YR 4/3	7.5YR 5/1 5/8 8/3	ab	1-2			ssst							
599		WAW	24	mel	10YR 4/2			5-10			ssst	24	35	IV	W	3b	Medium-Heavy	OC mottling around soft sandstones. Soft weathered sandstone gravels above 50cm. Impenetrable due to stones at 65cm.
			50	hel & sandy lenses	10YR 4/3	7.5YR 5/8 7/8 4/1 6/1 & 10YR 4/1	ab	5-10			ssst							
			65	mel & sandy lenses	10YR 4/3	10YR 4/1	m	10-20			ssst gyl							
601		WAW	27	mel	7.5YR 3/2	7.5YR 4/4	fw	5-10			ssst	28	35	IV	W	3b	Medium-Heavy	Offset due to proximity of muck heap. Sandy loam texture resulting from soft weathered ssst. Increasing manganese mottles below 80cm.
			100	hel & sandy lenses	7.5YR 4/2	7.5YR 5/8 7/8 & 4/1 & 6/1 10YR 4/1	ab	5-10			ssst							
			22	mel	dk gr br			3-5	few	few	ssst							

610	NZ13800, 09700	WW	45 100	hel e	dk-br br	ye & gr oc, ye & gr	e e	3-5 3-5			sst sst	45	45	4	CL & W	3b	m/h	4-7° slope, mottling in upper- SS very faint, common- weathered sandstone in SS.
611	As per- schedule	PGR	0-23	mel	10YR 3/2			3-5	1-2	1-2	hdsst-grvl- ssst	30	42	IV	W	3b	Medium- Heavy	Slightly organic topsoil to- 15cm. Very slightly improved- upper subsoil drainage to- 35cm
			23-42	hel	10YR 4/4	10YR 5/2 6/6 Mn	ab	3-5			hdsst-grvl							
			42-100	e	10YR 6/2	7.5YR 5/6 10YR 6/1	ab	3-5			hdsst-ssst							
612	As per- schedule		0-23	mel	10YR 3/2	7.5YR 5/6	fw	3-5	1-2	1-2	hdsst-grvl-q	20	35	IV	W	3b	Medium- Heavy	Very strongly gleyed clay- @45cm - dk bluish grey to v- dk grey. Less stony at depth
			23-45	hel	10YR 5/3	10YR 5/2 6/6 Mn	ab	5-10			hdsst-ssst							
			45-100	e	G2 3/1	10YR 6/6	m	1-2			hdsst-ssst hr							
613	NZ14000, 09575	WB	40	mel	v-dk-gr-br			3-5		few	sst	40	65	3	CL & W	3a	m/h	Near flat at top of hill, - unusual TS depth, right in- corner of field so possibly- disturbed
			65	mel	ye-br	oc, gr & Mn/Fe	e	5-10			sst							
			100	hel	dk-gr-br	lt-gr & ye	ab	5-10			sst							

BORING-NUMBER	NGR (actual)	LAND-USE	DEPTH (cm)	Texture	Soil Colour	MOTTLES		STONES			DEPTH-TO GLEYING (cm)	DEPTH-TO SPL (cm)	WETNESS-CLASS	ALC Limitation	ALC	SOIL-TYPE	COMMENTS	
					Munsell	Munsell	Ab.	Total (%)	>2cm	>6cm								Type
614	As per-schedule	PGR	0-26	mel (e)	10YR 3/2	7.5YR 5/6 Mn	r	3-5	1-2	1-2	hdst-grvl-ssst	65	no-SPL	II	W	3a	Medium	Stonier with improved drainage on upslope. See pit-description
			26-65	sl	10YR 4/4	10YR 5/6 Mn	f	5-10			hdst-grvl-ssst							
			65-100	sel	10YR 5/3	10YR 5/2 6/6 Mn	e	5-10			hdst-ssst-zst							
615		CER	33	mel	10YR 4/4			1-2				33	50	IV	W	3b	Medium-Heavy	Adjacent to road and site of archaeological pit. Relief beginning to rise in 3-4° slope. Impenetrable at 80cm due to stone. Surface stone content 3-5
			65	hcl	10YR 4/4	7.5r 5/8 & (10yr 3/1 >55)	mn >55	1-2										
			80	e	10YR 3/3	10yr 2/1 (& 7/8 weathered ssst)	ab	3-5			ssst-gravels							
616	NZ 14199, 09400	WB	31	hcl	v dk-gr-br			1-3	few	few	sst & lst	32	55	4	CL & W	4	hvy	4-7° slope. Technically ALC grade 4 but being farmed at a higher standard, at least partially due to field drains. Clay tile at 75 cm.
			55	hcl	ye-br	oc, rdye & lt gr	ab	1-3			sst & lst							
			75	e	dk-gr	oc & ye	ab	5-10			sst							
617	As per-schedule	WB	0-25	mel/hcl	10YR 3/2			5-10	3-5	1-2	hdst-ssst-lst	45	65	II	W	3a	Medium	
			25-65	hcl	10YR 4/4	10YR 5/6 Mn	fw	5-10			hdst-grvl-ehk							
			65-100	hcl	10YR 5/2	10YR 5/2 6/8	m	5-10			hdst-ssst							
618		CER	33	hcl	10YR 3/2			1-2				33	35	IV	W	4	Heavy	Satellite imagery indicating an area of previous possible disturbance? very dark grey/black >80cm, reduced ochreous mottling. Impenetrable due to stone at 90cm.
			55	hcl	10YR 4/3	10YR 5/8 & 6/4	m > ab	1-2										
			90	hcl & sandy-lenses	10YR 4/4	10YR 5/8 & 7/8 & 3/1	ab	3-5			ssst-gravels							
619	NZ 14300, 09500	WAW	28	mel	dk-gr-br			5-10		com	sst & lst	28	35	4	CL & W	3b	m/h	flattish, weathered sandstone in subsoil
			100	hcl-e	lt-gr & ye	oc & ye	ab	5-10			sst & lst							
620	NZ 14500, 09600	WAW	28	mel	dk-gr-br			3-5		com	lst & sst	28	35	4	CL & W	3b	m/h	stones becoming common below 70, impenetrable stone at 90
			100	e	gr	ye & ol	ab	3-5			sst							
621	NZ 14500, 09500	WAW	38	hcl	dk-gr-br	oe	r	3-5		com	sst	45	45	4	CL & W	4	hvy	flattish area
			45	e	gr-br	ye + ol	ab	3-5			sst							
			100	hcl	gr	oc, lt-gr & ye	ab	3-5			sst							
622	As per-schedule	WB	0-26	hcl	10YR 4/3			5-10	3-5	1-2	hdst-lst-q-p	28	35	IV	W	4	Heavy	Marginally lighter topsoil 5-10% subsoil in topsoil
			26-50	hcl	10YR 5/2	7.5YR 5/6 Mn	m	3-5			hdst-grvl-q							
			50-100	e	2.5YR 4/4	10YR 5/2 6/6 Mn	ab	3-5			hdst-grvl-ssst							
623	As per-schedule	WB	0-25	hcl	10YR 3/3			5-10	3-5	1-2	hdst-hr-lst	25	35	IV	W	4	Heavy	Marginally lighter topsoil
			25-60	hcl	10YR 5/2	10yr 5/4 6/6 Mn	ab	5-10			hdst-ssst-q							
			60-100	e	10YR 5/1	10YR 7/1	ab	3-5			hdst-ssst							
624	As per-schedule	WB	0-27	hcl/mel	10YR 3/3			3-5	1-2	1-2	hdst-hr-lst	55	55	III	W	3b	Medium-Heavy	Improved upper subsoil drainage strong mn mottles 50-55 marginal 3a
			27-55	mel	10YR 4/4	10YR 6/6	f	3-5			hdst-ssst							
			55-100	hcl	10YR 5/3	7.5YR 5/6 Mn	m	3-5			hdst-ssst							
625	414900 509363	WB	0-28	hcl	10YR 4/3			3-5	1-2	1-2	hdst-ssst	28	35	IV	W	4	Heavy	Few large sandstones in topsoil to 200mm size
			28-40	hcl	10YR 5/4	10YR 6/6 Mn	ab	5-10			hdst-ssst							
			40-100	e	10YR 5/2	10YR 7/1 Mn	ab	3-5			hdst-ssst							

BORING-NUMBER	NGR (actual)	LAND-USE	DEPTH (cm)	Texture	Soil Colour	MOTTLES		STONES			DEPTH-TO GLEYING (cm)	DEPTH-TO SPL (cm)	WETNESS-CLASS	ALG Limitation	ALG	SOIL-TYPE	COMMENTS	
					Munsell	Munsell	Ab.	Total (%)	>2cm	>6cm								Type
626	As per-schedule	WB	0-30	hcl	10YR 3/3			3-5	1-2	1-2	hdsst	30	40	IV	W	4	Heavy	Heavy topsoil. Grade 4- slightly harsh but to guidance as heavy topsoil and WC4
			30-40	hcl	10YR 5/3	10YR 6/1 Mn	ab	5-10			hdsst-ssst							
			40-100	hcl	10YR 5/2	10YR 6/6 Mn	ab	5-10			hdsst-ssst							
627	As per-schedule	WB	0-27	hcl	7.5YR 4/3			1-2	1-2	1-2	hdsst	27	38	IV	W	4	Heavy	Stony topsoil on eastern-headland - field stone-pickings? - Good earthworm-numbers
			27-38	hcl	10YR 5/4	7.5YR 5/6 Mn	ab	5-10			hdsst-ssst							
			38-100	e	10YR 5/2	10YR 6/1 Mn	ab	3-5			hdsst-ssst							
630	NZ 15100, 09000	PGR	24	org-ycl	dk-gr-br			3-5			sst	24	40	4	CL & W	3b	m/h	weathered sandstone in ss
			40	hcl	lt-gr & ye	gr & ye	ab	3-5			sst							
			100	hcl/e	dk-gr, oc & ye	oc, gr & ye	ab	5-10			sst, shl & cl							
631		WB	0-27	mcl	10YR 4/3			3-5	1-2	1-2	hdsst-hr-gr	27	36	IV	W	3b	Medium-Heavy	Rare large and v large hdsst in topsoil to 150mm size. Moderate slope 3-4° W
			27-45	e	10YR 6/2	10YR 6/6 6/8	ab	3-5			hdsst-ssst							
			45-100	hcl	10YR 6/6	10YR 6/1 6/6 Mn	ab	3-5			hdsst-ssst							
632	NZ 15200, 09000	WB	29	sel	dk-gr-br			3-5			sst	29	35	4	CL & W	3b	m/h	weathered sandstone in ss
			60	hcl	lt-gr & ye	gr & yel	ab	3-5			sst							
			100	hcl/e	dk-gr, oc & ye	oc, gr & ye	ab	5-10			sst, shl & cl							
633	NZ 15200, 08910	WB	30	mcl	dk-gr-br			3-5			sst	30	35	4	CL & W	3b	m/h	boring adjusted northwards to avoid road, field headland. weathered sandstone in ss
			50	hcl	lt-gr & ye	gr & ye	ab	3-5			sst							
			100	hcl/e	dk-gr, oc & ye	oc, gr & ye	ab	5-10			sst, shl & cl							
634	As per-schedule	WB	0-28	mcl	10YR 3/3			3-5	1-2	1-2	hdsst-hdlt-hr	30	43	IV	W	3b	Medium-Heavy	Poorer drainage at base of slope - 3-4 SSW
			28-43	mcl	10YR 6/4	7.5YR 6/8 Mn	e	3-5			hdsst-lst							
			43-80	e	10YR 5/3	10YR 6/2 6/6	ab	3-5			hdsst-lst							
635	As per-schedule	WB	0-23	hcl	10YR 4/3			1-2	1-2	1-2	hdsst-grvl	23	35	IV	W	4	Heavy	Wetter at bottom of slope - adjacent woodland. Heavy-topsoil
			23-35	hcl	10YR 5/2	10YR 6/6	ab	1-2			hdsst-ssst							
			35-100	e	2.5Y 4/3	10YR 6/2	ab	1-2			hdsst-ssst							
636	NZ 15300, 09100	WB	30	hcl	dk-gr-br			3-5			sst	30	35	4	CL & W	4	hvy	v dk-gr in ss with common soft-weathered sandstone. Impenetrable stone at 70
			70	hcl/e	dk-gr, oc & ye	oc, gr & ye	ab	5-10			sst, shl & cl							
637	NZ 15300, 09000	WB	30	mcl	dk-gr-br			3-5			sst	30	35	4	CL & W	3b	m/h	weathered sandstone in ss
			50	hcl/e	lt-gr & ye	gr & ye	ab	3-5			sst							
			100	hcl/e	dk-gr, oc & ye	oc, gr & ye	ab	5-10			sst, shl & cl							
638	NZ 15300, 08900	WB	30	hcl	dk-gr-br			3-5			sst	30	35	4	CL & W	4	hvy	ts wet and gleyed, weathered-sandstone in ss,
			100	hcl/e	dk & lt-gr	oc, ye & gr	ab	3-5			sst							
640	As per-schedule	WB	0-30	mcl	10YR 3/3			1-2	1-2	1-2	hdsst-q-shz	30	70?	III	W	3a	Medium	Less stony silty profile to depth
			30-65	mzel	10YR 7/4	7.5YR 5/6	ab	1-2			hdsst-sssr-grvl							
			65-100	mzel	10YR 8/6	7.5YR 6/8 Mn	ab	1-2			hdsst-grvl							
641	As per-schedule	WB	0-27	hcl	10YR 4/4			1-2	1-2	1-2	hdsst-grvl	27	70	III	W	3b	Medium-Heavy	Sandy very pale yellow upper-subsoil strongly gleyed but-not SPL. Heavy topsoil
			27-70	sel	2.5Y 7/2	7.5YR 5/6	ab	1-2			hdsst-ssst							
			70-100	hcl	2.5Y 7/3	10YR 6/6	ab	1-2			hdsst-ssst							

BORING-NUMBER	NGR (actual)	LAND-USE	DEPTH (cm)	Texture	Soil Colour	MOTTLES		STONES			DEPTH-TO GLEYING (cm)	DEPTH-TO SPL (cm)	WETNESS-CLASS	ALG Limitation	ALG	SOIL-TYPE	COMMENTS	
					Munsell	Munsell	Ab.	Total (%)	>2cm	>6cm								Type
642	NZ15400, 09000	WB	30	hel	dk-gr-br			3-5			sst	30	35	4	CL & W	4	hvy	ts-wet and gleyed, weathered sandstone in ss, impenetrable stone at 70
			50	e	oc, ye & lt-gr	oc & ye	ab	3-5			sst							
			70	hel/c	v-dk-gr & ye	oc, ye & gr	ab	3-5			sst & shl							
643	As per-schedule	WB	0-22	hel	10YR 4/4			3-5	1-2	1-2	hdsst-grvl-q	23	35	IV	W	4	Heavy	Rare large hard ssts in topsoil to 150mm size
			22-50	hel	10YR 5/3	10YR 6/6	ab	3-5			hdsst-grvl-q							
			50-100	e	10YR 5/2	7.5YR 5/6-Mn	ab	3-5			hdsst-ssst-e							
644	NZ15400, 08810	WB	30	mel	dk-gr-br			3-5			sst	30	35	4	CL & W	3b	m/h	shallow valley feature, soft-weathered sst and shale in ss
			45	hel	gr	oc & gr	e	3-5			sst & shl							
			100	hel/c	gr & v-dk-gr/bl	oc & ye	ab	10-20			sst, shl & cl							
646	As per-schedule	WB	0-28	hel	10YR 4/4			1-2	1-2	1-2	hdsst	28	35	IV	W	4	Medium-Heavy	Soft sandstone fragments in lower subsoil
			28-42	hel	10YR 5/3	10YR 5/6	ab	1-2			hdsst-grvl							
			42-100	e	10YR 5/2	10YR 5/6	ab	1-2			ssst							
647	As per-schedule	WB	0-32	mel	10YR 4/4			3-5	1-2	1-2	hdsst-ssst	32	65	III	W	3a	Medium-Heavy	Slightly improved drainage on elevated area of field. Impen @65
			32-65	hel	10YR 5/2	7.5YR 5/6-Mn	e	3-5			hdsst							
			65-100	e	10YR 5/3	7.5YR 5/6-Mn	ab	1-2			hdsst							
648	NZ15500, 08900	WB	35	hel	dk-gr-br			3-5			sst	35	35	4	CL & W	4	hvy	ts-wet and gleyed, weathered sandstone in ss
			60	e	dk-gr	ye & gr	ab	3-5			sst & shl							
			100	hel/c	v-dk-gr-br	oc, ye & lt-gr	ab	10-20			sst, shl & cl							
649	As per-schedule	WB	0-23	mel/hel	10YR 3/3			3-5	1-2	1-2	hdsst-grvl	23	35	IV	W	4	Heavy	Rare large hard ssts in topsoil to 150mm size
			23-50	hel	10YR 5/6	10YR 6/6 5/1	ab	3-5			hdsst-grvl							
			50-100	e	10YR 5/4	10YR 5/2 6/8	ab	3-5			hdsst-grvl							
650	NZ15600, 09000	WB	33	hel	dk-gr-br			3-5			sst	33	35	4	CL & W	4	hvy	ts-wet and gleyed, weathered sandstone in ss, impenetrable stone at 65
			50	e	dk-gr	oc, ye & gr	ab	3-5			sst							
			65	hel/c	v-dk-gr-br	ye & gr	ab	5-10			sst & shl							
651	As per-schedule	wb	0-24	m/hel	10YR 4/4			1-2	1-2	1-2	hdsst-grvl-q	26	35	IV	W	3b	Medium-Heavy	Marginally lighter topsoil. 5-10% subsoil in topsoil
			26-45	hel	10YR 6/2	7.5YR 5/6 10YR 6/1	ab	1-2			hdsst-ssst							
			45-100	e	10YR 5/3	7.5YR 5/6-Mn	ab	1-2			hdsst-ssst							
652	NZ15600, 08700	PGR	30	hel	v-dk-gr-br	none		3-5		fw	lst	30	40	4	CL & W	4	hvy	moved to grid square corner, impenetrable stone at 80
			35	hel	gr	fe-Mg	ab	5-10			lst & sst							
			100	hel	lt-gr	oc and yell	ab	5-10			lst & sst							
653	NZ15700, 08800	PGR	29	hel	dk-gr-br	none		3-5		fw	sst	30	35	4	CL & W	4	hvy	weathered sst, below 60 new
			60	hel	lt-gr	oc, Mn & ye	ab	3-5			sst							
			100	e	gr	lt-br & oc	ab	3-5			sst							
654	NZ15790, 08650	WAW	29	mel/sel	v-dk-gr-br			3-5		fw	sst & lst	35	35	4	CL & W	3b	m/h	bottom of slope, as above, impenetrable stone at 70cm
			45	gritty hel	rd-br	oc & ye	ab	3-5			sf-sst							
			70	hel	dk-gr/bl	oc & ye	ab	5-10			hd & sf-sst							
655	NZ15875, 08546	WAW	26	hel	v-dk-gr-br			3-5		fw	sst	25	35	4	CL & W	4	hvy	25 m from A66, weathered sst in ss
			45	hel	lt-gr	oc, ye & Fe/Mn	ab	3-5			sf-sst							
			100	e	dk-gr	oc & ye	ab	5-10			hd & sf-sst							

BORING-NUMBER	NGR (actual)	LAND-USE	DEPTH (cm)	Texture	Soil-Colour	MOTTLES		STONES			DEPTH-TO GLEYING (cm)	DEPTH-TO SPL (cm)	WETNESS-CLASS	ALG Limitation	ALG	SOIL-TYPE	COMMENTS	
					Munsell	Munsell	Ab.	Total (%)	>2cm	>6cm								Type
657	NZ-15901, 08425	WAW	50	mel stones + mel	v-dk-gr-br dk-gr-br	oc & ye	r	3-5 10+			sst sst			3-2	CL & W	3a	Dist.	Topsoil-like material to depth? impenetrable stone at 50cm. 3 different locations tried with a 10m radius with the same result.
658	NZ-15963, 08367	WAW	28	mel?	v-dk-gr-br			3-5		fw	sst	28	35	4	CL & W	3b	m/h	soft weathered sst in ss
			50	e	lt-gr	oc & ye	ab	5-10	sst									
			100	e/hcl	dk-gr	lt-gr & ye	e	20+	red-sst									
659	As per-schedule	WB	0-35	mel/hcl	10YR3/3			3-5	1-2	1-2	hdsst	35	62	III	W	3b	Medium-Heavy	Deeper topsoil. Sandier upper-subsoil strongly gleyed throughout and marginal SPL. Borderline hcl topsoil so grade as 3b
			35-62	sel	10YR5/3	10YR 5/2-6/6	ab	3-5	hdsst vsst									
			62-100	e	10YR6/2	10YR 6/1 Mn	ab	3-5	hdsst-1st									
661	As per-schedule	WOSR	0-35	mel	10YR 4/3			3-5	3-5		hdsst-grvl-pg	35	80	III	W	3a	Medium	Sandy colluvium at base of slope. Strongly gleyed grey-sandy subsoil >60cm. Likely receiving area for upslope run-off - vert wet to south of boring
			35-60	sel	10YR 5/3	10YR 6/6-7/1	ab	1-2	hdsst-ssst hd1st									
			60-80	msl	10YR 5/1	7.5YR 5/6 Mn	ab											
			80-100	hcl	10YR 5/2	7.5YR 5/6 10YR 7/1	ab	3-5	hdsst									
663		PGR	28	mel	2.5Y 3/1	7.5YR 5/8	fw	3-5			ssst	<10	35	IV	W	3b	Medium-Heavy	Field moist underfoot. Mottles increasingly dark blue-grey below 60cm. Impenetrable to auger due to stones at 85cm.
			85	hcl & sand lenses	2.5Y 5/3	7.5YR 5/8 & 5/1 & 2.5/1 & 10R 4/8	m	3-5	ssst									
664		WOSR	0-30	m/hcl	10YR 4/3			3-5	1-2	1-2	hdsst-hr-1st	30	35	IV	W	3b	Medium-Heavy	Marginal 4 if heavy topsoils. 3b more likely
			30-60	hcl	10YR 6/2	10YR 7/1 Mn	ab	3-5	hdsst-ssst									
			60-100	hcl	10YR 5/3	10YR 7/2 Mn	ab	3-5	hdst-ssst									
666	NZ-16500, 08200	PGR	30	mel	dr-gr-br			1-3%		r	sst	30	45	4	CL & W	3b	m/h	7-11° degrees slope, wet at 80cm
			45	mel	lt-gr	ye & lt-br	e	3-5%	sst									
			100	hcl	dr-gr-br	oc & gr	e	3-5%	sst									

Auger	Depth (cm)	Colour	Texture	Mottling	SPL	Soil Profile				Notes	Agricultural Land Classification						Notes	
						CaCO ₂	Stones (%)				(-)	W-C	WE grade	DR grade	Overall grade	Limit(s)		
							Total	>2cm	>6cm									Litho ¹
600	0-33	Br	MZCL	-	-		1		2		sandy in places	4	IV	3b		3b	WE	
	33-53	Gr	HCL	xxx	borderline		2		2									
	53-103	Gr	C	xxx	yes		1		2									
602	0-25	Dk Yl Br	MCL	-	-		5		2			8	IV	3b		3b	WE	variable slope over distance
	25-44	Gr	HCL	xxx	yes		4		2									
	44-100	Gr	HCL	xxx	yes		8		2									
603	0-20	Dk Gr Br	MCL	-	-		8		2			4	IV	3b		3b	WE	
	20-48	Gr	C	xxx	yes		8		2									
	48-100	Gr	C	xxx	yes		5		2									
604	0-24	Br	MCL	-	-		8		2	SBS 80cm	3	IV	3b		3b	WE		
	24-80	Gr + Br	HCL	xxx	yes		8		2									
605	0-32	Dk Yl Br	SCL	-	-		3		1			3	III-IV	3a-3b		3a-3b	WE	
	32-54	V Pl Br	SCL	xxx	no		3		1									
	54-100	Gr	HZCL	xxx	yes		3		1									
606	0-22	Br	MZCL	-	-		1		1			8	IV	3b		3b	WE	variable slope
	22-41	Li Gr	HCL	xxx	borderline		1		1									
	41-83	Pl Br + Gr	HCL	xxx	yes		0											
	83-100	Br	MCL	xxx	yes		2		1									
607	0-31	Dk Gr Br	MZCL	-	-		1		1			5	IV	3b		3b	WE	variable slope
	31-51	Yl Br + Gr	MCL	xxx	no		3		1									
	51-78	Br + Gr	HCL	xxx	yes		3		1									
	78-100	Gr	C	xxx	yes		3		1									
608	0-31	Br	MCL	-	-		2		1			5	IV	3b		3b	WE	
	31-74	Gr	C	xxx	yes		1		2									
	74-102	Gr	C	xxx	yes		1		1									
609	0-30	Dk Gr Br	MZCL	-	-		1		1	Stoney layer at 40cm	6	IV	3b		3b	WE	variable slope	
	30-52	Br	MCL	xxx	no		5		1									
	52-78	Gr	HCL	xxx	yes		3		1									
	78-100	Gr	C	xxx	yes		3		1									

Auger	Depth (cm)	Colour	Texture	Mottling	SPL	Soil Profile				Notes	Agricultural Land Classification						Notes
						CaCO ₂	Stones (%)				W-C	WE grade	DR grade	Overall grade	Limit(s)		
							Total	>2cm	>6cm							Litho ¹	
660	0-40	Br	MCL	-	-	2			2	sandy in places	5	IV	3b		3b	WE	variable slope
	40-51	Br	HCL	xxx	yes	5			2								
	51-102	Gr-Br	HCL	xxx	yes	6			2								
662	0-31	Br	MCL	-	-	2			2		3	IV	3b		3b	WE	
	31-71	Gr-Br	HCL	xxx	yes	1			2								
	71-102	Dk-Gr-Br	HCL	xxx	yes	2			2								
665	0-33	Br	HCL	-	-	3			2		4	IV	3b		3b	WE	
	33-76	Br	HCL	xxx	yes	8			2								
	76-100	Gr-Br	HCL	xxx	yes	8			2								
667	0-33	Br	MCL	-	-	1			1		8	IV	3b		3b	WE & GR	
	33-50	Br	MCL	e	no	1			1								
	50-100	Gr	SCL	xxx	yes	2			1								
668	0-35	Br	MCL	-	-	0				lighter than topsoil lighter and gritty in places	5	II	2		2	CL	
	35-60	Br	MCL	e	no	0											
	60-100	Pl-Br	MCL	xx	no	0											
682	0-27	Br	MCL	-	-	2			2	Impenetrable due to stone at 70cm.	2	IV	3b		3b	WE	
	27-42	Gr	HCL	xxx	yes	2			2								
	42-70	Gr	C	xxx	yes	2			2								
683	0-27	Br	MCL	-	-	2			2		6	IV	3b		3b	WE	
	27-46	Gr	HCL	xxx	no	4			2								
	46-100	Gr	HCL	xxx	yes	4			2								
684	0-30	Br	MCL	-	-	3			2		6	IV	3b		3b	WE	
	30-53	Gr	HCL	xxx	no	4			2								
	53-100	Gr+Br	HCL	xxx	yes	4			2								
685	0-27	Gr-Br	M-HCL	-	-	1			2	Mottled	4	IV	3b		3b	WE	
	27-53	Gr	HCL	xxx	no	2			2								
	53-100	Gr+Gr	C	xxx	yes	4			2								

Highways England

A66 Northern Trans-Pennine

Stephen Bank to Carkin Moor Agricultural Land Classification (ALC) Survey Results

1050859



Order Limits

Auger locations

ALC

2

3a

3b

4

5

Non-ag

Urban

Not surveyed

Drawn by Paul Taylor 29/04/2022, Verified by John Grylls 29/04/2022

0 100 200 300 400

Metres

Scale: 1:20,000 at A3 size

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Appendix 8: Key to soil auger boring abbreviations

Topsoil and Subsoil Texture			Soil Colour/Mottles		
zc	-	silty clay	bl	-	black
c	-	clay	br	-	brown
hcl	-	heavy clay loam	fe	-	Iron concretions
hzcl	-	heavy silty clay loam	g	-	grey
mcl	-	medium clay loam	lt	-	light
mzcl	-	medium silty clay loam	mn	-	manganese concretions
scl	-	sandy clay loam	o	-	ochrous
msl	-	medium sandy loam	ol	-	olive
mszl	-	medium sandy silt loam	p	-	pale
scl	-	sandy clay loam	pk	-	pinkish
csl	-	coarse sandy loam	r	-	red
msl	-	medium sandy loam	y	-	yellow
mszl	-	medium sandy silt loam	Abundance (Mottles)		
fsl	-	fine sandy loam	r	-	rare
fszl	-	fine sandy silt loam	f	-	few
zl	-	silt loam	c	-	common
lcs	-	loamy coarse sand	m	-	many
lms	-	loamy medium sand	ab	-	abundant
lfs	-	loamy fine sand	Cropping/Land Use		
cs	-	coarse sand			
ms	-	medium sand	A	-	arable (unspecified)
fs	-	fine sand	CULT	-	cultivated (awaiting drilling)
o	-	prefix 'o' = organic	F	-	fallow
pl	-	peaty loam	CER	-	cereals
p	-	peat	NON AG	-	non agricultural
Stone type			POT	-	Potatoes
br	-	brick	PLO	-	ploughed
chk	-	chalk	PGR	-	permanent grassland
c	-	coal	WOSR	-	winter oilseed rape
g	-	glass	RGR	-	rough grassland
grvl	-	gravel	WW	-	winter wheat
hdsst	-	hard sandstones			
mdst	-	mudstone	Other		
p	-	pottery			
peb	-	pebbles	Impen	-	impenetrable to auger
q	-	quartzite pebbles	pok	-	pockets
sch	-	schist	occ	-	occasional
ssst	-	soft/weathered sandstones	OB	-	overburden
t	-	tile fragments	OM	-	organic matter
slst	-	soft limestone	SPL	-	slowly permeable layer
zlst	-	siltstone	W	-	Weathering

Colour	Texture	Mottling	CaCO ₃
Bk - black Br - brown(ish) Bu - blue(ish) Dk - dark Du - dusky Gn - green(ish) Gr - grey(ish) Li - light Ol - olive Pi - pink(ish) Pl - pale Rd - red(dish) St - strong V - very Wk - weak Yl - yellow(ish)	C - clay ZC - silty clay SC - sandy clay CL - clay loam (H-heavy, M-medium) ZCL - silty clay loam (H-heavy, M-medium) SCL - sandy clay loam SZL - sandy silt loam (F-fine, M-medium, C-coarse) ZL - silt loam SL - sandy loam (F-fine, M-medium, C-coarse) LS - loamy sand (F-fine, M-medium, C-coarse) S - sand (F-fine, M-medium, C-coarse) Org - organic (S-sand, L-loam, C-clay) Pty - peaty (S-sand, L-loam) Pt - peat (S-sandy, L-loamy, H-humified, SF-semi-fibrous, F-fibrous) R - bedrock	o – unmottled soil; x – a few (<2%) ochreous mottles; xx – common (2-20%) to many (20-40%) ochreous mottles <u>OR</u> greyish or pale soil, typically with a few ochreous mottles; xxx – greyish or pale colours dominant in matrix and/or ped faces and common to very many (>40%) ochreous mottles <u>OR</u> if reddish colours are dominant in the matrix, > 2% greyish, brownish or ochreous mottles or ferri-manganiferous concentrations, and dominantly pale coloured ped faces (gleyed horizon); xxxx – dominantly grey soil, often with some ochreous mottles (gleyed horizon). 'greyish', 'pale', 'brownish', 'ochreous' and 'reddish' colours are assessed in the field using a Munsell Soil Colour Book and defined according to Appendix 3 of the ALC Guidelines.	non - non-calcareous v sl ca - very slightly calcareous sl ca - slightly calcareous ca - calcareous v ca - very calcareous Stone lithology 1 - all hard rocks or stones 2 - soft, medium or coarse grained sandstones 3 - soft 'weathered' igneous or metamorphic rocks or stones 4 - soft oolitic or dolomitic limestones 5 - soft fine grained sandstones 6 - soft, argillaceous or silty rocks or stones 7 - chalk or chalk stones 8 - gravel with non-porous stones 9 - gravel with porous stones
SPL			Notes
yes - a slowly permeable layer. borderline - a borderline slowly permeable layer. no - not a slowly permeable layer.			FMCs – ferri-manganiferous concentrations
Principal Limitation(s) to Agriculture			
CL - climate GR - gradient	DE - depth MR - microrelief	DR - droughtiness ST - stoniness	ER - erosion TX - texture FL - flooding WE - wetness
Droughtiness Calculation			
MDW - moisture deficit wheat (mm); MDP - moisture deficit potatoes (mm); MBW - moisture balance wheat (mm); MBP - moisture balance potatoes (mm); Grade W - droughtiness grade for wheat; Grade P - droughtiness grade for potatoes.			
Descriptions and classifications are made in accordance with <i>Soil Survey Field Handbook</i> (Hodgson, J.M., 1997), <i>Technical Information Note TIN037: Soil Texture</i> (Natural England, 2008) and <i>Agricultural Land Classification of England and Wales: Revised guidelines and criteria for grading the quality of agricultural land</i> (MAFF, 1988).			

In the auger boring descriptions sometimes the Munsell Soil Colour Code was used to record soil colour. Greyish, pale, brownish, ochreous and reddish colours are relevant to establishing if a soil horizon is gleyed i.e. has greyish, pale and ochreous soil colouring indicative of waterlogging). Munsell colours are defined as follows:-

- Greyish is Munsell soil colour of any hue with a chroma 2 or less and a value more than 3 e.g. in the Munsell colour code 10YR6/1 10YR is the hue, 6 is the value and 1 is the chroma (in a word the soil colour is grey).
- Pale is Munsell soil colour of any hue with *either* chroma 3 and a value more than 4 *or* chroma 4 and value more than 5 e.g. 10YR6/4 is light yellowish brown (considered a pale colour for ALC purposes).
- Brownish is Munsell soil colour of hues 7.5YR to 10YR with *either* chroma 3 and value 4 *or* chroma 4 and value 4 or 5 e.g. 7.5YR3/3 is dark brown.
- Ochreous is Munsell soil colour of 10YR or redder with chroma more than 4 and value less 7 e.g. 7.5YR4/6 is strong brown.
- Reddish is Munsell soil colour of hue 5YR or redder e.g. 5YR4/3 is reddish brown.

Soil surveyors carry Munsell Soil Colour Charts to assign soil colours whilst carrying out surveys.

Appendix 9: Laboratory Particle Size Distribution Results



ANALYTICAL REPORT										
Report Number	93590-22		F912 KEVIN BROOK		Client KEVIN BROOK					
Date Received	03-MAR-2022		RSK ADAS LTD							
Date Reported	17-MAR-2022		UNIT 1 RUBICON SQUARE							
Project	1010891 SOIL		4205 PARK APPROACH							
Reference	KEVIN BROOK		THORPE PARK							
Order Number			LEEDS LS15 8GB							
Laboratory Reference	SOIL550062		SOIL550063		SOIL550064		SOIL550065			
Sample Reference	A66 B383 TOPSOIL		A66 B383 UPPERSUB		A66 B632 T/S 0-23		A66 B632 UPPERSUB			
Determinand	Unit	SOIL	SOIL	SOIL	SOIL					
Sand 2.00-0.063mm	% w/w	82	86	53	38					
Silt 0.063-0.002mm	% w/w	9	5	25	27					
Clay <0.002mm	% w/w	9	9	22	35					
Organic Matter LOI	% w/w	5.2	0.9	6.4	3.7					
Textural Class **		LS	LS	SCL	GHCL					
Notes										
Analysis Notes										
<p>The sample submitted was of adequate size to complete all analysis requested.</p> <p>The results as reported relate only to the item(s) submitted for testing.</p> <p>The results are presented on a dry matter basis unless otherwise stipulated.</p>										
Document Control										
<p>This test report shall not be reproduced, except in full, without the written approval of the laboratory.</p> <p>** Please see the attached document for the definition of textural classes.</p>										
Reported by										
<p>[Redacted]</p> <p>Natural Resource Management, a trading division of Cawood Scientific Ltd. Coopers Bridge, Braziers Lane, Bracknell, Berkshire, RG42 6NS</p> <p>[Redacted]</p>										



ANALYTICAL REPORT											
Report Number	93591-22	F912 KEVIN BROOK	Client KEVIN BROOK								
Date Received	03-MAR-2022	RSK ADAS LTD									
Date Reported	17-MAR-2022	UNIT 1 RUBICON SQUARE									
Project	1010691 SOIL	4205 PARK APPROACH									
Reference	KEVIN BROOK	THORPE PARK									
Order Number		LEEDS LS15 8GB									
Laboratory Reference		SOIL550066									
Sample Reference		A88 B341 LS81									
Determinand	Unit	SOIL									
Sand 2.00-0.063mm	% w/w	66									
Silt 0.063-0.002mm	% w/w	16									
Clay <0.002mm	% w/w	18									
Textural Class **		SCL/SL									
Notes											
<p>Analysis Notes The sample submitted was of adequate size to complete all analysis requested. The results as reported relate only to the item(s) submitted for testing. The results are presented on a dry matter basis unless otherwise stipulated.</p> <p>Document Control This fast report shall not be reproduced, except in full, without the written approval of the laboratory.</p> <p> ** Please see the attached document for the definition of textural classes.</p>											
<p>Reported by [REDACTED] Natural Resource Management, a trading division of Cawood Scientific Ltd. Coopers Bridge, Braziers Lane, Bracknell, Berkshire, RG42 6NS [REDACTED]</p>											



ANALYTICAL REPORT										
Report Number	91606-22		K437 KIRK HILL							
Date Received	22-FEB-2022		RSK ADAS LTD							
Date Reported	07-MAR-2022		ADAS ROSEMAUND							
Project	KIRK HILL 1010891		PRESTON WYNNE							
Reference	AGG		HEREFORD							
Order Number			HR1 3PG							
Laboratory Reference	SOIL548014	SOIL548015	SOIL548016	SOIL548017	SOIL548018	SOIL548019	SOIL548020	SOIL548021	SOIL548022	
Sample Reference	SCHEME 8 WEST 458 TS	SCHEME 8 WEST 458 SS	B644 TS	B644 UPSS	B614 TS	B614 USS	SCHEME 8 W SS 55-100	SCHEME 3 AB40 TS	SCHEME1/2 PIT AB28	
Determinand	Unit	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Sand 2.00-0.063mm	% w/w	72	64	50	44	50	51	45	78	70
Silt 0.063-0.002mm	% w/w	15	20	25	25	27	33	27	13	15
Clay <0.002mm	% w/w	13	16	25	31	23	16	27	9	15
Textural Class **		SL	SL	SCL/MCL	HCL	SCL/MCL	SL	HCL	LS	SL
Notes										
<p>Analysis Notes The sample submitted was of adequate size to complete all analysis requested. The results as reported relate only to the item(s) submitted for testing. The results are presented on a dry matter basis unless otherwise stipulated.</p> <p>Document Control This fast report shall not be reproduced, except in full, without the written approval of the laboratory.</p> <p>** Please see the attached document for the definition of textural classes.</p>										
<p>Reported by [Redacted] Natural Resource Management, a trading division of Cawood Scientific Ltd. Coopers Bridge, Braziers Lane, Bracknell, Berkshire, RG42 6NS [Redacted]</p>										



ANALYTICAL REPORT									
Report Number	94040-22		K437		KIRK HILL				
Date Received	04-MAR-2022				RSK ADAS LTD				
Date Reported	17-MAR-2022				ADAS ROSEMAUND				
Project	1010891 A66 2402 TO 0203				PRESTON WYNNE				
Reference	KIRK HILL				HEREFORD				
Order Number					HR1 3PG				
Laboratory Reference		SOIL550282	SOIL550283	SOIL550284	SOIL550285	SOIL550286	SOIL550287		
Sample Reference		A66 198 TS	A66 210 TS	A66 3 TS	A66 213 TS	A66 AB 240 TOPSOIL	A66 AB 240 SUBSOIL		
Determinand	Unit	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL		
Sand 2.00-0.063mm	% w/w	76	79	55	78	67	52		
Silt 0.063-0.002mm	% w/w	12	11	26	11	18	21		
Clay <0.002mm	% w/w	12	10	19	11	15	27		
Textural Class **		SL	SL	SCL	SL	SL	SCL		
Notes									
<p>Analysis Notes</p> <p>The sample submitted was of adequate size to complete all analysis requested. The results as reported relate only to the item(s) submitted for testing. The results are presented on a dry matter basis unless otherwise stipulated.</p> <p>Document Control</p> <p>This test report shall not be reproduced, except in full, without the written approval of the laboratory.</p> <p>** Please see the attached document for the definition of textural classes.</p>									
<p>Reported by</p> <p>[Redacted Name] Natural Resource Management, a trading division of Cawood Scientific Ltd. Coopers Bridge, Braziers Lane, Bracknell, Berkshire, RG42 6NS</p> <p>[Redacted Signature]</p>									

ADAS (UK) Textural Class Abbreviations

The texture classes are denoted by the following abbreviations:

Class	Code
Sand	S
Loamy sand	LS
Sandy loam	SL
Sandy Silt loam	SZL
Silt loam	ZL
Sandy clay loam	SCL
Clay loam	CL
Silt clay loam	ZCL
Clay	C
Silty clay	ZC
Sandy clay	SC

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

vf	Very Fine (more than 2/3's of sand less than 0.106 mm)
f	Fine (more than 2/3's of sand less than 0.212 mm)
c	Coarse (more than 1/3 of sand greater than 0.6 mm)
m	Medium (less than 2/3's fine sand and less than 1/3 coarse sand).

The subdivisions of *clay loam* and *silty clay loam* classes according to clay content are indicated as follows:

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

Organic soils i.e. those with an organic matter greater than 10% will be preceded with a letter O.

Peaty soils i.e. those with an organic matter greater than 20% will be preceded with a letter P.

Appendix 10: Description of ALC Grades

The ALC grades and subgrades are described below in terms of the types of limitation which can occur, typical cropping range and the expected level and consistency of yield. The *'best and most versatile agricultural land'* falls into grades 1, 2 and subgrade 3a – which collectively comprises about one-third of the agricultural land in England and Wales. About half the land in England and Wales is either of moderate quality (subgrade 3b) or poor quality (grade 4). Although less significant on a national scale, such land can be locally valuable to agriculture and the rural economy where poorer farmland predominates. The remainder is very poor quality land in grade 5, which mostly occurs in the uplands.

Grade 1 – excellent quality agricultural land

Land with no or very minor limitations to agricultural use. A very wide range of agricultural and horticultural crops can be grown and commonly 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 and horticultural crops can usually be grown but on some land in the grade there may be reduced flexibility due to difficulties with the production of the more demanding crops such as winter harvested vegetables and arable root crops. The level of yield is generally high but may be lower or more variable than Grade 1.

Grade 3 – good to moderate quality land

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

Subgrade 3a – good quality agricultural land

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

Subgrade 3b – moderate quality agricultural land

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

Grade 4 – poor quality agricultural land

Land with severe limitations which significantly restrict the range of crops and/or level of yields. It is mainly suited to grass with occasional arable crops (e.g. cereals and forage crops) the yields of which are variable. In 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 agriculture land

Land with very severe limitations which restrict use to permanent pasture or rough grazing, except for occasional pioneer forage crops.