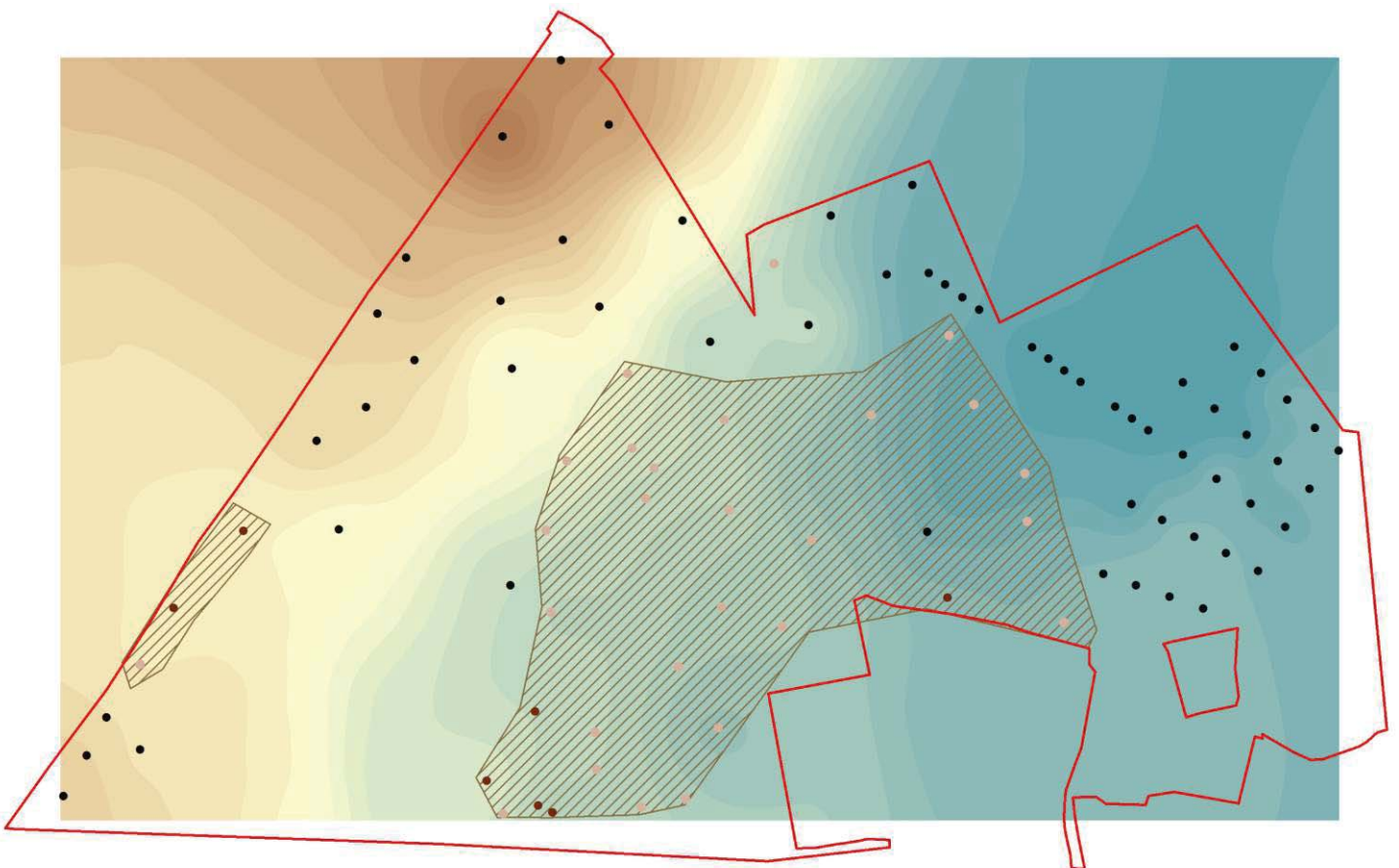




# Chapel Lane Bingham, Nottinghamshire

Geoarchaeological Borehole Survey



Ref: 113291.01  
August 2016



**Chapel Lane,  
Bingham, Nottinghamshire**

**Geoarchaeological Borehole Survey**

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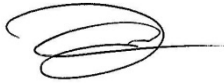


**August 2016**

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\* I = Internal Draft; E = External Draft; F = Final

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# Chapel Lane, Bingham, Nottinghamshire

## Geoarchaeological Borehole Survey

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# Chapel Lane, Bingham, Nottinghamshire

## Geoarchaeological Borehole Survey

### Summary

Wessex Archaeology was commissioned by Amec Foster Wheeler Environment & Infrastructure UK Ltd, acting on behalf of Crown Estates, to undertake a combined programme of archaeological evaluation trenching and borehole survey in advance of a proposed development either side of Chapel Lane, Bingham, Nottinghamshire.

The 'Bingham Basin' is a former lake (palaeolake), mapped by the British Geological Survey (BGS) as a thin peaty loam on shelly marl, extending for 5 km from Saxondale Junction to Scarrington in the east. An earlier borehole survey within the Bingham Basin to the west of Chapel Lane (Knight et al 1999) identified deposits of palaeoenvironmental potential, including layers of shelly marl, peat and alluvium resting on glacial till and Mercia Mudstone bedrock.

These deposits and their geoarchaeological and palaeoenvironmental potential were taken into account during the planning of archaeological works for the site, with a programme of evaluation trenching being supplemented by geoarchaeological borehole survey.

In total, 60 evaluation trenches were excavated across the site, along with a borehole survey comprising 34 boreholes to the east of Chapel Lane. The archaeological results from the programme of evaluation trenches has been reported on separately, with this report primarily focussing on the geoarchaeological and palaeoenvironmental deposits across site, taking into account results and samples from both the evaluation trenching and borehole survey. No archaeological remains were recorded within the lake deposits themselves. However, the evaluation trenching did identify likely medieval to post-medieval drainage ditches cut into the peat and lacustrine deposits of the former lake. The persistence of open water or other forms of wetland means that the part of the site which had previously been part of the 'Bingham Basin', were unlikely to have been suitable for settlement or agricultural practice prior to the areas' reclamation some time shortly before or during the 17th century (AMEC 2016).

Previous work including Infra-Red Stimulated Luminescence (IRSL) dating of the lower shelly marl, providing dates of  $14194 \pm 2475$  BC and  $11450 \pm 2360$  BC, indicating a Late Pleistocene/Early Holocene origin for these deposits (Barnett 1996). A band of peat recorded on the edge of the basin was previously dated between  $7090 \pm 80$  BP (Beta-80324, 6090-5790 Cal BC) and  $3680 \pm 60$  BP (Beta-80322, 2280-1890 Cal BC) (Knight et al 1999).

The site is divided in this report into 5 Areas (1–5) in order to better characterise and describe the sediments, which included organic sediments (peat), alluvium and extensive marl deposits. Across the majority of the site, a single unit of marl and peat was identified, but two layers of marl and peat were identified within the south-western section of Area 4.

The geoarchaeological value of the lake deposits therefore rests primarily in their potential to provide a local environmental context for the archaeology and human activity currently identified within the landscape surrounding the lake.



Very little archaeology was identified within the area of the former lake apart from probable medieval to post-medieval drainage ditches cut into the peat and lacustrine deposits of the former lake.

Although the geoarchaeological works have not identified any archaeological remains within the lake deposits there remains the obvious potential for as yet undiscovered organic objects and structures associated with prehistoric exploitation and settlement of the wetland environment of the Bingham Basin. However, the results of the geoarchaeological work indicate these are likely to exist in a very poor state of preservation given the generally restricted depth poor preservation of the peat across the Site. It is worth noting however, that the results of the geoarchaeological works did not reveal any evidence for islands within the lake environment which may have served as a focus for prehistoric activity. This is not to say that such islands are not present, they just have not been identified within the works undertaken so far.

Given the limited value of the geophysical survey across the area of the lake deposits and very small percentage of the lake deposits so far evaluated by trenches and boreholes it would seem likely that further archaeological remains will survive in this area. At the very least, it is to be expected that large sections of the probable medieval to post-medieval field system identified cutting into the peat and marl deposits survive.

Recommendations have been made for a programme of palaeoenvironmental assessment and dating of selected samples from across the site, which are focussed largely on organic sequences with the best potential for providing data which may provide context for local and regional archaeological activity.





# **Chapel Lane, Bingham, Nottinghamshire**

## **Geoarchaeological Borehole Survey**

### **Acknowledgements**

Wessex archaeology would like to thank the Amec Foster Wheeler Environment & Infrastructure Heritage Team for commissioning the archaeological and geoarchaeological works, and Ground Technology Services Ltd who undertook the coring on our behalf. Thanks are also extended to Ursula Spence of Nottinghamshire County Council for providing curatorial support throughout the fieldwork.

Boreholes were described by Richard Payne and Nicky Mulhall. Trenches were excavated and recorded under the field direction of Philip Wright and Peter Noble, with the assistance of Mike Keech, Hannah Holbrook, Philipp Maier, Callum Bruce and Jack Laverick.

This report was compiled by Alex Brown and edited by David Norcott. The project was managed on behalf of Wessex Archaeology by Chris Swales (Evaluation) and David Norcott (Borehole Survey).



# Chapel Lane, Bingham, Nottinghamshire

## Geoarchaeological Borehole Survey

### 1 INTRODUCTION

#### 1.1 Project background

- 1.1.1 Wessex Archaeology was commissioned by Amec Foster Wheeler Environment & Infrastructure UK Ltd on behalf of Crown Estates (hereafter 'the Client') to undertake a combined programme of archaeological evaluation trenching and borehole survey in advance of a proposed development either side of Chapel Lane, Bingham, Nottinghamshire (**Figures 1 and 2**). The development is centred on National Grid Reference (NGR) 470125, 340555 (hereafter referred to as 'the Site').
- 1.1.2 Outline planning consent has been obtained (10/01962/OUT) for a residential led mixed use development of 91 ha, as a replacement for three consented employment schemes. This large development amongst other aspects will include up to 1,050 residential buildings, a mixed use neighbourhood centre, a primary school, local retail and community centre, including children's play areas, community park and a re-modelling of Car Dyke and the creation of an attenuation lake. This construction work will be carried out in a phased programme over a potential 12 year time period.
- 1.1.3 As part of the planning consent a programme of archaeological works is required to fulfil condition 15 of this consent. The archaeological works comprised the excavation of 64 trenches (measuring 50 m in length and 2 m in width) and 34 boreholes (**Figure 2**). A Written Scheme of Investigation (WSI), which detailed the agreed excavation methodology and standards, was prepared on behalf of the Client (AMEC 2016), and approved by the archaeological advisor for Nottinghamshire County Council (NCC).
- 1.1.4 The purpose of this report is to presents the results of soil and sediment descriptions from both the boreholes and trenches, identifying the principal sedimentary units and providing a geoarchaeological context for the archaeology. Specific recommendations are made for palaeoenvironmental assessment and dating of samples, in order to address research questions outlined in the aims and objectives. The results of archaeological excavations are outlined in the Archaeological Evaluation report (WA 2016).

### 2 THE SITE

#### 2.1 Location and topography

- 2.1.1 The Site is located to the immediate north of the market town of Bingham, situated 15 km east of the City of Nottingham in the Borough of Rushcliffe (**Figure 1**). The Site is approximately 91 ha, bounded to the west and north-west by the A46 (following the route of the Fosse Way) and Chapel Lane and the Car Dyke on the north-east, following the boundary of the Moorbridge Road Industrial Estate in the southeast, and the Nottingham–Skegness railway line to the south. The centre of the Site is dissected by Chapel Lane, running north to south and joining Bingham to the A46 to the north.



- 2.1.1 The Site is generally flat in elevation, ranging between 20–27 m above Ordnance Datum (aOD). The central part of the Site is at or near the lower elevation while raised areas (up to 25 m aOD) occur along the western boundary of the Site parallel to the A46, and around Parson's Hill located within the eastern corner of the Site (up to 27 m aOD).
- 2.1.2 The present land-use of the Site is agricultural, mostly arable but with some pasture. Within the Site there are farm buildings, a residential property, part of the Moorbridge Road Industrial Estate, the Car Dyke and other drainage channels. In addition, a well is located near Chapel lane on the southern boundary of the site (Entec 2010).

## 2.2 Solid and Quaternary Geology

- 2.2.1 The solid geology of the Site predominantly comprises mudstones of the Edwalton Member with restricted deposits of the Arden Sandstone Formation on the eastern edge of the Site. Both geologies form part of the Mercia Mudstone Group of Triassic sediments in the area. Superficial deposits include Head (glacial debris) along the west and northwest of the site, comprising clays, silts, sands and gravels, with lacustrine deposits dominating the remainder of the Site (**Figure 1**).
- 2.2.2 The Bingham Basin is a former lake that extends across the Site. The palaeolake, mapped by the BGS and Knight et al (1999), contains a thin peat resting on calcareous shelly marl and alluvium with occasional intercalated peat bands. Infra-Red Stimulated Luminescence (IRSL) dating of the lower shelly marl provided dates of  $14194 \pm 2475$  BC and  $11450 \pm 2360$  BC, indicating a Late Pleistocene/Early Holocene origin for the deposits (Barnett 1996). A band of peat recorded on the edge of the basin was dated between  $7090 \pm 80$  BP (Beta-80324, 6090-5790 Cal BC) and  $3680 \pm 60$  BP (Beta-80322, 2280-1890 Cal BC) (Knight et al 1999).

## 3 GEOARCHAEOLOGICAL BACKGROUND

### 3.1 Summary

- 3.1.1 An auger survey of the Bingham Basin to the west of Chapel Lane was undertaken by Trent and Peak Archaeological Unit (Knight et al 1999), overlapping with the current trenching and auger survey (**Figure 2**). The auger survey revealed a complex sequence of post-glacial deposits including peat, marl and alluvium resting on patchy till deposits and Mercia mudstone bedrock.
- 3.1.2 The deposits were interpreted to reflect conditions fluctuating from open water, represented by marl and alluvium, to marshland, represented by peat deposits. Two distinct marl deposits were identified, the lower molluscan-rich marl producing the Late Pleistocene/Early Holocene IRSL dates (**2.2.2 above**). The upper marl was largely absent of molluscs with a pale brown colour resulting from oxidation.
- 3.1.3 Two distinct peat units were also recorded, the basal unit often occurring as thin lenses within the marl. The upper peat was more substantial but was often humified and contained a high clay content. The edges of the palaeolake were covered in a mantle of colluvial deposits.
- 3.1.4 Three layers of alluvium were recorded. The basal alluvium rests on till and is sealed by the lower marl. The middle alluvium is bedded between the lower peat and upper marl, with the upper alluvium overlying the upper peat in turn sealed by colluvium.



- 3.1.5 Large areas of unstratified clays mixed with silts, sand and stone derived from the till and Mercia mudstone, were interpreted as colluvial deposits, and merged laterally into the upper Alluvium, upper peat and upper marl deposits. IRSL dates from the colluvium yielded a wide spread of dates from 6910±260 BC to 258±740 BC, suggested a potentially protracted phase of colluvial sedimentation.

## **4 ARCHAEOLOGICAL BACKGROUND**

### **4.1 Introduction**

- 4.1.1 An overview of the archaeological background to the Site is presented below. A more comprehensive description is available in the project WSI (AMEC 2016) and Environmental Statement (Entec 2010). The following section is a summary of the archaeological background from these documents.

### **4.2 Recent investigations in the area**

- 4.2.1 Archaeological assessments of the Site, comprising desk-based research (Entec 2010), site inspection, geophysical survey and an auger survey (Knight et al 1999), highlight the potential presence of palaeo-environmental deposits and archaeological deposits, artefacts and features within the Site.
- 4.2.2 Archaeological work on sites adjacent and nearby include the A46 improvement scheme, development at RAF Newton and the excavations at the Roman town of *Margidunum*.
- 4.2.3 The archaeological works conducted as part of the A46 improvements identified a series of enclosures and post-built structures situated c. 300 m to the west and south of Margidunum and c. 600 m northwest of the development area. This extensive area of Romano-British settlement was occupied throughout the early and mid-Roman period and appears to have been a continuation of settlement within this area from at least the Iron Age. The excavation areas adjacent to the current development boundary excavated as part of the A46 improvements include sites TT1340, TT1141, TT1140, TT139, DE3003, DE3006, DE3001, DE3002, SM2018, SM2017, SM2076 and SM2017 (Cooke and Mudd 2015).
- 4.2.4 Sections of the current development area were subject to a geophysical survey (Headland Archaeology 2015). The survey indicated a series of Romano-British ditches and pits adjacent to the Fosse Way.
- 4.2.5 The archaeological evaluation that ran concurrently with the borehole survey (WA 2016) identified features that can be broadly split between those west of Chapel Lane and adjacent to the Fosse Way (Romano-British) and those to the centre, south and east of the Site (post-medieval and lacustrine). All archaeological features predating the medieval and post-medieval period were located within the northern and western limits of the Site, outside of the area occupied by the wetland environment of the Bingham Basin.

### **4.3 Upper Palaeolithic (40,000 – 10,000 BC) and Mesolithic (10,000 – 4,500 BC)**

- 4.3.1 The 'Bingham Basin', a former lake, is an area of potential palaeo-environmental and archaeological importance that extends across the central and eastern sections of the Site. For most of the post-glacial period much of the low-lying area between the Fosse Way and Chapel Lane is believed to have been part of this shallow basin, originally containing open water with surrounding marshland and possible islands. These wetlands appear to have been a major consideration influencing the siting of monuments and settlement from at least the Mesolithic period onwards. The persistence of open water or



other forms of wetland means that parts of the Site were unlikely to have been suitable for settlement before reclamation before or during the 17th century.

- 4.3.2 An isolated find of Late Upper Palaeolithic flintwork has been recovered from the southwest corner of the Site, part of a scatter of otherwise undiagnostic prehistoric flintwork recovered from fields north of the A46(T) Saxondale roundabout.
- 4.3.3 Fine grained interglacial alluvial deposits dating to c. 13,000 BC, have produced a Late Upper Palaeolithic open air site at Farndon, 13 km to the northeast overlooking the River Devon valley. This site included stratigraphically related Creswellian and Fedemesser flint assemblages that demonstrate the presence of *in situ* remains of mobile Late Upper Palaeolithic populations where suitable stratigraphic situations occur.
- 4.3.4 An assemblage of Late Mesolithic flint tools, comprising a large percentage of cores and blades, has been recovered c. 250 m to the northwest of the Site in fields between RAF Newton and the A46(T). Subsequent excavation in the same area recovered red deer bone of Mesolithic date and an assemblage of Late Mesolithic/ Early Neolithic flint on the margins of a palaeo-channel that drained into the Basin.
- 4.3.5 Fieldwalking, undertaken as part of a Heritage Lottery Funded (HLF) project, has recovered Mesolithic and Early Neolithic lithic material from around the lake margins. This was at a lower concentration than similar finds elsewhere in some parts of the parish, although the potential for colluvial action and the build-up of silt and peat deposits to bury these artefacts below plough-depth must be noted, as demonstrated during the investigations on the A46(T) improvement scheme (Amec 2016).

#### **4.4 Neolithic and Early Bronze Age (4,500 – 1,500 BC)**

- 4.4.1 Cropmarks recorded on the bedrock outcrops along the eastern fringe of the relict lake basin, include the Scheduled Neolithic Henge at Bingham (MonUID 29902). The Henge comprises a c. 35 m diameter ditch and bank with a causeway entrance to the southeast, and contains a central feature, possibly a pit. It occupies a position on a low ridge which rises to form Parsons Hill, which at this time may have been a notable landmark to which access was restricted by the surrounding wetlands. The Scheduled Neolithic Henge is now sealed beneath the Bingham Industrial Park (**Figure 1**).
- 4.4.2 There is a possibility that additional cropmarks on the eastern side of Parson's Hill may represent further Neolithic or earlier Bronze Age archaeological features on the higher ground overlooking the relict lake. Evidence of settlement activity to the southwest of the former lake, in the form of scatters of flint tools, have been found in fields adjacent to the A46 Saxondale roundabout. In total 81 artefacts were recovered, including an oblique arrowhead and scrapers.

#### **4.5 Late Bronze Age and Iron Age (1,500 BC – AD 43)**

- 4.5.1 An extensive Late Iron Age native settlement exists in the vicinity of the Roman town of *Margidunum*. Excavation undertaken as part of the A46 improvement scheme have resulted in extensive new evidence of enclosures, roundhouses and other settlement features including an unusual triple pit alignment located within the wetlands. This close spatial relationship with the Fosse Way suggests that later phases of the native settlement might be contemporary with the construction of the road and possibly the early Roman town. Excavation work on the A46 revealed similar remains on the east side of the road. Cropmarks on Parsons Hill may also include evidence for later prehistoric settlement within the wider landscape, beyond the route of the Fosse Way.



#### **4.6 Romano-British (AD 43 – 410)**

- 4.6.1 The Fosse Way is thought to follow the western boundary of the Site, beneath the route of the modern A46. The Fosse Way is conventionally understood to have been constructed by the Roman army in the second half of the 1st century AD to link the Roman Fortresses founded at Exeter and Lincoln.
- 4.6.2 The Roman town of *Margidunum* is located approximately 280 m to the north of the Site, alongside the Fosse Way. *Margidunum* may have originated as a fort, but subsequently developed as a small town. Occupation continued throughout the Roman period, and with only limited continuity, into the post-Roman periods. It probably provided provincial administration and economic functions, such as a market centre and a staging point in the *cursus publicus*, the latter prompting suggestions of the presence of a *mansio* or staging post.
- 4.6.3 Extra-mural settlement includes a villa at Shelford with what appear to be associated enclosures to the north of RAF Newton, and another villa to the north of *Margidunum*. Excavations along the A46 have revealed an extensive roadside settlement comprising more modest properties, an industrial area and infant burial ground and agricultural zones along the Fosse Way. This wider settlement area is likely to extend some distance beyond the Roman town walls.

#### **4.7 Anglo-Saxon to Early medieval (AD 410 – 1100)**

- 4.7.1 A significant change in the local settlement pattern occurs in the period following the departure of the Roman legions in AD 410 with a move away from *Margidunum* to Bingham. There may be an Anglo-Saxon derivation for the Bingham place name and historic sources refer to it as the focus of local administration under the Danes. Domesday provides unequivocal evidence for a well-established settlement at Bingham, comprising three manors and 55 families shortly after the Norman Conquest.
- 4.7.2 There are records of an inhumation accompanied by a shield and spear found at Parsons Hill in 1863, whilst recent work on the A46(T) has revealed a Saxon flat cemetery south of Saxondale some 2.34 km southwest of Bingham.

#### **4.8 Medieval (AD 1100 – 1485)**

- 4.8.1 The Site is located within what had been part of the immediate rural hinterland to the north of the medieval village/town. There is no evidence to suggest the presence of specific medieval activity within the Site.

#### **4.9 Post-medieval and modern (AD 1485 to present)**

- 4.9.1 Many of the present field boundaries, if not necessarily the hedges themselves, can be traced back to at least 1776, and appear to reflect the overall enclosure field system.
- 4.9.2 The Site has most recently remained largely in arable use, although small scale business development occurred with the construction of the present employment park in the 1970s. The present field system, though based on that set out at enclosure has been modified relatively recently, as have the small bridges and crossings across the various streams and dykes, which are of reinforced concrete and have a uniform appearance, suggesting that they were inserted during the mid-20th century as part of a coordinated programme of improvement, probably after the acquisition of the land by the Crown Estates in the 1920s. Similarly, the present Moor Bridge on Chapel Lane appears to be of comparable date and reinforced concrete construction. The pill box noted by the HER east of Chapel Lane



appears to have been built as a defensive feature for either the railway crossing or as an outlier for the defensive scheme at RAF Newton.

- 4.9.3 It has been suggested that the area east of Chapel Lane was used as a town dump in the 18th and 19th centuries. Material from this dump and from individual households within the town were used as night soil, or fertiliser on fields within the local area, allowing tentative analysis of the changing land use within the parish between the 18th and 20th centuries.

## 5 AIMS AND OBJECTIVES

- 5.1.1 The aims and objectives of the geoarchaeological works build upon those stated in the Written Scheme of Investigation (AMEC 2016) with the following specific objectives;
- Determine the extent, depth and type of deposits
  - Identify suitable deposits for palaeoenvironmental assessment; and
  - Make recommendations for palaeoenvironmental assessment

## 6 METHODOLOGY

### 6.1 Borehole survey

- 6.1.1 Five transects comprising 34 boreholes were undertaken across the eastern section of the Site (**Figure 2**) using a percussive window sampling rig (Terrier type) to extract sleeved cores one metre in length and 100 mm in diameter.
- 6.1.2 The borehole survey was designed to investigate the eastern section of the Site that was not included in the survey of Knight et al (1999). This area is considered likely to include a deep sequence of lake sediments where mapping by the British Geological Survey shows the bedrock dipping in elevation from west to east.
- 6.1.3 The gridded borehole survey, combined with deposit modelling, is applied as the best approach to investigate the sediments and model the sub-surface topography of the wetland and dryland zones over prehistory. This approach provides the means to target evaluation, mitigation and palaeoenvironmental works.
- 6.1.4 Boreholes were described in the field and laboratory by suitably experienced geoarchaeologists following Hodgson (1997), including information such as:
- Depth
  - Texture
  - Composition
  - Inclusions
  - Structure (Bedding, ped characteristics etc)
  - Contacts between deposits

The data was tabulated by borehole and depth (**Appendix 11.2**)



## 6.2 Deposit modelling

- 6.2.1 The deposit records from the geotechnical logs were entered into industry standard software (Rockworks™ v17.0). Each identified lithological unit (gravel, sand, silt etc.) was given a unique colour and pattern allowing cross correlation of the different sediment and soil types across the study area.
- 6.2.2 Where suitable contexts were present, a sequence of stratigraphic units representing defined depositional environments and/or landforms are reconstructed and displayed in the form of transects and Digital Elevation Models (**Figures 3–7**).

## 7 RESULTS

### 7.1 Introduction

- 7.1.1 The combined program of evaluation trenches and boreholes, totalling 60 trenches and 34 boreholes (**Figure 2**), provide a detailed stratigraphic overview across the 91 ha Site. The boreholes are located to the east of Chapel Lane, projecting in a series of transects heading west to northwest from Parson's Hill. The trenches are spread across the Site, but with the larger number of trenches located on the western side of Chapel lane (**Figure 2**).
- 7.1.2 The results focus on the description of the sediments across five distinct areas (**Areas 1–5**) defined by the similarity of sediment types and geographical proximity of selected trenches and boreholes (**Figure 2**).
- 7.1.3 Interpretation of these sediments is detailed below in **Section 5**, and is aided by the inclusion of four linear transects across the sediments (**Figures 3-6**), a digital elevation model (**Figure 7**) and interpretative plan of the development and extent of former lake deposits (**Figure 8**).

### 7.2 Area 1

- 7.2.1 Area 1 is located in the north-west of the Site between the Roman road and Chapel Lane and comprises trenches 1-10, 18-21 and 23 (**Figure 2, Appendix 11.1**). The stratigraphy is generally uniform across the area, comprising a shallow sequence of sediments to a depth typically no greater than 0.5 deep. The lithology comprises topsoil overlying silty-clay subsoil and natural (trenches 1, 4, 5, 7–10, 18–21 and 23), and in three cases with topsoil directly on natural geology (2, 3 and 6). The 'natural' is described as a reddish-brown and orange-brown sandy clay, and pale grey clay (trench 7), that may variously reflect deposits of alluvium, glacial till and the mudstone bedrock.

### 7.3 Area 2

- 7.3.1 Area 2 comprises three trenches (22, 30 and 34) in the south-west corner of the Site adjacent to the Roman road (**Figure 2, Appendix 11.1**). All three trenches include a layer of peaty clay resting on natural, the peat varying in thickness from 0.41m (trench 22), 0.14m (trench 34) and 0.09m (trench 30). Silty clay alluvium overlies the peat in trenches 22 and 30, with topsoil directly overlying peat in trench 34.

### 7.4 Area 3

- 7.4.1 Area 3 is a small area in the south-western corner of the Site below Area 2 and adjacent to the Roman road, comprising trenches 36–39 (**Figure 2, Appendix 11.1**). The sediments are similar to those encountered in Area 1, comprising silty clay and sandy clay subsoil overlying natural and sealed by topsoil. The surface of the 'natural' is typically no



deeper than 0.54 m, comprising yellow-grey, orange-red and light grey clay, probably representing till and the underlying mudstone.

## 7.5 Area 4

7.5.1 Area 4 is the largest area in the central southern section of the Site, and includes trenches 11–17, 26–29, 40–51 and 57–64 (**Figure 2, Appendix 11.1**). The trenches typically revealed deposits of alluvium, peat and marl, each here considered in turn.

### *Peat*

7.5.2 Peat deposits were recorded in all but trench 61 from Area 4, most often as a single peat underlying alluvium (trench 14, 26–29, 40–42, 48 45, 60, 62–64), topsoil (trench 13, 15–17, 46, 50, 51, 56–59) or made ground (trench 44). In cases two, or more rarely three, peats are present separated by marl or peaty marl (trench 31, 43, 47, 49, 56). The peat is a well humified fibrous peat to peaty clay, frequently with thin laminations of marl.

7.5.3 The depth of peat encountered across Area 4 varied from as little as 0.01 m, with the majority of exposures > 0.20 m, and the thickest peats, between 0.3–0.41 m, recorded from the south-western section of Area 4 (trench 41, 42, 44 and 49).

### *Marl*

7.5.4 Marl is present across Area 4, most often as a single unit underlying peat, and less commonly as two units interbedded with multiple peat layers and alluvium (trench 31, 43 and 47–49). The marl varies in composition from pale yellow and yellow brown silty and clay marls, but most often a pale brown sandy marl, frequently with abundant molluscan remains.

7.5.5 The thickest marls are also recorded from the south-western section of Area 4 where they vary between 0.35–0.45 m, with depths for marl across Area 4 more typically < 0.20 m. Thin laminae of marl were also recorded in the peat units.

### *Alluvium*

7.5.6 Clay, silt and sandy alluvium is widespread across Area 4, both sealing, interbedded with and underlying the peat and marl. The highest alluvium overlying the peat is comparatively thin, varying between ca. 0.08–0.25 m, with the basal alluvium resting on bedrock varying between ca. 0.45–0.6 m and as thick as 1.0 m in trench 60.

7.5.7 The alluvium varies between grey, brown and yellow-brown in hue, and includes orange-brown mottling. The orange-brown hues reflect post-depositional chemical alteration of the alluvium, including oxidation of the iron content resulting in the mottling effect.

### *'Natural' geological deposits*

7.5.8 Within the evaluation trenches, the 'natural' is variously described as a light greyish-brown sandy clay, greyish-brown silt sand, greyish-blue sandy clay and silty clay, blue-grey clay and sandy clay, reddish-brown clay and sandy clay.

7.5.9 This reflects the varied near-surface geology of the Site, which is likely to include till, Head deposits and possibly Late Pleistocene alluvium, in addition to the red-brown mudstone bedrock recorded from Areas 1 and 5.

## 7.6 Area 5

- 7.6.1 Area 5 is located in the north-eastern and eastern section of the Site and includes trenches 52–55 and all 34 boreholes (**Figure 2; Appendix 11.2**). The sediments include a deep sequence of light brown marls and alluvium, the latter variously textured as silty clay, sandy clay and clay. With the greater penetration of the boreholes these were bottomed in mudstone bedrock, with the trenches generally bottoming in sterile brown and greenish-grey silty clay deposits immediately overlying the mudstones, and which are likely to belong to that unit.
- 7.6.2 The depth of marl and alluvium present in the boreholes varies between 0.9–2.6 m, and in hue from largely light grey brown and occasionally dark grey, blue-grey and reddish-brown, often with evidence for fine clay banding. The bedrock occurs at a depth of between 1.5–3 m.

## 7.7 Palaeoenvironmental sequences from trenches

- 7.7.1 Environmental sequence sampling focused on Area 4 where evaluation trenches identified sequences of greatest palaeoenvironmental potential containing deposits of peat and marl.
- 7.7.2 Seven Monolith sequences were taken from cleaned and recorded section faces from trenches 29, 40, 43, 46, 49, 51 and 60 (**Table 1, Appendix 11.1**). Monolith 29 focused on sampling the fill of ditch 2905, with the remaining sequences covering natural sequences of marl and peat.
- 7.7.3 Recommendations for palaeoenvironmental assessment of environmental samples are outlined in section 7.

**Table 1: Monolith samples taken for palaeoenvironmental assessment**

| Sample number | Trench | Contexts  |
|---------------|--------|-----------|
| 2901          | 29     | 2906-2912 |
| 4001          | 40     | 4003-4007 |
| 4301          | 43     | 4303-4310 |
| 4601/2        | 46     | 4602-4606 |
| 4901/2        | 49     | 4902-4910 |
| 5101          | 51     | 5002-5005 |
| 6001          | 60     | 6003-6008 |

## 8 INTERPRETATION AND DISCUSSION

### 8.1 Introduction

- 8.1.1 The sediments mapped by evaluation trenches and boreholes contribute to the broader picture of the development and extent of the former lake across the Site since the latter stages of the last (Devensian) Ice Age ca. 15,000 years ago. The results correlate well with those sediments revealed and described through coring by Knight et al (1999) on the western side of Chapel Lane.
- 8.1.2 Interpretation of the sediments is aided by four linear transects (**Figures 3–6**) across the Site that show the distribution and relationship of the principal sedimentary units,

accompanied by a digital elevation model (DEM) (**Figure 7**) showing the underlying surface of the bedrock, and an interpretative plan (**Figure 8**) that clearly shows the development and extent of the former lake deposits across the Site. The maximum extent of the former lake across the Site is represented within **Figure 8d**.

- 8.1.3 Each of the principal sedimentary units is discussed and interpreted in turn below, focusing on how the distribution and variation in these sediments (both at specific locations and across the Site) reflect specific environmental settings across the Site and the development of the lake over time.

## 8.2 Bedrock

- 8.2.1 The bedrock underlying the Site is mapped by the BGS as Triassic rocks of the Mercia Mudstone Group, primarily red–brown and greenish–grey mudstones and siltstones of the Edwalton Formation.
- 8.2.2 Red-brown, and occasional grey, mudstones and siltstones are consistently recorded within the base of the 34 boreholes (**Appendix 11.2**). Deposits of compact clay and silty clays of orange, reddish-brown to grey hues, representing bedrock are described within the trenches as ‘natural’ along with a variety of other superficially similar sediments most likely representing till and alluvial sediments of Pleistocene date (**see 8.3 below; Appendix 11.1**).
- 8.2.3 The Digital Elevation Model (DEM) records the surface of the pre-Quaternary sediments (**Figure 7**) and shows a pronounced west to east reduction in elevation from a high of 27.5–27.8 m aOD in the north-west of the Site to a low of 17.7–18 m aOD in the north-east of the Site.
- 8.2.4 Transect 4 (**Figure 6**) runs perpendicular to the west-east dip of the bedrock, and shows how the surface of the mudstone also rises in elevation from the north-west to south-east where the edge of the lake meets the dry ground of Parson’s Hill.
- 8.2.5 The bedrock is overlain by a sequence of Late Pleistocene and Holocene sediments that have largely accumulated over the last ca. 12–15,000 years, and that are shown on transects 1–4 (**Figures 3–6**) to achieve their greatest depth where the OD height of the bedrock (**Figure 7**) inclines within the eastern and north-eastern parts of the Site.
- 8.2.6 In no case did the evaluation trenches or boreholes indicate the presence of any buried islands likely to have existed during the lifetime of the lake. Buried islands are most likely to be visible as areas of raised bedrock projecting up through the lake sediments and perhaps including a buried soil. No such raised areas or deposits were identified, and the alluvium, marl and peat deposits that drape the bedrock are consistent within their areas of deposition.

## 8.3 Pleistocene deposits

### *Till deposits*

- 8.3.1 Mid red clays, pale yellow-brown sandy clay and blue grey clays recorded as ‘natural’ in several of the trenches (**Appendix 11.1**), and including mottling and occasional to frequent stones, are most likely to represent patchy deposits of till (sediments deposited by icesheets), also recorded in the survey of Knight et al (1999) as boulder clay (an earlier term for till).

- 8.3.2 During the last Ice Age, the maximum limits of the icesheet were located to the north of the Bingham basin, and thus the patch till deposits present across the Site date to the Anglian glaciation (ca. 480–420 ka BP).

#### *Lake deposits*

- 8.3.3 Within several of the trenches (e.g. 53–54, 58–60, 62, 64; **Appendix 11.1**) deposits described as natural, but including silty and sandy clays of grey-brown, pale grey, greenish-grey and blue grey hue, without laminations or stones/gravels, are best interpreted as Late Pleistocene lake (alluvium) deposits. Dark grey silty clays recorded in the boreholes also represent the lower alluvium (**Appendix 11.2**), most obviously shown sealing the bedrock in transect 4 (**Figure 6**) and collectively representing a phase of open water at the end of the last ice age.
- 8.3.4 There are no direct dates for the lower alluvium, but the aforementioned IRSL dates on the overlying marl (**2.2.2**) suggest the lower alluvium could be at least 12,000 years' old.
- 8.3.5 The extent of the Late Pleistocene lake, represented by deposits recorded as lower alluvium, is shown in transects 1–4 (**Figures 3–6**). The greatest depth of lower alluvium is present in the east of the Site, shown in transect 4 (**Figure 6**), where the OD height of the underlying bedrock is at its lowest at ca. 17.7–18 m aOD (**Figure 7**).
- 8.3.6 As the OD height of the bedrock rises to the west, deposits of lower alluvium become progressively thinner, clearly shown in transect 1 (**Figure 3**) and to a lesser extent in transect 2 (**Figure 4**) where the thinning and disappearance of the lower alluvium along the transects records the margins between the lake and dry ground.
- 8.3.7 **Figure 8** shows the maximum extent of the Late Pleistocene lake across the Site, occurring largely to the east of Chapel Lane but projecting to the south-west towards the Nottingham–Skegness railway line.
- 8.3.8 The Late Pleistocene lake would initially have developed to the west of Chapel lane where the bedrock was lowest, gradually expanded to the east as the sediments gradually accumulated over the course of the Late Pleistocene

## **8.4 Marl**

- 8.4.1 Deposits of Marl are widespread across the Site and reflect periods when the lake was a shallow aquatic open water environment. The marl is most often present as a single unit underlying peat, and less commonly as two units, with the upper marl interbedded with multiple peat layers and alluvium (**Figures 3–6**).

#### *Lower marl*

- 8.4.2 The lower marl varies in composition from pale yellow and yellow brown silty and clay marls, but most often a pale brown sandy marl, frequently with abundant molluscan remains. A Late Pleistocene/Early Holocene date for the basal marl has been suggested on the basis of two Infra-Red Stimulated Luminescence (IRSL) dates of 14194±2475 BC and 11450±2360 BC (Barnett 1996).
- 8.4.3 The lower marl is most clearly present in the boreholes of Area 5, shown in transect 4 (**Figure 6**) where they seal the lower alluvium and reflect the development of a shallower open water lake environment. Again, the lower marl is thickest where the underlying bedrock has lower OD height, with the marl thinning to the west along transect 1 (**Figure**

3) and to the south-west along transect 2 (**Figure 4**) as the bedrock rises in elevation towards the edges of the lake.

8.4.4 The extent of marl across the Site is shown in **Figure 8b**, comparing very closely with the overall lake extent shown in **Figure 8d**, implying that the maximum extent of the lake across the Site occurred during the early Holocene.

#### *Upper Marl*

8.4.5 Whilst the lower marl is present across most of the Lake, the upper marl is more restricted in distribution, largely occurring inter-bedded between two peat layers within the southern part of Area 2, shown as a thin upper marl in transect 2 (**Figure 4**).

8.4.6 The upper marl is most likely of a mid-Holocene date, interbedded between two peat layers (trenches 13, 31, 43–49, **Appendix 11.1**) that have been previously dated to between 6090–1890 cal BC (Knight et al 1999).

8.4.7 The upper marl most probably reflects a phase of rising lake water levels that resulted in a retrogressive succession from semi-terrestrial marsh (represented by the peat) growing along the shallower edges and margins, back to the previous shallow open water environment.

8.4.8 The absence of peat and an upper marl in Area 5, reflected in transect 4 (**Figure 6**), suggests that marl deposition and open water conditions continued in the east of the site. At the same time shallower parts of the lake were more susceptible to fluctuations in lake level, allowing for periods of peat encroachment followed by return to shallow open water environments. This balance between semi-terrestrial and lake environments is most clearly shown in the inter-bedding of marls and peats visible at the southern end of transect 2 (**Figure 4**) corresponding within the southern section of Area 4 closest to the Nottingham–Skegness railway line.

## **8.5 Peat**

8.5.1 Peat deposits are restricted to Areas 2 and 4 within the western and central sections of the Site. However, rather than forming two distinct areas of peat, the survey of Knight et al (1999), which overlaps with the present survey, show that Areas 2 and 4 connected to form a single spread of peat, with Area 2 forming part of a thin finger of peat projecting west towards the A46, with the overall interpreted extent of peat shown in **Figure 8c**.

8.5.2 Two peats were recorded, in close agreement with Knight et al (1999) who also recorded a thin basal peat and thicker upper peat (max 0.30 m). The peat deposits at Bingham reflect a lowering of water levels within the lake and the subsequent colonisation of the lake by emergent vegetation likely to include sedge fen and reed swamp habitats.

8.5.3 The thin lower peat was only recorded within the south and south-western sections of Area 2, most clearly shown on transect 2 (**Figure 4**), and reflects a short-lived period of stable or falling lake levels where semi-terrestrial marsh vegetation was able to colonise the formerly open water lake margins. This was followed by a return to marl deposition and subsequent formation of the more substantial upper peat.

8.5.4 The upper peat is far more extensive across Areas 2 and 4 although of a depth no greater than 0.41 m thick occurring at the eastern end of transect 1 (**Figure 3**) and the southern end of transect 2 (**Figure 4**) closest to the edge of the lake. Both transects 1, 2 and 3 (**Figures 3–5**) show that this peat thins as it extending out into the lake within Area 4. This

reflects a more protracted phase of peat development with semi-terrestrial marsh vegetation colonising a large portion of the former lake apart from the deepest parts to the east in Area 5 where transect 4 (**Figure 6**) shows an open water environment remained. Whilst peat colonised shallow waters around the lake margins, open water conditions remained further out from the lake edge and in areas of deeper water. The peat often includes fine silt/clay laminae, reflecting fluctuating water levels and a highly dynamic lacustrine environment.

- 8.5.5 The relatively thin and variable depth of peat encountered across the Site is unlikely to represent its former depth and reflects a number of post-depositional factors acting on peat preservation. Peats are extremely soft sediments and contain a high water content and pore space. They are therefore highly susceptible to auto-compaction from overlying sediments. Fluctuating water-tables, occurring both naturally and as a result of more recent agricultural activity, also lead to a reduction in the water content of peat, resulting in the degradation and wasting of peat. In addition, truncation of peat is also likely to have occurred through agricultural ploughing, most apparent where peats are overlain directly by topsoil and subsoil layers.

## 8.6 Holocene Alluvium

- 8.6.1 Alluvium is a generalised term covering unconsolidated sediments transported by water in a non-marine environment. Although the marls are technically alluvium, the fine grained molluscan rich marl is distinguished separately from other alluvial deposits that typically include a range of sediment from fine grained clays to sands.
- 8.6.2 Holocene Alluvium occurs in a number of contexts across the Site, either i) overlying the upper peat and sealed by topsoil, visible in transects 1, 2 and 3 towards the lake margins (**Figures 2–5**), ii) underlying the upper peat where it either rests on natural or seals a lower peat or marl, most obviously in trench 64, shown on transect 1 (**Figure 3**), and iii) underlying the basal marl where the alluvium may be of an Early Holocene and/or Late Pleistocene date (**section 8.3**).
- 8.6.3 The alluvium represents open water conditions within the lake at numerous stages throughout the Holocene. The alluvium is frequently mottled, in cases with flecks and thin laminae of marl (trench 60) and occasional pebble and stones – particularly in the uppermost alluvium. This reflects a highly dynamic lake environment with changeable water depths.
- 8.6.4 The extent of the Holocene alluvium represents the greatest extent of the lake across the Site (**Figure 8d**).

## 8.7 Lake development

- 8.7.1 Taken together the sedimentary data from the boreholes, trenches and the previous survey of Knight et al (1999) provide an outline development of the lake over the course of the Late Pleistocene and Holocene, outlined below and synthesised in **Figure 8a-d**.
- 8.7.2 **Figure 8d** shows the maximum extent of the lake (highlighted in light blue) which covers a significant portion of the Site, with only the extreme southern and north-western parts of the Site representing areas of dry ground. The extent of the lake proposed in **Figure 8d** corresponds well with the extent of the lake recently proposed during the A46 improvement scheme (Cooke and Grant, 2014, fig. 3.1).

- 8.7.3 The alluvium, marl and peat each reflect different environmental conditions occurring during the life of the lake, outlined below as seven key phases. The precise chronology of these phases is at present very crudely known due to the lack of radiocarbon or other dates of key sedimentary units (the use of '?' represents where ages are uncertain or unknown).

*Phase 1: Lower alluvium – Late Pleistocene (? - 11,500 years ago)*

- 8.7.4 The lake first formed at the end of last ice no later than 12,000 years ago and perhaps around 15,000 years ago, predominantly within the eastern half of the Site (**Figure 8a**) and representing an open-water environment.

*Phase 2: Lower Marl – Late Pleistocene to early Holocene (? - 8000 years ago)*

- 8.7.5 The lake continues to develop following the end of the last ice age 11,500 years ago, and by ca. 8000 years ago covers a large area of the Site. However, the marl – although still reflecting an open water environment, is suggestive of shallower water depths which freshwater snails were able to colonise.

*Phase 3: Lower Peat – Early Holocene (from ca. 8000 years ago - ?)*

- 8.7.6 As a result of falling or stable water levels, plants including reeds and sedges were able to colonise along the margins of the lake where previously it had been open water. These plants died and partially decayed in the oxygen-free conditions, forming a peat that seals the marl. The peat is thin and therefore likely very short-lived. Marl deposition continued within the rest of the lake.

*Phase 4: Upper Marl and middle Alluvium – Early-Mid Holocene (from ca. 8000 - ?)*

- 8.7.7 The short-lived lower peat that formed along the southern margins of the lake was followed by renewed deposition of marl, and in places coarser grained lake sediments (middle alluvium), reflecting rising water levels and the return of an open-water environment across the entire lake.

*Phase 5: Upper peat – Mid-Late Holocene (ca. 8000 - 4000 years ago)*

- 8.7.8 Falling or even stable lake levels resulted in wide-spread encroachment of peat-forming semi-terrestrial vegetation across the central parts of the lake during this time (**Figure 8c**), most likely representing reed and sedge swamp environments. Over time the swamp progressively encroached into the lake, reducing the area of open-water until only the eastern section of the lake, represented by Area 5 (**Figure 2**), remained open. Previous radiocarbon dates from peat at the margins of the lake cover a period from ca. 8000–4000 years ago. Peats in other locations around the lake may cover different lengths of time, with thinner peats further out in the lake likely accumulating over a much shorter period of time.

*Phase 6: Upper alluvium – Late Holocene (ca. 4000 years and later)*

- 8.7.9 Peat formation comes to an end, again most likely as a result of rising lake levels. Renewed deposition of alluvium represents a return to open water conditions, although Knight et al (1999) suggested that the lake was only seasonally flooded during this period, a theory supported during the recent trenching programme by the inconsistent presence of alluvium overlying the peat. It is uncertain how long areas of standing water remained within the basin, whether peat continued to form in places around the lake, or the impact of recent agricultural activity that may have resulted in potential truncation of the upper alluvium and peat.



*Phase 7: Soil formation – Late Holocene (Historic period?)*

- 8.7.10 The topsoil and subsoil reflect the more recent history of use of the Site, with most of the field boundaries traced back to at least 1776, and remaining in agricultural use until the present day.
- 8.7.11 The general absence of archaeology within the lake pre-dating the post-medieval period does rather suggests the area of the lake remained a boggy place largely unsuitable for agriculture until irrigation during more recent centuries.

## **9 OVERVIEW OF GEOARCHAEOLOGICAL AND ARCHAEOLOGICAL POTENTIAL**

### **9.1 Introduction**

- 9.1.1 The results of archaeological and geoarchaeological works at Chapel Lane Bingham raise several important issues of relevance for further geoarchaeological assessment of samples and further groundworks within the development boundary.

### **9.2 Geoarchaeological potential**

- 9.2.1 The evaluation trenches and boreholes identified a sequence of marl, alluvial and peat sediments within the area of the former lake comparable to that previously identified by the survey of Knight et al (1999).
- 9.2.2 The lake deposits have been modelled to reveal the subsurface topography of the lake. Deposit modelling indicates shows that the lake sediments are deepest in the north-east of the Site linked to a pronounced west to east reduction in the elevation of the underlying bedrock.
- 9.2.3 However, the deposit modelling did not identify any signs of sub-surface islands that might have existed as areas of dry ground within the lake during the past. Buried islands would typically be visible as areas of raised bedrock projecting up through the lake sediments, and likely including a buried land surface representing the soil that developed on the dry ground prior to subsequent to inundation by lake sediments. No such raised areas were identified and the alluvium, marl and peat deposits that drape the bedrock are consistent in their areas of deposition.
- 9.2.4 None of the environmental samples (**listed in Table 1**) are directly associated with archaeological features or remains. However, the margins of the lake would no doubt have been an important focus for human activity, as suggested by the distribution of known historic and prehistoric archaeology around the Site (WA 2016).
- 9.2.5 The geoarchaeological value of the lake deposits therefore rests primarily in their potential to provide a local environmental context for the archaeology and human activity currently identified within the landscape surrounding the lake.
- 9.2.6 However, the geoarchaeological potential of the environmental samples is largely restricted to the peat deposits. Peaty sediments are ideal for radiocarbon dating, and have the greatest potential for the survival of palaeoenvironmental remains (such as pollen and plant macrofossils), although the peat is rather poorly preserved across the Site. Specific recommendations are made below (**Section 9.3**) for palaeoenvironmental assessment focusing on the peat within the seven monolith samples (**Table 2**)
- 9.2.7 We do not propose targeting additional work on the marl deposits. Although molluscs are well preserved other environmental proxies are poorly preserved in marl and alluvial



sediment. The low organic content and high quantities of aquatic material makes these sediments generally unsuitable for radiocarbon dating. Moreover, the ecological setting of the marl is already well-established as a calcareous shallow water environment. Further assessment of molluscs is considered unlikely to provide significant additional ecological information, and will provide little indication of wider environmental conditions relevant to the surrounding archaeology.

### 9.3 Recommendations for palaeoenvironmental assessment

9.3.1 Palaeoenvironmental sampling is focused on the following key aims and objectives with the total number of samples for palaeoenvironmental assessment and radiocarbon dating itemised below in **Table 2**, using the methods outlined in **Section 9.4**;

- Detailed description of monolith samples prior to sub-sampling.
- Determine the preservation and concentration of palaeoenvironmental remains (pollen, diatoms and ostracod) in organic sediments and at the peat/marl/alluvial interfaces.
- Determine the date-range of peat deposits through AMS radiocarbon dating. Radiocarbon dating will also provide a baseline chronological context for the targeted palaeoenvironmental assessment, and help to establish the timing and extent of anthropogenic activity and relationship to nearby archaeology on the dry ground.
- What is the evidence from pollen analysis for past vegetation environments, human activity and land-use on the adjoining dry ground (e.g. woodland clearance, burning, hunter-gatherer and agricultural land-use regimes)? These data will be set in the context of previous palaeoenvironmental analysis undertaken as part of the A46 improvement scheme (Cooke and Grant 2014).
- Changes between alluvium, marl and peat record transitions between open water and semi-terrestrial marshland as a consequence of changing lake levels. Assessment of the plant macrofossils, diatoms, ostracods and pollen will investigate the changing lake ecology represented by these transitions that in addition may have provided opportunities for human communities to exploit new environmental niches.

9.3.2 The total number of sub-samples for palaeoenvironmental assessment and radiocarbon dating are itemised below in **Table 2**.

**Table 2: Sub-samples for palaeoenvironmental assessment**

| Monolith | Samples |          |         |           |              |
|----------|---------|----------|---------|-----------|--------------|
|          | Pollen  | Ostracod | Diatoms | 14C dates | Plant macros |
| 2901     | 6       | -        | -       | 1         | 2            |
| 4001     | 3       | 2        | 2       | 1         | 2            |
| 4301     | 8       | 8        | 8       | 2         | 4            |



|              |    |    |    |    |    |
|--------------|----|----|----|----|----|
| <b>4601</b>  | 8  | 8  | 8  | 2  | 4  |
| <b>4901</b>  | 4  | 4  | 4  | 2  | 4  |
| <b>5101</b>  | 2  | 2  | 2  | 1  | 2  |
| <b>6001</b>  | 2  | 2  | 2  | 1  | 2  |
| <b>Total</b> | 33 | 26 | 26 | 10 | 20 |

## 9.4 Methods for palaeoenvironmental assessment

9.4.1 Palaeoenvironmental assessment will involve a suite of complementary techniques comprising macrofossils (plants and insects) and microfossils (pollen, diatoms and ostracods) supported by radiocarbon dating on suitable organic deposits (**Table 2**). Multiple techniques are typically assessed in accordance with Historic England guidelines on good practice in environmental archaeology (English Heritage 2011), providing a comprehensive understanding of the depositional and environmental context of the sediment.

### *Pollen*

9.4.2 Pollen is one of the principal techniques used in environmental archaeology to investigate past vegetation environments and the impact of human communities on the landscape, the latter often evident as distinct phases of woodland clearance or specific land-use strategies (e.g., cereal cultivation, creation of pastures or meadows). Pollen is best preserved in waterlogged organic and oxygen-free sediment, such as peat, where the pollen grains are most representative of the surrounding vegetation at the time of deposition. Marine/riverine sediments are not ideal for pollen assessment as the grains may be transported over long distances or suspended in the water column for significant periods of time.

### *Diatoms and ostracods*

9.4.3 Diatoms (unicellular algae) and Ostracods (bivalve Crustacea) occur in a wide range of freshwater and semi-terrestrial environments and provide important comparative indicators on past changes in lake ecosystems. Assessment of sediments at peat-alluvial transitions can help to distinguish evidence for changes in lake ecology not immediately apparent in the pollen record, including the influence of short term fluctuations in lake levels (perhaps visible as fine organic/mineral banding in sediments).

### *Radiocarbon dating*

9.4.4 Radiocarbon dating is an established technique used for determining the date of a range of organic materials. AMS (Accelerator Mass Spectrometry) dating of slices of peat, or of short-lived material (seeds, twigs) recovered from the peat, will provide a secure chronological context for these deposits and the palaeoenvironmental assessment recommended on select boreholes. Where thick peats are present AMS dates from the top and base of the peat are recommended, where as one date will suffice for thin and relatively short-lived peats.

## 9.5 Archaeological potential

- 9.5.1 Very little archaeology was identified within the area of the former lake apart from probable medieval to post-medieval drainage ditches cut into the peat and lacustrine deposits of the former lake.
- 9.5.2 Archaeological remains predating the medieval period, if they occur, are most likely to exist around the margins of the lake in association with the peat, the limits of which are clearly shown on **Figure 8d**, and where communities are likely to have been active in exploiting the resources of the lake.
- 9.5.3 This interpretation would seem to be confirmed by the results of the archaeological evaluation that ran concurrently with the borehole survey (WA 2016). The trenching identified features that can be broadly split between those west of Chapel Lane and adjacent to the Fosse Way (Romano-British) and those to the centre, south and east of the Site (post-medieval and lacustrine). All archaeological features predating the medieval and post-medieval period were located within the northern and western limits of the Site, outside of the area occupied by the wetland environment of the Bingham Basin.
- 9.5.4 Romano-British ditches and occasional pits were identified adjacent to the Fosse Way. These features correspond well to anomalies identified during the Geophysical survey of the area and seem likely to be associated with field systems within this period. Examination of the artefacts recovered from this area has identified Romano-British coursewares, a small assemblage of finewares, ceramic building material and an iron nail. Due to this paucity of feature types (postholes/stakeholes) and Romano-British finds, which are classically associated with settlement (together with an absence of industrial waste, rubbish pits or ritual evidence), it would appear that nature of the Romano-British usage of the Site was non-domestic and instead probably reflects agricultural plots or enclosures for housing livestock. However, given the limited nature of the trenching and complexity of the geophysical responses adjacent to the Fosse Way it is plausible that a continuation of the Romano-British activity previously recorded to the northwest and west, within site DE3001 of the A46 improvement works may exist.
- 9.5.5 Within DE3001, a large sub-rectangular enclosure (Enclosure K) was created probably in the 3rd century AD and appears to have defined the southern extent of the roadside activity fronting on to the west side of the Fosse Way. This enclosure contained minimal internal features, but several burials were identified. The Romano-British remains identified within Area 3 of the geoarchaeological works may represent the southern extent of the roadside activity fronting on to the east side of the Fosse Way.
- 9.5.6 The discovery of two sherds of possible Anglo-Saxon pottery from within the north of the Site potentially fits with the post-Roman change in the local settlement pattern, with a move away from Margidunum to Bingham. The two sherds were recovered from the last of a series of recut ditches which appeared to respect the positioning of a previous Romano-British field system. In this respect the recovery of the possible Anglo-Saxon pottery from such a feature could suggest that some level of continuity existed in the respective field systems of the Romano-British and Anglo-Saxon periods.

## 9.6 Archaeological recommendations

- 9.6.1 Although the geoarchaeological works have not identified any archaeological remains within the lake deposits there remains the obvious potential for as yet undiscovered organic objects and structures associated with prehistoric exploitation and settlement of the wetland environment of the Bingham Basin. However, the results of the



geoarchaeological work indicate these are likely to exist in a very poor state of preservation given the generally restricted depth poor preservation of the peat across the Site. It is worth noting however, that the results of the geoarchaeological works did not reveal any evidence for islands within the lake environment which may have served as a focus for prehistoric activity. This is not to say that such islands are not present, they just have not been identified within the works undertaken so far.

- 9.6.2 The archaeological evaluation trenching of the Site has demonstrated that the peat and marl deposits of the former lake are cut by a series of ditches and gullies, tentatively dated to the medieval and post-medieval period. None of these features were identified by the previous phase of geophysical survey. The similar nature of the ditch fills and the surrounding deposits would account for the lack of geophysical anomalies within the area covered by the former lake and wetlands.
- 9.6.3 Given the limited value of the geophysical survey across the area of the lake deposits and very small percentage of the lake deposits so far evaluated by trenches and boreholes it would seem likely that further archaeological remains will survive in this area. At the very least, it is to be expected that large sections of the probable medieval to post-medieval field system identified cutting into the peat and marl deposits survive.



## 10 REFERENCES

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## 11 APPENDICES

### 11.1 Appendix 1: Trench context descriptions

| Trench 1    | Description:   | Dimensions:<br>50 x 1.8m |
|-------------|--|--------------------------|
| Context No. |  | Depth:<br>0.45m          |
| 101         | Topsoil – Dark brownish-grey sandy silt with sparse small sub-rounded stones.                                | 0 – 0.18 m               |
| 102         | Subsoil – Compact mid reddish-brown silty clay with occasional small sub-rounded stones.                     | 0.18 – 0.45 m            |
| 103         | Natural substrate – Compact mid orange-red clay with sparse patches of light grey degraded mudstone bedrock. | 0.45 m +                 |
| 104         | Fill of ditch 106 – Compact mid greyish-brown silty clay with sparse sub-angular stones.                     | 0.45m +                  |
| 105         | Fill of ditch 106 – Compact mid orange-red silty clay.   | 0.45m +                  |
| 106         | Cut of ditch   | 0.45m +                  |
| 107         | Fill of ditch 108 – Mid brownish-grey silty clay. Occasional medium sub-angular stones.                      | 0.45m +                  |
| 108         | Cut of ditch   | 0.45m +                  |
| 109         | Fill of ditch 111 – Moderately compact mid reddish-brown clay silt with sparse sub-angular stones.           | 0.45m +                  |
| 110         | Fill of ditch 111 – Compact mid brownish-red silty clay. Occasional flecks degraded bedrock.                 | 0.45m +                  |
| 111         | Cut of ditch   | 0.45m +                  |
| 112         | Fill of ditch 114 – Moderately compact mid greyish-red silty clay. Sparse small angular stones.              | 0.45m +                  |
| 113         | Fill of ditch 114 – Compact mid brownish-red silty clay. Occasional flecks degraded bedrock.                 | 0.45m +                  |
| 114         | Cut of ditch   | 0.45m +                  |
| 115         | Fill of pit 116 – Moderately compact sandy-silt. Sparse small sub-angular stones.                            | 0.45m +                  |
| 116         | Cut of pit   | 0.45m +                  |

| Trench 2    | Description:   | Dimensions:<br>50 x 1.8m |
|-------------|--|--------------------------|
| Context No. |  | Depth: 0.5m              |
| 201         | Topsoil – Dark brownish-grey sandy silt. Sparse small sub-rounded and sub-angular stones.                    | 0 – 0.32 m               |
| 202         | Natural substrate – Compact dark reddish-brown clay with patches of pale brownish-grey sand.                 | 0.32 m +                 |
| 203         | Fill of ditch 204 - Dark greyish-brown sandy clay. Moderately frequent medium sub-angular stones.            | 0.32 m +                 |
| 204         | Cut of ditch.  | 0.32 m +                 |
| 205         | Cut of ditch.  | 0.32 m +                 |
| 206         | Fill of ditch 205 – Light brownish-red clay with frequent greyish mottling. Sparse small sub-angular stones. | 0.32 m +                 |
| 207         | Fill of ditch 205 – Brownish-red clay. Sparse sub-angular stones.  | 0.42 m +                 |

| Trench 3    | Description:  | Dimensions:<br>50 x 1.8m |
|-------------|---|--------------------------|
| Context No. |   | Depth:<br>0.37m          |
| 301         | Topsoil – Dark greyish-brown silty clay with occasional pebbles.                    | 0 – 0.32 m               |
| 302         | Fill of ditch 308 – Dark reddish-brown sandy clay. Sparse small sub-angular stones. | 0.32 m +                 |



|     |   |          |
|-----|---|----------|
|     | Same as 303.  |          |
| 303 | Fill of ditch 308 – Dark reddish-brown sandy clay. Sparse sub-angular stones. Same as 302.        | 0.32 m + |
| 304 | Fill of ditch 308 – Dark reddish-brown clay. Same as 305.   | 0.32 m + |
| 305 | Fill of ditch 308 – Dark reddish-brown clay. Same as 304.   | 0.32 m + |
| 306 | Fill of land drain  | 0.32 m + |
| 307 | Land drain  | 0.32 m + |
| 308 | Cut of ditch  | 0.32 m + |
| 309 | Land drain  | 0.32 m + |
| 310 | Natural substrate – Compact mid red clay with occasional sub-angular stones.                      | 0.32 m + |
| 311 | Cut of ditch  | 0.32 m + |
| 312 | Fill of ditch 311 – Mid reddish-brown sandy clay. Sparse pebbles.                                 | 0.32 m + |
| 313 | Cut of ditch  | 0.32 m + |
| 314 | Fill of ditch 313 – Dark grey silty clay. Occasional medium to large sub-angular stone fragments. | 0.32 m + |
| 315 | Cut of ditch  | 0.32 m + |
| 316 | Fill of ditch 315 – Dark greyish-brown silty clay. Occasional large sub-angular stones.           | 0.32 m + |
| 317 | Cut of ditch  | 0.32 m + |
| 318 | Fill of ditch 317 – Very dark grey silty clay. Occasional small pebbles.                          | 0.32 m + |
| 319 | Cut of ditch  | 0.32 m + |
| 320 | Fill of ditch 319 – Very dark greyish-brown silty clay. Sparse gravel inclusions.                 | 0.32 m + |

| <b>Trench 4</b>    | <b>Description:</b>  | <b>Dimensions:<br/>50 x 1. m</b> |
|--------------------|--|----------------------------------|
| <b>Context No.</b> |  | <b>Depth 0.65m</b>               |
| 401                | Topsoil – Dark grey sandy clay silt.   | 0 – 0.30 m                       |
| 402                | Subsoil – Mid brownish-grey slightly clayey silty sand.  | 0.30 – 0.65 m                    |
| 403                | Natural substrate – Hetrogenous dark orange and pale greenish-grey clay with bedrock outcropping in south end of trench. | 0.50 – 0.65 m +                  |

| <b>Trench 5</b>    | <b>Description:</b>   | <b>Dimensions:<br/>50 x 1.8m</b> |
|--------------------|---|----------------------------------|
| <b>Context No.</b> |   | <b>Depth: 0.44m</b>              |
| 501                | Topsoil – Dark greyish-brown silty clay. Occasional pebbles.                        | 0 – 0.32 m                       |
| 502                | Subsoil – Light greyish-brown silty clay with sparse gravel inclusions.             | 0.32 – 0.44 m                    |
| 503                | Natural substrate – Mid reddish-brown sandy clay with greenish-grey clay mottling.  | 0.44 m +                         |
| 504                | Cut of ditch.   | 0.44 m +                         |
| 505                | Fill of ditch 504 – Dark grey silty clay. Frequent stone inclusions.                | 0.44 m +                         |
| 506                | Cut of ditch.   | 0.44 m +                         |
| 507                | Fill of ditch 506 – Dark greyish-brown silty clay. Sparse small sub-angular stones. | 0.44 m +                         |

| <b>Trench 6</b>    | <b>Description:</b>  | <b>Dimensions:<br/>50 x 1.8m</b> |
|--------------------|--|----------------------------------|
| <b>Context No.</b> |  | <b>Depth:<br/>0.40m</b>          |
| 601                | Topsoil – Dark greyish-brown silty clay with occasional pebbles. | 0 – 0.40 m                       |



|     |  |               |
|-----|--|---------------|
| 602 | Natural substrate – Mid reddish-brown very sandy clay with mid greenish-grey mottling.                 | 0.40 m +      |
| 603 | Cut of ditch.  | 0.40 – 0.90 m |
| 604 | Fill of ditch 603 – Moderately compact mid reddish-brown clay. Small sub-angular stones.               | 0.68 – 0.90 m |
| 605 | Fill of ditch 603 - Dark greyish-brown silty clay. Frequent sub-angular and sub-rounded stones.        | 0.40 – 0.68 m |
| 606 | Cut of shallow ditch.  | 0.40 m+       |
| 607 | Fill of gully 606 – Reddish-brown with greenish-grey mottling silty clay. Frequent sub-angular stones. | 0.68 m +      |
| 608 | Fill of gully 606 – Mid reddish-brown silty clay.  | 0.40 m +      |
| 609 | Fill of pit 610 – Dark greyish-brown silty clay. Occasional small sub-angular stones.                  | 0.40 m +      |
| 610 | Cut of pit.  | 0.40 m +      |
| 611 | Fill of pit 612 – Mid greyish-brown sandy silt. Sparse small angular stone fragments.                  | 0.40 m +      |
| 612 | Cut of pit.  | 0.40 m +      |

| <b>Trench 7</b>    | <b>Description:</b>   | <b>Dimensions:<br/>50 x 1.8m</b> |
|--------------------|---|----------------------------------|
| <b>Context No.</b> |   | <b>Depth 0.55m</b>               |
| 701                | Topsoil – Dark brownish-grey silty clay.  | 0 – 0.25 m                       |
| 702                | Subsoil – Mid brownish-grey sandy clayey silt.  | 0.25 – 0.35 m                    |
| 703                | Natural substrate – Firm pale grey clay with patches of orange sandy clay.                | 0.35 – 0.55 m +                  |
| 704                | Cut of ditch  | 0.50 – 0.98 m                    |
| 705                | Fill of ditch 704 – Mid reddish-brown clay. Frequent sub-angular and sub-rounded stones.  | 0.50 – 0.76 m                    |
| 706                | Fill of ditch 704 – Dark greyish-brown clay. Frequent sub-angular and sub-rounded stones. | 0.76 – 0.98 m                    |
| 707                | Cut of pit.   | 0.50 – 1.22 m                    |
| 708                | Fill of pit 707 – Dark grey clay. Frequent stone inclusions.                              | 0.50 – 0.82 m                    |
| 709                | Fill of pit 707 – Reddish-grey clay. Occasional pebbles.                                  | 0.82 – 1.22 m                    |
| 710                | Cut of land drain   | 0.50 – 0.56 m                    |
| 711                | Fill of 710 – Mid grey silty clay. Sparse gravel inclusions.                              | 0.50 – 0.56 m                    |

| <b>Trench 8</b>    | <b>Description:</b>  | <b>Dimensions:<br/>50 x 1.8m</b> |
|--------------------|--|----------------------------------|
| <b>Context No.</b> |  | <b>Depth: 0.46m</b>              |
| 801                | Topsoil – Dark brown silty clay. Occasional pebbles.   | 0 – 0.32 m                       |
| 802                | Subsoil – Dark reddish-brown silty clay. Occasional sub-angular and sub-rounded stones.              | 0.32 – 0.40 m                    |
| 803                | Natural substrate – Firm mid reddish-brown sandy clay with frequent patches of pale grey sandy clay. | 0.40 – 0.46 m +                  |
| 804                | Cut of field boundary  | 0.40 m +                         |
| 805                | Fill of 804 – Mid reddish-grey silty clay.   | 0.40 m +                         |

| <b>Trench 9</b>    | <b>Description:</b>   | <b>Dimensions:<br/>50 x 1.8m</b> |
|--------------------|---|----------------------------------|
| <b>Context No.</b> |   | <b>Depth: 0.47m</b>              |
| 901                | Topsoil – Dark grey silty clay. Frequent gravel inclusions. | 0 – 0.23 m                       |





|     |  |                    |
|-----|--|--------------------|
| 902 | Subsoil – Mid brownish-grey silty clay. Rare small stone inclusions.   | 0.23 – 0.38 m      |
| 903 | Natural substrate – Orange-brown sandy clay with mottling of light blueish-grey mottling.                                | 0.38 – 0.46 m<br>+ |
| 904 | Cut of ditch.  | 0.38 m +           |
| 905 | Fill of ditch 904 – Firm mid yellowish-brown silty clay. Occasional pebbles. Occasional small sub-angular stones.        | 0.38 m +           |
| 906 | Cut of ditch.  | 0.38 m +           |
| 907 | Fill of 906 – Moderately compact dark yellowish-brown silty clay. Frequent small sub-angular stone fragments.            | 0.38 m +           |
| 908 | Cut of ditch.  | 0.38 m +           |
| 909 | Fill of ditch 908 – Compact mid brown clay. Small sub-rounded stone inclusions.  | 0.38 m +           |
| 910 | Cut of ditch.  | 0.38 +             |
| 911 | Fill of ditch 910 – Firm mid greyish-brown silty clay. Occasional pebbles. Occasional small sub-angular stone fragments. | 0.38 m +           |
| 912 | Cut of ditch.  | 0.38 m +           |
| 913 | Fill of ditch 912 – Moderately compact dark greyish-brown peaty clay. Frequent molluscs. Occasional pebbles.             | 0.38 m +           |

| <b>Trench 10</b>   | <b>Description:</b>  | <b>Dimensions:<br/>50 x 1.8m</b> |
|--------------------|--|----------------------------------|
| <b>Context No.</b> |  | <b>Depth: 0.54m</b>              |
| 1001               | Topsoil – Dark greyish-brown silty clay. Occasional pebbles.   | 0 – 0.20m                        |
| 1002               | Subsoil - Mid greyish-brown silty clay with occasional small stone inclusions.   | 0.20 – 0.43 m                    |
| 1003               | Natural substrate – Mid reddish-brown sandy clay with frequent patches of pale grey sandy clay.  | 0.43 – 0.54 m<br>+               |
| 1004               | Fill of ditch 1005 – Compact very dark brownish-grey clay silt. Sparse medium sub-rounded stones.  |                                  |
| 1005               | Cut of ditch.  |                                  |
| 1006               | Fill of ditch 1009 – Compact dark greyish-brown silty clay. Sparse large bedrock fragments (<250 mm).  |                                  |
| 1007               | Fill of ditch 1009 – Moderately compact mid brownish-red silty clay. Sparse small angular stone fragments.                                   |                                  |
| 1008               | Fill of ditch 1009 – Compact mid reddish-brown silty clay. Sparse large weathered bedrock fragments (<200 mm) and sparse small stone flecks. |                                  |
| 1009               | Cut of ditch.  |                                  |
| 1010               | Fill of ditch 1019 – Compact mid reddish-brown silty clay. Sparse small angular bedrock fragments (<50 mm).                                  |                                  |
| 1011               | Fill of ditch 1019 – Moderately compact mid brownish-red silty clay.   |                                  |
| 1012               | Fill of ditch 1019 – Compact mid yellowish-brown silty clay. Rare flecks of sub-angular weathered bedrock and sparse sub-rounded pebbles.    |                                  |
| 1013               | Fill of ditch 1019 – Compact mid orange-brown silty clay. Sparse small angular stones.   |                                  |
| 1014               | Fill of ditch 1019 – Moderately compact mid greyish-brown silty clay. Sparse small sub-rounded stones (<30mm).                               |                                  |
| 1015               | Fill of ditch 1019 - Compact mid reddish-brown clay silt. Sparse flecks of weathered bedrock.  |                                  |
| 1016               | Fill of ditch 1019 – Compact mid reddish-yellow silty clay. Same as 1018.  |                                  |
| 1017               | Fill of field drain.   |                                  |
| 1018               | Fill of ditch 1019 – Compact mid reddish-yellow silty clay. Same as 1016.  |                                  |
| 1019               | Cut of ditch.  |                                  |



| <b>Trench 11</b>   | <b>Description:</b>  | <b>Dimensions:<br/>50 x 1.8m</b> |
|--------------------|--|----------------------------------|
| <b>Context No.</b> |  | <b>Depth: 0.64m</b>              |
| 1101               | Topsoil – Dark greyish-brown silty clay. Occasional pebbles.   | 0 – 0.20 m                       |
| 1102               | Subsoil – Mid greyish-brown sandy clay with occasional sub-angular stones and occasional pebbles.              | 0.20 – 0.35 m                    |
| 1103               | Peat – Dark grey fibrous organic peaty clay.   | 0.35 – 0.46 m                    |
| 1104               | Marl – Pale brown sandy marl. Frequent molluscs.   | 0.46 – 0.56 m                    |
| 1105               | Natural substrate – Pale yellowish-brown very sandy clay with occasional lenses of pale grey sandy clay. Till. | 0.56 – 0.64 m<br>+               |

| <b>Trench 12</b>   | <b>Description:</b>   | <b>Dimensions:<br/>50 x 1.8m</b> |
|--------------------|---|----------------------------------|
| <b>Context No.</b> |   | <b>Depth: 0.65m</b>              |
| 1201               | Topsoil – Dark greyish-brown silty clay. Occasional pebbles.  | 0 – 0.30 m                       |
| 1202               | Marl (tuforescent) – Mid brown very sandy tuforescent marl.   | 0.30 – 0.40 m                    |
| 1203               | Marl – Pale brown sandy marl. Occasional molluscs.  | 0.40 – 0.56 m                    |
| 1204               | Natural substrate – Pale grey very sandy clay with frequent mid yellowish-brown sand mottling and frequent pebbles. Till. | 0.56 – 0.65 m<br>+               |

| <b>Trench 13</b>   | <b>Description:</b>  | <b>Dimensions:<br/>50 x 1.8m</b> |
|--------------------|--|----------------------------------|
| <b>Context No.</b> |  | <b>Depth: 0.62m</b>              |
| 1301               | Topsoil – Dark greyish-brown silty clay. Occasional pebbles. | 0 – 0.30 m                       |
| 1302               | Peat – Dark grey peat with some tufa/sand mottling.          | 0.30 – 0.40 m                    |
| 1303               | Marl – Pale brown sandy marl. Abundant molluscs.             | 0.40 – 0.60 m                    |
| 1304               | Cut of furrow.   | 0.60 m +                         |
| 1305               | Fill of 1304 – Dark greyish-brown peaty clay.                | 0.60 m +                         |
| 1306               | Alluvium – Pale grey very sandy clay.                        | 0.60 – 0.62 m +                  |

| <b>Trench 14</b>   | <b>Description:</b>   | <b>Dimensions:<br/>50 x 1.8m</b> |
|--------------------|---|----------------------------------|
| <b>Context No.</b> |   | <b>Depth: 1.20m</b>              |
| 1401               | Topsoil – Dark greyish-brown silty clay. Occasional pebbles.  | 0 – 0.20 m                       |
| 1402               | Alluvium – Firm dark yellowish-brown clay. Occasional pebbles.  | 0.20 – 0.40 m                    |
| 1403               | Peat – Dark grey fibrous organic peat.  | 0.40 – 0.50 m                    |
| 1404               | Marl – Pale brown sandy marl. Occasional molluscs.  | 0.50 – 0.70 m                    |
| 1405               | Alluvium – Mid greyish-brown very silty clay. Occasional pebbles.   | 0.70 – 1.15 m                    |
| 1406               | Natural – Mid greyish-blue sandy clay with frequent mid yellowish-brown sand mottling and frequent pebbles. Till. | 1.15 – 1.20 m +                  |
| 1407               | Cut of ditch. Same as 1420.   | 0.50 m+                          |
| 1408               | Fill of ditch base 1407 – Dark greyish brown peaty clay.  | 0.50 m+                          |
| 1409               | Fill of ditch 1420 – Moderately compact mid grey black peat.  | 0.50 m+                          |
| 1410               | Fill of ditch 1420 – Moderately compact mid brownish-black clay peat.   | 0.50 m+                          |
| 1411               | Fill of ditch 1420 – Moderately compact mid brownish-black clay peat.   | 0.50 m+                          |
| 1412               | Impression of timber in ditch 1420 – Dark brown black clay peat with frequent light brown degraded wood flecks.   | 0.50 m+                          |



|      |   |          |
|------|---|----------|
| 1413 | Fill of ditch 1420 – Compact mid yellowish-grey silty clay. Sparse small sub-angular stones.                    | 0.50 m+  |
| 1414 | Fill of ditch 1420 – Soft mid brownish black silty peat. Sparse small sub-angular stones.                       | 0.50 m+  |
| 1415 | Fill of ditch 1420 – Moderately compact mid grey black clay peat. Sparse marl flecks.                           | 0.50 m+  |
| 1416 | Fill of ditch 1420 – Moderately compact light yellowish-grey sandy silt. Sparse small sub-angular stone flecks. | 0.50 m+  |
| 1417 | Fill of ditch 1420 – Moderately compact light yellowish-grey sandy silt. Sparse small sub-angular stone flecks. | 0.50 m+  |
| 1418 | Fill of ditch 1420 – Soft dark brownish-black peat. Frequent small roots.                                       | 0.50 m+  |
| 1419 | Fill of ditch 1420 – Friable dark grey black peat.  | 0.50 m+  |
| 1420 | Cut of ditch. Same as 1407.   | 0.50 m + |

| Trench 15   | Description:  | Dimensions:<br>50 x 1.8m |
|-------------|---|--------------------------|
| Context No. |   | Depth: 0.43m             |
| 1501        | Topsoil – Mid greyish-brown silty clay.   | 0 – 0.18 m               |
| 1502        | Peat – Dark grey peat.  | 0.18 – 0.37 m            |
| 1503        | Marl – Pale brown sandy marl.   | 0.37 – 0.43 m            |
| 1504        | Fill of ditch 1508 – Moderately compact mid greyish-brown peat. Frequent marl flecks.     | 0.37 m +                 |
| 1505        | Fill of ditch 1508 – Friable dark grey peat.  | 0.37 m +                 |
| 1506        | Fill of ditch 1508 – Moderately compact mid-greyish-brown silty sand. Sparse marl flecks. | 0.37 m +                 |
| 1507        | Fill of ditch 1508 – Compact Dark grey / black peat.                                      | 0.37 m +                 |
| 1508        | Cut of ditch.   | 0.37 m +                 |
| 1509        | Fill of ditch 1512 – Moderately compact mid greyish-brown peat. Frequent marl flecks.     | 0.37 m +                 |
| 1510        | Fill of ditch 1512 – Friable dark brown / black peat. Sparse fragments of degraded marl.  | 0.37 m +                 |
| 1511        | Fill of ditch 1512 – Moderately compact mid brownish-grey silty sand. Sparse marl flecks. | 0.37 m +                 |
| 1512        | Cut of ditch.   | 0.37 m +                 |

| Trench 16   | Description:   | Dimensions:<br>50 x 1.8m |
|-------------|--|--------------------------|
| Context No. |  | Depth:<br>1.21m          |
| 1601        | Topsoil – Dark greyish-brown clay silt   | 0 m- 0.32 m              |
| 1602        | Peat – Dark grey organic peat.   | 0.32 – 0.37 m            |
| 1603        | Marl – Pale yellowish-brown silty marl. Abundant molluscs.                                   | 0.37 – 0.53 m            |
| 1604        | Alluvium – Dark yellowish-grey silty clay. Rare patches of fine gravel. Occasional molluscs. | 0.53 -0.74 m             |
| 1605        | Alluvium – Light yellowish-grey silty clay. Rare molluscs.                                   | 0.74 – 0.92 m            |
| 1606        | Alluvium – Dark yellowish-grey clay.   | 0.92 – 1.15 m            |
| 1607        | Natural – Blue/grey clay with patches of fine gravel.  | 1.15 – 1.21 m            |

| Trench 17   | Description:   | Dimensions:<br>50 x 1.8m |
|-------------|--|--------------------------|
| Context No. |  | Depth:<br>1.15m          |
| 1701        | Topsoil – Dark greyish-brown silty clay. Occasional pebbles. | 0 – 0.30 m               |



|      |   |               |
|------|---|---------------|
| 1702 | Peat – Dark grey fibrous organic peaty clay.  | 0.30 – 0.40 m |
| 1703 | Marl – Pale brown sandy marl. Abundant molluscs.  | 0.40 – 0.55 m |
| 1704 | Alluvium – Mid greyish-brown very sandy clay. Occasional pebbles.   | 0.55 – 1.05 m |
| 1705 | Natural – Mid greyish-blue sandy clay, frequent light yellowish-brown sand mottling. Frequent pebbles and sub-angular stones. | 1.05 – 1.15 m |

| <b>Trench 18</b>   | <b>Description:</b>   | <b>Dimensions:<br/>50 x 1.8m</b> |
|--------------------|---|----------------------------------|
| <b>Context No.</b> |   | <b>Depth:<br/>0.44m</b>          |
| 1801               | Topsoil – Dark greyish-brown silty clay. Occasional pebbles.  | 0 – 0.28 m                       |
| 1802               | Subsoil – Dark reddish-brown silty clay. Occasional pebbles.  | 0.28 – 0.36 m                    |
| 1803               | Natural substrate – Mid reddish-brown sandy clay with frequent patches of mid grey sandy clay and occasional bedrock outcropping. | 0.36 – 0.44 m                    |
| 1804               | Cut of modern pit.  | 0.36 m +                         |
| 1805               | Fill of pit 1804 – Dark greyish-brown silty clay. Occasional small sub-angular stones.  | 0.36 m +                         |
| 1806               | Fill of furrow 1807.  | 0.36 m +                         |
| 1807               | Furrow.   | 0.36 m +                         |

| <b>Trench 19</b>   | <b>Description:</b>   | <b>Dimensions:<br/>50 x 1.8m</b> |
|--------------------|---|----------------------------------|
| <b>Context No.</b> |   | <b>Depth: 0.58m</b>              |
| 1901               | Topsoil – Dark greyish-brown silty clay. Occasional pebbles.  | 0 – 0.28 m                       |
| 1902               | Subsoil – Mid greyish-brown silty clay with frequent large irregular lenses of peat.                                | 0.28 – 0.54 m                    |
| 1903               | Natural substrate – Mid reddish-brown sandy clay with frequent patches of light grey sandy clay. Occasional stones. | 0.54 – 0.58 m +                  |

| <b>Trench 20</b>   | <b>Description:</b>  | <b>Dimensions:<br/>50 x 1.8m</b> |
|--------------------|--|----------------------------------|
| <b>Context No.</b> |  | <b>Depth: 0.54m</b>              |
| 2001               | Topsoil – Dark greyish-brown silty clay. Occasional pebbles.                                 | 0 – 0.20 m                       |
| 2002               | Subsoil – Mid greyish-brown silty clay. Occasional pebbles.                                  | 0.20 – 0.40 m                    |
| 2003               | Natural substrate – Mid reddish-brown sandy clay. Infrequent patches of mid grey sandy clay. | 0.40 – 0.54 m +                  |
| 2004               | Cut of ditch.  | 0.54 m +                         |
| 2005               | Fill of ditch 2004 – Compact mid greyish-brown sandy clay. Sparse sub-rounded stones.        | 0.70m – 0.75 m                   |
| 2006               | Fill of ditch 2004 – Compact mid greyish-brown clay. Occasional stones.                      | 0.70 – 1.29 m                    |
| 2007               | Cut of ditch.  | 0.54 m +                         |
| 2008               | Fill of ditch 2007 – Mid greyish-brown silty clay. Frequent small to medium stones.          | 0.54 m +                         |
| 2009               | Cut of ditch.  | 0.54 m +                         |
| 2010               | Fill of ditch 2009 – Mid reddish-brown silty sand.   | 1.30 m +                         |
| 2011               | Fill of ditch 2009 – Mid reddish-grey silty clay. Frequent pebbles.                          | 0.90 m +                         |
| 2012               | Fill of ditch 2009 – Mid grey silty clay. Sparse gravel inclusions.                          | 0.54 m +                         |



| <b>Trench 21</b>   | <b>Description:</b>  | <b>Dimensions:<br/>50 x 1.8m</b> |
|--------------------|--|----------------------------------|
| <b>Context No.</b> |  | <b>Depth: 0.60m</b>              |
| 2101               | Topsoil – Dark greyish-brown silty clay. Occasional pebbles.                                 | 0 – 0.30 m                       |
| 2102               | Subsoil – Mid greyish-brown silty clay. Occasional small sub-rounded and sub-angular stones. | 0.30 – 0.48 m                    |
| 2103               | Natural substrate – Mid reddish-brown sandy clay. Rare patches of mid-grey sandy clay.       | 0.48 – 0.60 m<br>+               |
| 2104               | Cut of ditch.  | 0.48 m +                         |
| 2105               | Fill of ditch 2104 – Compact mid-brown clay.   | 0.48 – 0.66 m                    |

| <b>Trench 22</b>   | <b>Description:</b>  | <b>Dimensions:<br/>50 x 1.8m</b> |
|--------------------|--|----------------------------------|
| <b>Context No.</b> |  | <b>Depth: 1.02m</b>              |
| 2201 m             | Topsoil – Dark greyish-brown silty clay. Occasional pebbles.                           | 0 – 0.25 m                       |
| 2201               | Subsoil – Mid greyish-brown silty clay.  | 0.25 – 0.48 m                    |
| 2203               | Peat – Dark greyish-brown organic peaty clay.  | 0.48 – 0.89 m                    |
| 2204               | Natural – Mid reddish-brown sandy clay with occasional pebbles and sub-angular stones. | 0.89 – 1.02 m<br>+               |

| <b>Trench 23</b>   | <b>Description:</b>  | <b>Dimensions:<br/>50 x 1.8m</b> |
|--------------------|--|----------------------------------|
| <b>Context No.</b> |  | <b>Depth: 0.66m</b>              |
| 2301               | Topsoil – Dark greyish-brown silty clay. Occasional pebbles.   | 0 – 0.30 m                       |
| 2302               | Subsoil – Mid greyish-brown silty clay. Occasional pebbles.  | 0.30 – 0.55 m                    |
| 2203               | Natural substrate – Light blueish-grey very sandy clay with frequent patches of pale yellowish-brown sand. | 0.55 m- 0.66 m<br>+              |

| <b>Trench 24</b>   | <b>Description:</b>   | <b>Dimensions:<br/>50 x 1.8m</b> |
|--------------------|---|----------------------------------|
| <b>Context No.</b> |   | <b>Depth:<br/>0.40m</b>          |
| 2401               | Topsoil – Dark greyish-brown silty clay. Occasional pebbles.  | 0 – 0.25 m                       |
| 2402               | Subsoil – Dark reddish-brown silty clay. Occasional stones.   | 0.25 – 0.30 m                    |
| 2403               | Natural substrate – Mid reddish-brown sandy clay with occasional lenses of pale grey very sandy clay. | 0.30 – 0.40 m                    |

| <b>Trench 26</b>   | <b>Description:</b>  | <b>Dimensions:<br/>50 x 1.8m</b> |
|--------------------|--|----------------------------------|
| <b>Context No.</b> |  | <b>Depth: 1m</b>                 |
| 2601               | Topsoil – Dark greyish-brown silty clay. Occasional pebbles.   | 0 – 0.24 m                       |
| 2602               | Alluvium – Firm dark yellowish-brown clay. Occasional pebbles.   | 0.24 – 0.30<br>m                 |
| 2603               | Peat – Dark grey fibrous organic peat. Some tuforescent laminations.   | 0.36 – 0.48<br>m                 |
| 2604               | Marl – Pale brown sandy marl. Abundant molluscs.   | 0.48 – 0.60<br>m                 |
| 2605               | Natural substrate – Light greyish-brown very sandy clay with frequent light yellowish brown sand mottling. Till. | 0.60 – 1 m +                     |



| <b>Trench 27</b>   | <b>Description:</b>  | <b>Dimensions:<br/>50 x 1.8m</b> |
|--------------------|--|----------------------------------|
| <b>Context No.</b> |  | <b>Depth: 1.10m</b>              |
| 2701               | Topsoil – Mid greyish-brown silty clay. Occasional sub-angular stones.                                     | 0 – 0.30 m                       |
| 2702               | Subsoil – Moderately compact light greyish-brown silty clay.   | 0.30 – 0.50 m                    |
| 2703               | Peat   | 0.50 – 0.59 m                    |
| 2704               | Marl – Pale yellowish brown silty sand.  | 0.59 – 0.80 m                    |
| 2705               | Marl – Pale greyish brown silty sand. Frequent molluscs.   | 0.80 – 1.04                      |
| 2706               | Natural substrate – Compact mid grey brown silty clay  | 1.04 – 1.10 m                    |
| <b>Trench 28</b>   | <b>Description:</b>  | <b>Dimensions:<br/>50 x 1.8m</b> |
| <b>Context No.</b> |  | <b>Depth: 0.46m</b>              |
| 2801               | Topsoil – Dark greyish-brown silty clay. Occasional pebbles.   | 0 – 0.22 m                       |
| 2802               | Subsoil – Mid greyish-brown silty clay. Occasional lenses of peat.   | 0.22 – 0.41 m                    |
| 2803               | Marl – Pale brown sandy clay.  | 0.41 m +                         |
| 2804               | Cut of ditch.  | 0.41 m+                          |
| 2805               | Fill of ditch 2904 – Very dark grey peaty clay. Sparse small pebbles.                                      | 0.41 m+                          |
| 2806               | Fill of ditch 2904 – Dark grey silty clay. Frequent small pebbles. Occasional sub-angular stone fragments. | 0.41 m+                          |
| 2807               | Fill of ditch 2904 – Mid grey silty clay with light grey mottling. Frequent pebbles.                       | 0.41 m+                          |

| <b>Trench 29</b>   | <b>Description:</b>  | <b>Dimensions:<br/>20.5 x 1.8m</b> |
|--------------------|--|------------------------------------|
| <b>Context No.</b> |  | <b>Depth:<br/>0.44m</b>            |
| 2901               | Topsoil – Dark greyish-brown silty clay. Occasional pebbles.   | 0 – 0.30 m                         |
| 2902               | Alluvium – Firm dark yellowish-brown clay with occasional stones.  | 0.30 – 0.40 m                      |
| 2903               | Peat – Dark grey fibrous organic peat with occasional lenses of tufoous marl.  | 0.40 – 0.46 m                      |
| 2904               | Marl – Pale brown very sandy marl. Abundant molluscs.  | 0.46 m +                           |
| 2905               | Cut of ditch.  | 0.46 m +                           |
| 2906               | Fill of ditch 2905 – Moderately compact dark grey peat. Occasional lenses of tufa. Occasional pebbles.   | 0.46 m +                           |
| 2907               | Fill of ditch 2905 – Moderately compact dark grey peaty clay with frequent dark yellowish-brown tufoous marl mottling. Frequent charcoal flecks. Occasional lenses of mid yellowish-brown clay.        | 0.46 m+                            |
| 2908               | Fill of ditch 2905 – Firm mid greyish-brown silty clay.  | 0.68 m +                           |
| 2909               | Fill of ditch 2905 – Dark greyish-brown peaty clay. Frequent lenses of pale brown sandy clay and laminations of sand. Moderately frequent molluscs. Occasional pebbles. Occasional sub-angular stones. | 0.46 m +                           |
| 2910               | Fill of ditch 2905 – Light yellowish-brown very sandy clay. Occasional charcoal flecks. Occasional molluscs.   | 0.82 m +                           |
| 2911               | Fill of ditch 2905 – Moderately compact mid greyish-brown sandy peaty clay. Occasional small lenses of pale brown clay. Occasional molluscs, Occasional charcoal flecks.                               | 0.80 m +                           |
| 2912               | Fill of ditch 2905 – Light blueish-grey very sandy clay. Frequent lenses of peat. Rare charcoal flecks.  | 0.96 m +                           |



| <b>Trench 30</b>   | <b>Description:</b>   | <b>Dimensions:<br/>50 x 1.8m</b> |
|--------------------|---|----------------------------------|
| <b>Context No.</b> |   | <b>Depth:<br/>0.60m</b>          |
| 3001               | Topsoil – Mid greyish-brown silty clay. Occasional pebbles.   | 0 – 0.25 m                       |
| 3002               | Alluvium – Mid reddish-brown and mid grey mottled very sandy clay.  | 0.25 – 0.34 m                    |
| 3003               | Alluvium – Firm dark reddish-brown sandy clay.  | 0.34 – 0.40 m                    |
| 3004               | Peat – Dark grey fibrous organic peaty clay.  | 0.40 – 0.51 m                    |
| 3005               | Natural substrate – Light grey very sandy clay with frequent mid reddish-brown sandy clay mottling and bedrock outcropping. | 0.51 – 0.60 m                    |

| <b>Trench 31</b>   | <b>Description:</b>   | <b>Dimensions:<br/>50 x 1.8m</b> |
|--------------------|---|----------------------------------|
| <b>Context No.</b> |   | <b>Depth:<br/>0.90m</b>          |
| 3101               | Topsoil – Mid greyish-brown sandy clay.   | 0 – 0.33 m                       |
| 3102               | Peat – Dark blueish-grey clayey peat.   | 0.33 – 0.38 m                    |
| 3103               | Marl (tufores) – Thin layer of tufores marl sporadically present within trench. | 0.38 – 0.45 m                    |
| 3104               | Peat – Dark grey sandy peat.  | 0.38 – 0.64 m                    |
| 3105               | Marl – Pale yellowish-brown sandy marl.   | 0.64 – 0.88 m                    |
| 3106               | Natural substrate – Blueish-brown clay with yellowish-orange mottling.          | 0.88 – 0.90 m +                  |

| <b>Trench 34</b>   | <b>Description:</b>  | <b>Dimensions:<br/>50 x 1.8m</b> |
|--------------------|--|----------------------------------|
| <b>Context No.</b> |  | <b>Depth: 0.60m</b>              |
| 3401               | Topsoil – Dark greyish-brown silty clay. Occasional pebbles.   | 0 – 0.30 m                       |
| 3402               | Subsoil – Mid greyish-brown slightly organic peaty clay.   | 0.30 – 0.52 m                    |
| 3403               | Natural substrate – Pale grey very sandy clay with frequent patches of mid yellowish-brown sand. Till. | 0.52 – 0.60 m +                  |

| <b>Trench 36</b>   | <b>Description:</b>   | <b>Dimensions:<br/>50 x 1.8m</b> |
|--------------------|---|----------------------------------|
| <b>Context No.</b> |   | <b>Depth: 0.56m</b>              |
| 3601               | Topsoil – Dark greyish-brown silty clay. Sparse small sub-angular stone inclusions. | 0 – 0.22 m                       |
| 3602               | Subsoil – Mid yellowish brown sandy clay.   | 0.22 – 0.32 m                    |
| 3603               | Subsoil – Dark greyish-brown clay with sparse sub-rounded stones.                   | 0.33 – 0.47 m                    |
| 3604               | Natural substrate – Mid yellowish-grey clay with dark red sand mottling.            | 0.47 – 0.56 m +                  |
| 3605               | Plough-scarring disturbance.  | 0.56 m +                         |
| 3606               | Fill of disturbance 3605.   | 0.56 m +                         |
| 3607               | Bioturbation.   | 0.56 m+                          |
| 3608               | Bioturbation.   | 0.56 m +                         |
| 3609               | Fill of tree hollow 3610.   | 0.56 m+                          |
| 3610               | Tree hollow.  | 0.56 m +                         |



| <b>Trench 37</b>   | <b>Description:</b>   | <b>Dimensions:<br/>50 x 1.8m</b> |
|--------------------|---|----------------------------------|
| <b>Context No.</b> |   | <b>Depth: 0.62m</b>              |
| 3701               | Topsoil – Mid brownish-grey silty clay. Sparse small angular stones.  | 0 – 0.38 m                       |
| 3702               | Natural substrate – Compact mid orange-red clay with occasional bedrock outcropping.                            | 0.38 – 0.62 m<br>+               |
| 3703               | Fill of land drain 3704.  |                                  |
| 3704               | Land drain.   |                                  |
| 3705               | Fill of ditch 3707 – Moderately compact mid brownish-grey silty clay. Sparse small sub-rounded stones.          |                                  |
| 3706               | Fill of ditch 3707 – Moderately compact mid reddish-brown silty clay. Sparse small sub-angular stone fragments. |                                  |
| 3707               | Cut of ditch.   |                                  |
| 3708               | Fill of ditch 3710 – Compact mid brownish-grey silty sand. Sparse small sub-angular stones and charcoal flecks. |                                  |
| 3709               | Fill of ditch 3610 – Moderately compact mid reddish-brown silty clay. Sparse small bedrock fragments.           |                                  |
| 3610               | Cut of ditch.   |                                  |

| <b>Trench 38</b>   | <b>Description:</b>   | <b>Dimensions:<br/>50 x 1.8m</b> |
|--------------------|---|----------------------------------|
| <b>Context No.</b> |   | <b>Depth:<br/>0.58m</b>          |
| 3801               | Topsoil – Mid greyish-brown silty clay. Occasional pebbles.                                   | 0 – 0.22 m                       |
| 3802               | Subsoil – Moderately compact mid greyish-brown silty clay. Sparse sub-rounded stones (<40mm). | 0.22 – 0.54 m                    |
| 3803               | Natural substrate – Compact light grey clay with occasional weathered bedrock.                | 0.54 – 0.58 m                    |
| 3804               | Fill of modern ditch 3805 – Moderately compact mid greyish-brown clay silt.                   | 0.54 m +                         |
| 3805               | Cut of modern ditch 3804  | 0.54 m +                         |

| <b>Trench 39</b>   | <b>Description:</b>  | <b>Dimensions:<br/>50 x 1.8m</b> |
|--------------------|--|----------------------------------|
| <b>Context No.</b> |  | <b>Depth: 0.45m</b>              |
| 3901               | Topsoil – Dark grey silty clay.  | 0 – 0.45 m                       |
| 3902               | Subsoil – Mid reddish-brown silty clay.  | 0.40 – 0.45 m                    |
| 3903               | Natural – Mixed mid orange-red sandy clay with pale grey sandy clay in west of trench. | 0.45 m +                         |
| 3904               | Cut of probable modern linear.   | 0.45 m +                         |
| 3905               | Fill of 3904 – Dark brown sandy clay.  | 0.45 – 0.77 m                    |
| 3906               | Fill of 3904 – Mid greyish-brown sandy clay.   | 0.77 – 0.95 m                    |

| <b>Trench 40</b>   | <b>Description:</b>   | <b>Dimensions:<br/>50 x 1.8m</b> |
|--------------------|---|----------------------------------|
| <b>Context No.</b> |   | <b>Depth: 0.96m</b>              |
| 4001               | Topsoil – Mid greyish-brown silty clay. Occasional pebbles.                 | 0 – 0.18 m                       |
| 4002               | Alluvium – Firm dark yellowish-brown clay. Occasional pebbles.              | 0.18 – 0.29 m                    |
| 4003               | Peat – Dark grey fibrous organic peat with visible laminae of tufoous marl. | 0.29 – 0.42 m                    |
| 4004               | Marl – Pale brown sandy marl. Abundant molluscs.                            | 0.42 – 0.55 m                    |
| 4005               | Alluvium – Firm mid yellowish-brown clay. Frequent pebbles.                 | 0.55 – 0.68 m                    |





|      |   |                    |
|------|---|--------------------|
| 4006 | Alluvium – Mid blueish-grey sandy clay with frequent mid yellowish-brown sand mottling. | 0.68 – 0.88 m      |
| 4007 | Bedrock – Mid reddish-brown fissile sandy clay mudstone.                                | 0.88 – 0.96 m<br>+ |

| <b>Trench 41</b>   | <b>Description:</b>  | <b>Dimensions:<br/>50 x 1.8m</b> |
|--------------------|--|----------------------------------|
| <b>Context No.</b> |  | <b>Depth: 1.30m</b>              |
| 4101               | Topsoil – Dark greyish-brown silty clay. Occasional pebbles.   | 0 – 0.26 m                       |
| 4102               | Alluvium – Firm mid yellowish-brown clay. Occasional pebbles.  | 0.26 – 0.35 m                    |
| 4103               | Peat – Dark greyish-brown fibrous organic peat with occasional irregular lenses of tufa. No consistent lamination. | 0.35- 0.60 m                     |
| 4104               | Peat – Dark reddish-brown peat.  | 0.60 – 0.65 m                    |
| 4105               | Alluvium – Pale yellowish-brown very sandy clay.   | 0.65 – 0.85 m                    |
| 4106               | Alluvium – Pale blueish-grey sandy clay with frequent pale yellowish-brown mottling. Possibly gleyed.              | 0.85 – 1.10 m                    |
| 4107               | Natural – Pale greyish-blue sandy clay with frequent pebbles. Till.  | 1.10 – 1.24 m<br>+               |

| <b>Trench 42</b>   | <b>Description:</b>   | <b>Dimensions:<br/>50 x 1.8m</b> |
|--------------------|---|----------------------------------|
| <b>Context No.</b> |   | <b>Depth: 0.85m</b>              |
| 4201               | Topsoil – Mid brownish-grey clay.                               | 0 – 0.35 m                       |
| 4202               | Peat – Dark grey friable. Occasional coarse gravel.             | 0.35 - 0.50 m                    |
| 4202               | Natural – Firm mid orange-grey clay. Becomes redder with depth. | 0.50 – 0.85 m +                  |

| <b>Trench 43</b>   | <b>Description:</b>  | <b>Dimensions:<br/>50 x 1.8m</b> |
|--------------------|--|----------------------------------|
| <b>Context No.</b> |  | <b>Depth:<br/>1.80m</b>          |
| 4301               | Topsoil – Dark greyish-brown silty clay. Occasional pebbles.   | 0 – 0.27 m                       |
| 4302               | Alluvium – Firm mid yellowish-brown clay, Occasional pebbles.  | 0.27 – 0.50 m                    |
| 4303               | Peat – Dark greyish-brown fibrous organic peat.  | 0.50 – 0.66 m                    |
| 4304               | Marl – Pale brown very sandy tuforous marl (only present within possible paleo-channel in south of trench).  | 0.66 – 0.76 m                    |
| 4305               | Peat – Dark brownish-grey fibrous organic peat with visible laminae of tufa in places (only present within possible paleo-channel in south of trench).                                 | 0.76 – 0.80 m                    |
| 4306               | Marl – Very pale brown sandy clay marl. Abundant molluscs (only present within possible paleo-channel in south of trench).   | 0.80 – 0.90 m                    |
| 4307               | Peat – Soft dark greyish-brown very organic peaty clay. Occasional dark yellowish-brown mottling. Occasional molluscs (only present within possible paleo-channel in south of trench). | 1 – 1.20m                        |
| 4308               | Alluvium / Peat – Dark yellowish-brown humic peaty clay. Frequent dark greyish-brown mottling. Sparse Molluscs.  | 0.90 – 1.20 m                    |
| 4309               | Alluvium – Pale yellowish-brown very sandy clay with frequent pale blueish-grey mottling.  | 0.85 – 1.24 m                    |
| 4310               | Natural – Pale greyish-blue silty clay. Frequent small pebbles and sub-angular stones. Upper 0.10 m is blueish-grey suggesting a gleyed horizon.                                       | 1.24 – 1.8 m<br>+                |



| <b>Trench 44</b>   | <b>Description:</b>   | <b>Dimensions:</b><br><b>50 x 1.8m</b> |
|--------------------|---|--|
| <b>Context No.</b> |   | <b>Depth: 1.3m</b>                     |
| 4401               | Topsoil – Dark brownish-grey clay.  | 0 – 0.25 m                             |
| 4402               | Made ground – Mixed reddish-brown and pale blue silty clay redeposited natural. | 0.25 – 0.60 m                          |
| 4403               | Peat – Soft dark grey fibrous peat.   | 0.60 – 0.80 m                          |
| 4404               | Peat – Friable dark reddish-brown peat.   | 0.80 – 1 m                             |
| 4405               | Natural - Pale greenish-blue silty clay.  | 1 – 1.50 m                             |
| 4406               | Natural – Red sandy clay.   | 1.50 – 2.25 m +                        |

| <b>Trench 45</b>   | <b>Description:</b>                                       | <b>Dimensions:</b><br><b>50 x 1.8m</b> |
|--------------------|---|--|
| <b>Context No.</b> |   | <b>Depth: 1.2m</b>                     |
| 4501               | Topsoil – Dark greyish-brown silty clay.                  | 0.- 0.18 m                             |
| 4502               | Subsoil – reddish-brown clay.                             | 0.18 – 0.32 m                          |
| 4503               | Peat.   | 0.32 – 0.45 m                          |
| 4504               | Alluvium – Dark yellowish-brown clayey sand.              | 0.45 – 0.50 m                          |
| 4505               | Alluvium – Dark yellowish-brown clay.                     | 0.50 – 0.58 m                          |
| 4506               | Alluvium – Dark yellowish-grey clayey sand.               | 0.58 – 0.72 m                          |
| 4507               | Alluvium – Pale grey sandy clay.                          | 0.72 – 0.94 m                          |
| 4508               | Natural – Mid red sandy clay. Abundant gravel inclusions. | 0.94 – 1.20 m +                        |

| <b>Trench 46</b>   | <b>Description:</b>                                   | <b>Dimensions:</b><br><b>50 x 1.8m</b> |
|--------------------|---|--|
| <b>Context No.</b> |   | <b>Depth: 1m</b>                       |
| 4601               | Topsoil – Dark brownish-grey clay.                    | 0 – 0.15 m                             |
| 4602               | Peat – Dark grey friable fibrous peat.                | 0.30 – 0.40 m                          |
| 4603               | Marl – Very pale brown silty marl. Abundant molluscs. | 0.50 – 0.9 m                           |
| 4604               | Subsoil – Firm mid reddish-brown clay.                | 0.15 – 0.30 m                          |
| 4606               | Dark orange brown soft silty clay                     | 0.9 – 1 m                              |
| 4607               | Natural – Mid blueish-grey clay.                      | 1 m +                                  |

| <b>Trench 47</b>   | <b>Description:</b>  | <b>Dimensions:</b><br><b>50 x 1.8m</b> |
|--------------------|--|--|
| <b>Context No.</b> |  | <b>Depth: 1.6m</b>                     |
| 4701               | Topsoil – Dark greyish-brown silty clay. Occasional pebbles.                                     | 0 – 0.20 m                             |
| 4702               | Alluvium – Firm mid yellowish-brown clay. Occasional pebbles.                                    | 0.20 – 0.28 m                          |
| 4703               | Peat – Dark greyish-brown fibrous organic peat.  | 0.28 – 0.40 m                          |
| 4704               | Peaty marl – dark greyish brown peat with visible mottling and laminae of pale brown sandy marl. | 0.40 – 0.54 m                          |
| 4705               | Peat – Dark greyish brown fibrous organic peat.  | 0.54 – 0.61 m                          |
| 4706               | Marl – Pale brown very sandy tuforous marl. Abundant molluscs.                                   | 0.61 – 0.80 m                          |
| 4707               | Marl – Mid greyish-brown marl. Abundant molluscs. Slightly more organic than 4706.               | 0.80 – 0.85 m                          |



|      |   |                   |
|------|---|-------------------|
| 4708 | Marl – Pale brown very sandy marl. Abundant molluscs.                 | 0.85 – 1.04 m     |
| 4709 | Peat – Dark greyish-brown fibrous organic peat.                       | 1.04 – 1.10 m     |
| 4710 | Alluvium – Mid yellowish-brown silty clay.                            | 1.10 – 1.20 m     |
| 4711 | Peat – Dark reddish-brown organic peaty clay band.                    | 1.20 – 1.22 m     |
| 4712 | Natural – Light blueish-grey sandy clay. Moderately frequent pebbles. | 1.22 – 1.6 m<br>+ |

| <b>Trench 48</b>   | <b>Description:</b>  | <b>Dimensions:<br/>50 x 1.8m</b> |
|--------------------|--|----------------------------------|
| <b>Context No.</b> |  | <b>Depth: 1.20m</b>              |
| 4801               | Topsoil – Dark grey silty clay. Occasional pebbles.          | 0 – 0.18 m                       |
| 4802               | Subsoil – Pinkish-red clay.                                  | 0.18 – 0.30 m                    |
| 4803               | Peat.  | 0.30 – 0.40 m                    |
| 4804               | Marl – Pale yellowish brown silty sand.                      | 0.40 – 0.45 m                    |
| 4805               | Very dark grey silty clay band.                              | 0.45 – 0.47 m                    |
| 4806               | Marl – pale yellowish-brown.                                 | 0.47 – 0.82 m                    |
| 4807               | Soft mid yellowish-brown clay.                               | 0.82 – 0.86 m                    |
| 4808               | Very dark brown soft sandy clay.                             | 0.86 – 0.90 m                    |
| 4809               | Alluvium – Soft yellowish-brown clay.                        | 0.90 – 0.96 m                    |
| 4810               | Natural – Dark blueish-grey clay with some lighter mottling. | 0.96 – 1.20 m<br>+               |

| <b>Trench 49</b>   | <b>Description:</b>  | <b>Dimensions:<br/>50 x 1.8m</b> |
|--------------------|--|----------------------------------|
| <b>Context No.</b> |  | <b>Depth: 1.52m</b>              |
| 4901               | Topsoil – Dark greyish-brown silty clay. Occasional pebbles.   | 0 – 0.14 m                       |
| 4902               | Alluvium – Firm mid yellowish-brown clay. Occasional pebbles.  | 0.14 – 0.28 m                    |
| 4903               | Peat – Dark greyish-brown fibrous organic peat.  | 0.28 – 0.37 m                    |
| 4904               | Peat / marl– Dark greyish brown peat with visible laminae of pale brown sandy marl.                            | 0.37 – 0.42 m                    |
| 4905               | Peat – Dark greyish-brown fibrous organic peat.  | 0.42 – 0.46 m                    |
| 4906               | Marl – Pale brown soft clayey marl. Abundant molluscs.   | 0.46 – 0.86 m                    |
| 4907               | Alluvium – Mid yellowish-brown sandy clay. Occasional pebbles and moderately frequent lenses of peat.          | 0.86 – 1.07 m                    |
| 4908               | Alluvium – Mid grey sandy clay with frequent pale blue mottling. Moderately frequent pebbles. Possibly gleyed. | 1.07 – 1.21 m                    |
| 4909               | Till – Pale greyish-blue sandy clay with frequent pale yellowish-brown mottling. Moderately frequent pebbles.  | 1.21 – 1.43 m                    |
| 4910               | Bedrock – Mid reddish-brown fissile sandy clay mudstone.   | 1.42 – 1.52 m<br>+               |

| <b>Trench 50</b>   | <b>Description:</b>                                      | <b>Dimensions:<br/>50 x 1.8m</b> |
|--------------------|--|----------------------------------|
| <b>Context No.</b> |  | <b>Depth: 1.32m</b>              |
| 5001               | Topsoil – Dark brownish-grey silty clay. Sparse pebbles. | 0 – 0.32 m                       |
| 5002               | Peat – Dark grey organic peat. Visible molluscs.         | 0.32 – 0.42 m                    |
| 5003               | Marl – Pale brown fine silty sand.                       | 0.42 – 0.70 m                    |
| 5004               | Alluvium - Soft light yellowish-brown clay.              | 0.70 – 0.78 m                    |



|      |  |               |
|------|--|---------------|
| 5005 | Alluvium – Soft brownish grey clay with orange-brown mottling.     | 0.78 – 1.31 m |
| 5006 | Natural – Light grey soft clay with patches of reddish-brown sand. | 1.31 m +      |

| <b>Trench 51</b>   | <b>Description:</b>   | <b>Dimensions:<br/>50 x 1.8m</b> |
|--------------------|---|----------------------------------|
| <b>Context No.</b> |   | <b>Depth: 1.22m</b>              |
| 5101               | Topsoil – Dark greyish-brown silty clay. Occasional pebbles and gravel.           | 0 – 0.23 m                       |
| 5102               | Peat – Very dark grey organic peat.   | 0.23 – 0.27 m                    |
| 5103               | Marl – Pale yellowish-brown sandy marl. Abundant molluscs.                        | 0.27 – 0.51 m                    |
| 5104               | Alluvium – Mottled brownish-grey clay with lenses yellow clay. Frequent molluscs. | 0.51 – 0.64 m                    |
| 5105               | Alluvium – Light brownish-grey silty clay.  | 0.64 – 0.84 m                    |
| 5106               | Alluvium – Dark yellowish-grey silty clay. Sparse pebbles. Occasional molluscs.   | 0.84 – 1.05 m                    |
| 5107               | Natural – mixed blue/red very sandy clay.   | 1.05 – 1.52 m<br>+               |

| <b>Trench 52</b>   | <b>Description:</b>  | <b>Dimensions:<br/>50 x 1.8m</b> |
|--------------------|--|----------------------------------|
| <b>Context No.</b> |  | <b>Depth: 0.44m</b>              |
| 5201               | Topsoil – Moderately compact mid greyish-brown silty sand.   | 0 – 0.30 m                       |
| 5202               | Subsoil – Loose mid grey silty sand. Sparse medium sub-angular stones.   | 0.30 – 0.37 m                    |
| 5203               | Natural – Compact light yellowish-grey silty clay. Sparse small sub-angular stones (<30mm).                                  | 0.37 – 0.44 m +                  |
| 5204               | Fill of gully 5205 – Moderately compact mid brownish-grey silty clay. Frequent marl flecks. Sparse small sub-angular stones. | 0.37 m +                         |
| 5205               | Cut of shallow gully.  | 0.37 m +                         |

| <b>Trench 53</b>   | <b>Description:</b>  | <b>Dimensions:<br/>50 x 1.8m</b> |
|--------------------|--|----------------------------------|
| <b>Context No.</b> |  | <b>Depth: 0.63m</b>              |
| 5301               | Topsoil – Moderately compact dark greyish-brown sandy silt.  | 0 – 0.35 m                       |
| 5302               | Subsoil – Mid yellowish-brown sandy silt. Rare small sub-angular stones.                               | 0.35 – 0.51 m                    |
| 5303               | Natural – Compact light greyish-green silty clay with occasional patches of fine pale grey sandy silt. | 0.51 – 0.63 m                    |
| 5304               | Cut of ditch.  | 0.51 m +                         |
| 5305               | Fill of ditch 5304 – Moderately compact mid brownish-grey silty sand.                                  | 0.51 m +                         |

| <b>Trench 54</b>   | <b>Description:</b>  | <b>Dimensions:<br/>50 x 1.8m</b> |
|--------------------|--|----------------------------------|
| <b>Context No.</b> |  | <b>Depth: 0.44m</b>              |
| 5401               | Topsoil – Friable dark greyish-brown sandy silt.   | 0 – 0.30 m                       |
| 5402               | Marl – Soft pale yellowish-brown silty sand.   | 0.30 – 0.44 m                    |
| 5403               | Natural – Compact mid greyish-green silty clay.  | 0.44 m +                         |
| 5404               | Cut of ditch.  | 0.38 m +                         |
| 5405               | Fill of ditch 5404 – Dark greyish-brown silty clay. Moderately frequent sub-angular stone fragments (<60mm). | 0.38 m +                         |
| 5406               | Fill of ditch 5404 – Pale greyish-brown very silty clay. Occasional sub-angular stone fragments (<80 mm).    | 0.40 m +                         |



| <b>Trench 55</b>   | <b>Description:</b>   | <b>Dimensions:<br/>50 x 1.8m</b> |
|--------------------|---|----------------------------------|
| <b>Context No.</b> |   | <b>Depth: 0.45m</b>              |
| 5501               | Topsoil – Moderately compact dark brownish-grey sandy silt. | 0 – 0.30 m                       |
| 5502               | Subsoil – Moderately compact mid yellowish sand.-grey silty | 0.30 – 0.43 m                    |
| 5503               | Natural – Compact orange-grey silty clay.                   | 0.43 – 0.45 m +                  |

| <b>Trench 56</b>   | <b>Description:</b>   | <b>Dimensions:<br/>50 x 1.8m</b> |
|--------------------|---|----------------------------------|
| <b>Context No.</b> |   | <b>Depth: 0.69m</b>              |
| 5601               | Topsoil – Dark brownish-grey moderately compact sandy silt.                     | 0 – 0.28 m                       |
| 5602               | Subsoil – Moderately compact mid yellowish-grey silty sand.                     | 0.28 – 0.38 m                    |
| 5603               | Peat – Compact black silty sand.  | 0.38 – 0.39 m                    |
| 5604               | Alluvium – Moderately compact mid yellowish-grey silty sand.                    | 0.39 – 0.49 m                    |
| 5605               | Peat.   | 0.49 – 0.50 m                    |
| 5606               | Marl – Pale brown friable silty sand.   | 0.50 – 0.66 m                    |
| 5607               | Natural – Compact orange-grey silty clay with patches of pale brown silty sand. | 0.66 – 0.69 m +                  |

| <b>Trench 57</b>   | <b>Description:</b>                               | <b>Dimensions:<br/>50 x 1.8m</b> |
|--------------------|---|----------------------------------|
| <b>Context No.</b> |   | <b>Depth: 1.39m</b>              |
| 5701               | Topsoil – Mid brownish-grey clay silt.            | 0 – 0.38 m                       |
| 5702               | Peat.   | 0.38 – 0.40 m                    |
| 5703               | Marl – Pale yellowish-brownsandy silt.            | 0.40 – 0.58 m                    |
| 5704               | Alluvium – Pale grey silty clay.                  | 0.58 – 1.02 m                    |
| 5705               | Alluvium – Light brownish-yellow soft silty clay. | 1.02 – 1.05 m                    |
| 5706               | Natural – Compact mid brownish-grey silty clay.   | 1.05 – 1.59 m                    |

| <b>Trench 58</b>   | <b>Description:</b>  | <b>Dimensions:<br/>50 x 1.8m</b> |
|--------------------|--|----------------------------------|
| <b>Context No.</b> |  | <b>Depth: 1.2m</b>               |
| 5801               | Topsoil – Mid brownish-grey clay silt. Sparse small sub-angular stones and marl flecking.  | 0 – 0.29 m                       |
| 5802               | Peat.  | 0.29 – 0.35 m                    |
| 5803               | Marl – Pale yellowish-brown sandy marl.  | 0.35 – 0.61 m                    |
| 5804               | Alluvium – Pale grey soft silty clay.  | 0.61 – 1.05 m                    |
| 5805               | Alluvium – Light brownish-yellow silty sand band.  | 1.05 – 1.06                      |
| 5806               | Natural – Moderately compact mid brownish-grey silty clay.   | 1.06 – 1.20 m                    |
| 5807               | Cut of ditch.  | 0.30 m +                         |
| 5808               | Fill of ditch 5807 – Moderately loose dark yellowish-brown very sandy clay. Moderately frequent flecks of very sandy marl. Occasional small sub-rounded pebbles (<30mm). | 0.30 m +                         |
| 5809               | Fill of ditch 5807 – Moderately compact dark greyish-brown silty clay. Frequent pale brown sandy marl flecks.  | 0.40 m +                         |
| 5810               | Fill of ditch 5807 – Light greyish-brown very silty clay. Occasional lenses of dark greyish-brown clay. Rare charcoal flecks.  | 0.70 m +                         |



| <b>Trench 59</b>   | <b>Description:</b>  | <b>Dimensions:<br/>50 x 1.8m</b> |
|--------------------|--|----------------------------------|
| <b>Context No.</b> |  | <b>Depth: 1.35m</b>              |
| 5901               | Topsoil – Moderately compact mid brownish-grey sandy silt.                             | 0 – 0.27 m                       |
| 5902               | Peat.  | 0.27 – 0.32 m                    |
| 5903               | Marl – Pale yellowish-brown silty sand.  | 0.32 – 0.49 m                    |
| 5904               | Alluvium – Pale grey silty clay.   | 0.49 – 0.99 m                    |
| 5905               | Alluvium – Moderately compact pale yellowish-brown silty clay.                         | 0.99 – 1.02 m                    |
| 5906               | Natural – Moderately compact mid brownish-grey silty clay.                             | 1.02 – 1.35 m                    |
| 5907               | Fill of ditch 5908 – Moderately compact dark brownish-grey clay silt with marl flecks. | 0.27 m +                         |
| 5908               | Cut of ditch.  | 0.27 m +                         |
| 5909               | Fill of ditch 5910 - Moderately compact dark brownish-grey clay silt with marl flecks. | 0.27 m +                         |
| 5910               | Cut of ditch.  | 0.27 m +                         |

| <b>Trench 60</b>   | <b>Description:</b>   | <b>Dimensions:<br/>50 x 1.8m</b> |
|--------------------|---|----------------------------------|
| <b>Context No.</b> |   | <b>Depth: 1.55m</b>              |
| 6001               | Topsoil – Dark brownish-grey silty clay. Sparse small sub-angular stones.   | 0 – 0.18 m                       |
| 6002               | Subsoil – Mid brownish-grey soft clay silt with frequent marl flecks.   | 0.18 – 0.28 m                    |
| 6003               | Peat.   | 0.28 – 0.32 m                    |
| 6004               | Marl – Pale yellowish-brown silty marl.   | 0.32 – 0.40 m                    |
| 6005               | Alluvium – Compact mid yellowish-grey clay. Frequent marl flecks.   | 0.40 – 0.60 m                    |
| 6006               | Fill of ditch 6007 – Compact dark reddish-brown silty clay. Lenses of yellow clay and frequent marl flecks.               | 0.40 m +                         |
| 6007               | Cut of ditch.   | 0.40 m +                         |
| 6008               | Alluvium – Firm light brown very sandy clay.  | 0.60 – 0.84 m                    |
| 6009               | Sand – Very pale brown loose sand. Occasional molluscs.   | 0.84 – 0.86 m                    |
| 6010               | Alluvium – Light yellowish-brown very sandy clay with lenses of mid yellowish-brown sand and sporadic sandy marl laminae. | 0.86 – 1.12 m                    |
| 6011               | Alluvium – Mid yellowish-brown sandy clay with frequent pale blueish-grey mottling.                                       | 1.12 – 1.33 m                    |
| 6012               | Alluvium – Light yellowish-brown very sandy clay with frequent pale blueish grey mottling.                                | 1.33 – 1.42 m                    |
| 6013               | Natural – Firm mid greyish-blue clay with frequent pale yellowish-brown mottling.   | 1.42 – 1.55 m                    |

| <b>Trench 61</b>   | <b>Description:</b>  | <b>Dimensions:<br/>50 x 1.8m</b> |
|--------------------|--|----------------------------------|
| <b>Context No.</b> |  | <b>Depth: 0.74m</b>              |
| 6101               | Topsoil – Dark greyish-brown compact silty clay.   | 0 – 0.32 m                       |
| 6102               | Subsoil – Mid brownish-grey soft silty clay. Sparse small sub-angular stone fragments and marl flecking. | 0.32 – 0.60 m                    |
| 6103               | Alluvium – Compact light yellow clay with frequent orange flecking.                                      | 0.60 – 0.74 m                    |



| <b>Trench 62</b>   | <b>Description:</b>  | <b>Dimensions:</b><br>50 x 1.8m |
|--------------------|--|---------------------------------|
| <b>Context No.</b> |  | <b>Depth: 1.63m</b>             |
| 6201               | Topsoil – Dark greyish-brown silty clay. Occasional pebbles.   | 0 – 0.28 m                      |
| 6202               | Alluvium – Firm dark yellowish-brown clay. Occasional pebbles.   | 0.28 – 0.38 m                   |
| 6203               | Peat – Dark grey fibrous organic peat.   | 0.38 – 0.44 m                   |
| 6204               | Marl – Pale brown very sandy marl. Frequent molluscs.  | 0.44 – 0.50 m                   |
| 6205               | Alluvium – Moderately compact mid yellowish-brown very sandy clay.   | 0.50 – 0.69 m                   |
| 6206               | Alluvium – Firm light brown very sandy clay.   | 0.69 – 0.80 m                   |
| 6207               | Sand – Very pale brown loose sand. Frequent molluscs.  | 0.80 – 0.82 m                   |
| 6208               | Alluvium – Pale yellowish-brown very sandy clay with lenses of mid yellowish-brown sand and sporadic tuforescent marl laminae.                 | 0.82 – 1.11 m                   |
| 6209               | Alluvium – Mid yellowish-brown very sandy clay with frequent pale blueish-grey mottling.   | 1.11 – 1.31 m                   |
| 6210               | Alluvium – Light yellowish-brown very sandy clay with frequent pale blueish-grey mottling.   | 1.31 – 1.43 m                   |
| 6211               | Natural – Firm mid greyish-blue clay with frequent pale yellowish-brown mottling.  | 1.43 – 1.63 m +                 |
| 6212               | Cut of ditch.  | 0.29 m +                        |
| 6213               | Fill of ditch 6212 – Moderately loose dark yellowish-brown very sandy clay. Frequent marl flecks. Occasional small pebbles (<30mm).            | 0.29 m +                        |
| 6214               | Fill of ditch 6212 – Moderately compact dark greyish-brown silty clay. Frequent marl flecks.   | 0.32 m +                        |
| 6215               | Fill of ditch 6212 – Moderately compact mid greyish-brown silty clay. Frequent marl flecks. Frequent lenses of mid yellowish-brown sandy clay. | 0.40 m +                        |
| 6216               | Fill of ditch 6212 – Firm dark grey peaty clay. Occasional small sub-angular stones. Rare marl flecks.   | 0.85 m +                        |
| 6217               | Fill of ditch 6212 – Moderately compact light grey silty clay. Occasional small lenses of peaty clay.  | 0.96 m +                        |

| <b>Trench 63</b>   | <b>Description:</b>   | <b>Dimensions:</b><br>50 x 1.8m |
|--------------------|---|---------------------------------|
| <b>Context No.</b> |   | <b>Depth: 0.76m</b>             |
| 6301               | Topsoil – Moderately compact mid greyish-brown silty clay. Sparse small sub-angular stones. | 0 – 0.28 m                      |
| 6302               | Subsoil – Compact mid orange-brown silty clay. Rare charcoal flecks.                        | 0.28 – 0.38 m                   |
| 6303               | Alluvium – compact mid brown-grey silty clay. Sparse large sub-rounded stones.              | 0.38 – 0.50 m                   |
| 6304               | Peat.   | 0.50 – 0.69 m                   |
| 6305               | Marl – Pale yellowish-brown sandy silt.   | 0.69 – 0.73 m                   |
| 6306               | Alluvium - Moderately compact mid yellowish-grey silty clay.                                | 0.73 – 0.76 m +                 |
| 6307               | Fill of possible hedgerow 6308.   |                                 |
| 6308               | Cut of possible hedgerow.   |                                 |

| <b>Trench 64</b>   | <b>Description:</b>  | <b>Dimensions:</b><br>50 x 1.8m |
|--------------------|--|---------------------------------|
| <b>Context No.</b> |  | <b>Depth: 1.40m</b>             |
| 6401               | Topsoil – Dark greyish-brown silty clay. Occasional pebbles.   | 0 – 0.31 m                      |
| 6402               | Alluvium – Firm dark yellowish-brown clay. Occasional pebbles. | 0.31 – 0.41 m                   |
| 6403               | Peat – Dark greyish brown peat.                                | 0.41 – 0.50 m                   |
| 6404               | Marl – Pale brown sandy marl. Abundant molluscs.               | 0.50 – 0.60 m                   |



|      |  |               |
|------|--|---------------|
| 6405 | Alluvium – Light yellowish-brown very sandy clay.  | 0.60 – 0.88 m |
| 6406 | Sand – Loose pale brown sand with occasional molluscs.   | 0.88 – 0.94 m |
| 6407 | Alluvium – Mid yellowish-brown very sandy clay with frequent light yellowish-brown sand mottling and occasional lenses of mid blue clay. | 0.94 – 1.24 m |
| 6408 | Natural – Firm mid blueish-grey clay with frequent mid yellowish-brown sand mottling   | 1.24 - 1.40 m |
| 6409 | Paleo-channel  | 0.44 m +      |
| 6410 | Fill of paleo-channel 6409 – Firm mid greyish-brown clay. Occasional flecks of degraded stone.   | 0.44 m +      |
| 6411 | Fill of paleo-channel 6409 – Firm mid yellowish-brown clay. Occasional flecks of sand.   | 0.44 m +      |
| 6412 | Fill of paleo-channel 6409 – Firm mid greyish-brown clay. Occasional flecks of degraded stone.   | 1.02 m +      |
| 6413 | Fill of paleo-channel 6409 – Dark greyish-brown slightly peaty clay. Occasional marl flecks.   | 0.64 m        |





## 11.2 Appendix 2: Borehole sedimentary records

| <b>Location:</b>    |               | 470740.10<br>340681.06  | <b>Borehole ID:</b> | BR01 | <b>Comments:</b> 113291 Bingham |      |
|---------------------|---------------|---|---------------------|------|---------------------------------|------|
| <b>Level (top):</b> |               | 21.03m OD   | <b>Drg:</b>         |      |                                 |      |
| Depth               |               | Sediment description  |                     |      | Interpretation                  | Unit |
| Mbg                 | mOD           |   |                     |      |                                 |      |
| 0 – 0.15            | 21.03 – 20.88 | Void  |                     |      | Compression gap                 |      |
| 0.15 – 0.5          | 20.88 – 20.53 | Dark brown silty clay loam, disturbed gradual lower boundary  |                     |      | Plough soil                     | 1    |
| 0.5 – 2.0           | 20.53 – 19.03 | Marl. Light grey brown silty clay becoming clay with depth with darker fine clay bands from 1.3 – 1.5m. |                     |      | Lacustrine/lake edge deposits   | 2    |
| 2.0 – 2.1           | 19.03 – 18.93 | Void  |                     |      | Compression gap                 |      |
| 2.1 – 2.2           | 18.93 – 18.83 | Grey friable silt/mud stone   |                     |      | Geology                         | 5    |
| 2.2 – 3.0           | 18.83 – 17.03 | Red brown mudstone  |                     |      | Geology                         | 5    |

| <b>Location:</b>    |               | 470711.6<br>340708.1   | <b>Borehole ID:</b> | BR02 | <b>Comments:</b> 113291 Bingham |      |
|---------------------|---------------|--|---------------------|------|---------------------------------|------|
| <b>Level (top):</b> |               | 20.67m OD  | <b>Drg:</b>         |      |                                 |      |
| Depth               |               | Sediment description   |                     |      | Interpretation                  | Unit |
| Mbg                 | mOD           |  |                     |      |                                 |      |
| 0 – 0.45            | 20.67 – 21.12 | Dark brown silty clay loam, disturbed gradual lower boundary                                       |                     |      | Plough soil                     | 1    |
| 0.45 – 2.0          | 21.12 – 23.12 | Marl. Light grey brown silty clay becoming clay with depth with darker fine clay bands throughout. |                     |      | Lacustrine/lake edge deposits   | 2    |
| 2.0 – 2.2           | 23.12 – 23.32 | Grey friable silt/mud stone  |                     |      | Geology                         | 5    |
| 2.2 – 3.0           | 23.32 – 24.12 | Red brown mudstone   |                     |      | Geology                         | 5    |



| <b>Location:</b>    |               | 470678.5<br>340741.7   | <b>Borehole ID:</b> | BR03 | <b>Comments:</b> 113291 Bingham |      |
|---------------------|---------------|--|---------------------|------|---------------------------------|------|
| <b>Level (top):</b> |               | 20.7m OD   | <b>Drg:</b>         |      |                                 |      |
| Depth               |               | Sediment description   |                     |      | Interpretation                  | Unit |
| Mbg                 | mOD           |  |                     |      |                                 |      |
| 0 – 0.15            | 20.7 – 20.85  | Void   |                     |      | Compression gap                 |      |
| 0.15 – 0.45         | 20.85 – 21.30 | Dark brown silty clay loam, disturbed gradual lower boundary   |                     |      | Plough soil                     | 1    |
| 0.45 – 1.8          | 21.30 – 23.10 | Marl. Light grey brown silty clay becoming clay with depth with darker fine clay bands throughout. Marl. |                     |      | Lacustrine/lake edge deposits   | 2    |
| 1.8 - 3             | 23.10 – 24.90 | Grey friable silt/mud stone  |                     |      | Geology                         | 5    |

| <b>Location:</b>    |              | 470647.28<br>340773.54  | <b>Borehole ID:</b> | BR04 | <b>Comments:</b> 113291 Bingham   |      |
|---------------------|--------------|---|---------------------|------|---|------|
| <b>Level (top):</b> |              | 20.72m OD   | <b>Drg:</b>         |      |   |      |
| Depth               |              | Sediment description  |                     |      | Interpretation  | Unit |
| Mbg                 | mOD          |   |                     |      |   |      |
| 0 – 0.38            | 20.72- 20.34 | Dark brown silty clay loam, quite compact with common roots. Sharp lower boundary.  |                     |      | Plough soil   | 1    |
| 0.38 – 1.77         | 20.34- 18.95 | Marl. Light grey brown silty clay becoming clay with depth with darker fine clay bands throughout. Iron staining from 0.56 increasing with depth, deposit becomes more red/brown in colour because of this. Aquatic mollusc shells at 1.72 ? <i>Lymnaea</i> sp. Clear lower boundary. |                     |      | Lacustrine/lake edge deposits   | 2    |
| 1.77 – 2.0          | 18.95- 18.72 | Dark grey sandy clay with occasional fine horizontal banding and vertical iron stained roots.   |                     |      | Early lake deposits?  | 3    |
| 2.0 – 3.0           | 18.72- 17.72 | Dark grey sandy silty clay, compact and homogenous with red brown mudstone just at the base.  |                     |      | Edwalton member of the Sidmouth Mudstone Formation of the Mercia Mudstone Group | 3/5  |

| <b>Location:</b>    |              | 470614.92<br>340805.44  | <b>Borehole ID:</b> | BR05 | <b>Comments:</b> 113291 Bingham |      |
|---------------------|--------------|---|---------------------|------|---------------------------------|------|
| <b>Level (top):</b> |              | 20.59m OD   | <b>Drg:</b>         |      |                                 |      |
| Depth               |              | Sediment description  |                     |      | Interpretation                  | Unit |
| Mbg                 | mOD          |   |                     |      |                                 |      |
| 0 – 0.54            | 20.59- 20.05 | Dark brown silty clay loam with common roots. Clear lower boundary. |                     |      | Plough soil                     | 1    |



| <b>Location:</b>    |             | 470614.92<br>340805.44  | <b>Borehole ID:</b> | BR05 | <b>Comments:</b> 113291 Bingham   |      |
|---------------------|-------------|---|---------------------|------|---|------|
| <b>Level (top):</b> |             | 20.59m OD   | <b>Drg:</b>         |      |   |      |
| Depth               |             | Sediment description  |                     |      | Interpretation  | Unit |
| Mbg                 | mOD         |   |                     |      |   |      |
| 0.54 – 0.80         | 20.05-19.79 | Slightly reddish brown compact clay with some iron staining and occasional ?marly inclusions. Clear lower boundary.   |                     |      |   | 1*   |
| 0.80-1.67           | 19.79-18.92 | Marl. Light grey brown soft very silty sand clay with some iron stain and faint horizontal banding. Becomes soft and wet and slightly reddish brown towards the base. Clear lower boundary. |                     |      | Lacustrine/lake edge deposits   | 2    |
| 1.67-3.00           | 18.92-17.59 | Medium to dark grey very silty clay, very compact with occasional vertical roots and faint horizontal banding. Becomes very friable and quite stony towards base.                           |                     |      | Early lake deposits/geology?  | 4    |
| 3.00-4.00           | 17.59-16.59 | Grey siltstone over red brown mudstone.   |                     |      | Edwalton member of the Sidmouth Mudstone Formation of the Mercia Mudstone Group | 5    |

| <b>Location:</b>    |             | 470705.24<br>340634.93  | <b>Borehole ID:</b> | BR12 | <b>Comments:</b> 113291 Bingham   |      |
|---------------------|-------------|---|---------------------|------|---|------|
| <b>Level (top):</b> |             | 20.84m OD   | <b>Drg:</b>         |      |   |      |
| Depth               |             | Sediment description  |                     |      | Interpretation  | Unit |
| Mbg                 | mOD         |   |                     |      |   |      |
| 0 – 0.86            | 20.84-19.98 | Dark brown silty clay loam, quite compact with some iron stain towards the base. Common roots. Clear lower boundary.  |                     |      | Plough soil   | 1    |
| 0.86 – 1.82         | 19.98-19.02 | Marl. Light grey brown silty clay becoming clay with depth with darker fine clay bands throughout. Becomes darker brown from 1.20 with occasional ?marly inclusions and rare waterlogged plant remains. Clear lower boundary. |                     |      | Lacustrine/lake edge deposits   | 2    |
| 1.82 – 2.37         | 19.02-18.47 | Dark grey sandy clay with occasional fine horizontal banding. Quite blocky and stony at top ? weathered siltstone. Gradual lower boundary.  |                     |      | Early lake deposits/geology?  | 3    |
| 2.37 – 3.0          | 18.47-17.84 | Red brown mudstone.   |                     |      | Edwalton member of the Sidmouth Mudstone Formation of the Mercia Mudstone Group | 5    |

| <b>Location:</b>    |             | 470667.05<br>340668.27  | <b>Borehole ID:</b> | BR13 | <b>Comments:</b> 113291 Bingham |      |
|---------------------|-------------|---|---------------------|------|---------------------------------|------|
| <b>Level (top):</b> |             | 20.50m OD   | <b>Drg:</b>         |      |                                 |      |
| Depth               |             | Sediment description  |                     |      | Interpretation                  | Unit |
| Mbg                 | mOD         |   |                     |      |                                 |      |
| 0 – 0.34            | 20.50-20.16 | Dark brown silty clay loam with common roots. Sharp lower boundary. |                     |      | Plough soil                     | 1    |



| <b>Location:</b>    |             | 470667.05<br>340668.27  | <b>Borehole ID:</b> | BR13 | <b>Comments:</b> 113291 Bingham   |      |
|---------------------|-------------|---|---------------------|------|---|------|
| <b>Level (top):</b> |             | 20.50m OD   | <b>Drg:</b>         |      |   |      |
| Depth               |             | Sediment description  |                     |      | Interpretation  | Unit |
| Mbg                 | mOD         |   |                     |      |   |      |
| 0.34 – 0.57         | 20.16-19.93 | Marl. Light grey brown silty clay becoming clay with depth with darker fine clay bands throughout. Occasional lumps of gypsum crystal/rock. Gradual lower boundary. |                     |      | Lacustrine/lake edge deposits   | 2    |
| 0.57 – 1.49         | 19.93-19.01 | Blue grey very silty clay with occasional fine horizontal banding and abundant iron stain. Gradual lower boundary.  |                     |      | Early lake deposits?  | 3/4  |
| 1.49-2.00           | 19.01-18.50 | Red brown mudstone.   |                     |      | Edwalton member of the Sidmouth Mudstone Formation of the Mercia Mudstone Group | 5    |

| <b>Location:</b>    |             | 470629.71<br>340699.81   | <b>Borehole ID:</b> | BR14 | <b>Comments:</b> 113291 Bingham   |      |
|---------------------|-------------|--|---------------------|------|---|------|
| <b>Level (top):</b> |             | 20.60m OD  | <b>Drg:</b>         |      |   |      |
| Depth               |             | Sediment description   |                     |      | Interpretation  | Unit |
| Mbg                 | mOD         |  |                     |      |   |      |
| 0 – 0.39            | 20.60-20.21 | Dark brown silty clay loam with common roots. Sharp lower boundary.  |                     |      | Plough soil   | 1    |
| 0.39 – 0.60         | 20.21-20.00 | Marl. Light grey brown silty clay becoming compact clay with depth with darker fine clay bands throughout and occasional gypsum crystal/rock. Clear lower boundary.  |                     |      | Lacustrine/lake edge deposits   | 2    |
| 0.60 – 2.92         | 20.00-17.68 | Dark grey silty clay with occasional fine horizontal banding. Compact with abundant iron stain and vertical roots. Occasional waterlogged plant remains. Becomes more of a sandy silty clay from 1.68. Clear lower boundary. |                     |      | Early lake deposits?  | 3/4  |
| 2.92 – 3.0          | 17.68-17.60 | Red brown mudstone.  |                     |      | Edwalton member of the Sidmouth Mudstone Formation of the Mercia Mudstone Group | 5    |

| <b>Location:</b>    |             | 470591.02<br>340731.24  | <b>Borehole ID:</b> | BR15 | <b>Comments:</b> 113291 Bingham |      |
|---------------------|-------------|---|---------------------|------|---------------------------------|------|
| <b>Level (top):</b> |             | 20.67m OD   | <b>Drg:</b>         |      |                                 |      |
| Depth               |             | Sediment description  |                     |      | Interpretation                  | Unit |
| Mbg                 | mOD         |   |                     |      |                                 |      |
| 0 – 0.38            | 20.67-20.29 | Dark brown silty clay loam with common roots. Clear lower boundary. |                     |      | Plough soil                     | 1    |



| <b>Location:</b>    |             | 470591.02<br>340731.24  | <b>Borehole ID:</b> | BR15 | <b>Comments:</b> 113291 Bingham   |      |
|---------------------|-------------|---|---------------------|------|---|------|
| <b>Level (top):</b> |             | 20.67m OD   | <b>Drg:</b>         |      |   |      |
| Depth               |             | Sediment description  |                     |      | Interpretation  | Unit |
| Mbg                 | mOD         |   |                     |      |   |      |
| 0.38 – 1.84         | 20.29-18.83 | Marl. Light grey brown silty clay becoming clay with depth with darker fine clay bands throughout. Some vertical roots and iron staining towards the base making the deposit appear more reddish brown in colour. Clear lower boundary. |                     |      | Lacustrine/lake edge deposits   | 2    |
| 1.84 – 2.98         | 18.83-17.69 | Dark grey sandy clay with occasional fine horizontal banding. Geology just observed at base.  |                     |      | Early lake deposits/geology?  | 3    |
| 2.98 – 3.0          | 17.69-17.67 | Red brown mudstone.   |                     |      | Edwalton member of the Sidmouth Mudstone Formation of the Mercia Mudstone Group | 5    |

| <b>Location:</b>    |             | 470553.10<br>340762.51  | <b>Borehole ID:</b> | BR16 | <b>Comments:</b> 113291 Bingham   |      |
|---------------------|-------------|---|---------------------|------|---|------|
| <b>Level (top):</b> |             | 20.63m OD   | <b>Drg:</b>         |      |   |      |
| Depth               |             | Sediment description  |                     |      | Interpretation  | Unit |
| Mbg                 | mOD         |   |                     |      |   |      |
| 0 – 0.37            | 20.63-20.26 | Dark brown silty clay loam with common roots. Sharp lower boundary.   |                     |      | Plough soil   | 1    |
| 0.37 – 1.00         | 20.26-19.63 | Marl. Light grey brown silty clay with faint horizontal banding. Iron staining at 0.56-0.76. Becoming quite stony at base with common rounded lumps and small nodules of gypsum rock/crystal. |                     |      | Lacustrine/lake edge deposits   | 2    |
| 1.00-1.47           | 19.63-19.16 | Marl. Light grey brown silty clay with faint horizontal banding becoming darker in colour with depth with occasional waterlogged plant remains. Clear lower boundary.                         |                     |      | Lacustrine/lake edge deposits   | 2    |
| 1.47-1.70           | 19.16-18.93 | Reddish brown silt with faint horizontal banding and occasional vertical roots. Clear lower boundary.   |                     |      | ? iron stained unit 3   | ?3   |
| 1.7-2.82            | 18.93-17.81 | Dark grey sandy silty clay with occasional fine horizontal banding. Quite compact. Clear lower boundary.  |                     |      | Early lake deposits/geology?  | 3    |
| 2.82 – 3.0          | 17.81-17.63 | Red brown mudstone.   |                     |      | Edwalton member of the Sidmouth Mudstone Formation of the Mercia Mudstone Group | 5    |



| <b>Location:</b>    |             | 470676.11<br>340589.64  | <b>Borehole ID:</b> | BR17 | <b>Comments:</b> 113291 Bingham   |      |
|---------------------|-------------|---|---------------------|------|---|------|
| <b>Level (top):</b> |             | 20.94m OD   | <b>Drg:</b>         |      |   |      |
| Depth               |             | Sediment description  |                     |      | Interpretation  | Unit |
| Mbg                 | mOD         |   |                     |      |   |      |
| 0 – 0.70            | 20.94-20.24 | Dark brown silty clay loam with common roots. Gradual lower boundary.   |                     |      | Plough soil   | 1    |
| 0.70-1.00           | 20.24-19.94 | Slightly reddish brown compact clay with some iron staining.  |                     |      |   | 1*   |
| 1.0-1.88            | 19.94-19.06 | Marl. Light grey brown silty clay with occasional chalky inclusions becoming slightly paler clay with depth with darker fine clay bands throughout. |                     |      | Lacustrine/lake edge deposits   | 2    |
| 1.88-2.00           | 19.06-18.94 | Void  |                     |      | Compression gap   |      |
| 2.0 – 2.37          | 18.94-18.57 | Medium grey brown silty clay. Very compact with occasional fine clay banding. Clear lower boundary.   |                     |      | Lacustrine/lake edge deposits   | 2    |
| 2.37 – 3.0          | 18.57-17.94 | Red brown mudstone.   |                     |      | Edwalton member of the Sidmouth Mudstone Formation of the Mercia Mudstone Group | 5    |

| <b>Location:</b>    |               | 470634.79<br>340617.66   | <b>Borehole ID:</b> | BR18 | <b>Comments:</b> 113291 Bingham   |      |
|---------------------|---------------|--|---------------------|------|---|------|
| <b>Level (top):</b> |               | 20.54m OD  | <b>Drg:</b>         |      |   |      |
| Depth               |               | Sediment description   |                     |      | Interpretation  | Unit |
| Mbg                 | mOD           |  |                     |      |   |      |
| 0 – 0.15            | 20.54 – 20.35 | Void   |                     |      | Compression gap   |      |
| 0.15 – 0.45         | 20.35 – 20.09 | Dark brown silty clay loam, disturbed gradual lower boundary                                       |                     |      | Plough soil   | 1    |
| 0.45 – 1.9          | 20.09 – 18.64 | Marl. Light grey brown silty clay becoming clay with depth with darker fine clay bands throughout. |                     |      | Lacustrine/lake edge deposits   | 2    |
| 1.9 – 3.0           | 18.64 – 17.54 | Grey siltstone over Red brown mudstone   |                     |      | Edwalton member of the Sidmouth Mudstone Formation of the Mercia Mudstone Group | 5    |



| <b>Location:</b>    |             | 470593.87<br>340646.86   | <b>Borehole ID:</b> | BR19 | <b>Comments:</b> 113291 Bingham   |      |
|---------------------|-------------|--|---------------------|------|---|------|
| <b>Level (top):</b> |             | 20.64m OD  | <b>Drg:</b>         |      |   |      |
| Depth               |             | Sediment description   |                     |      | Interpretation  | Unit |
| Mbg                 | mOD         |  |                     |      |   |      |
| 0 – 0.22            | 20.64-20.42 | Void   |                     |      | Compression gap   |      |
| 0.22 – 0.41         | 20.42-20.23 | Dark brown silty clay loam with common roots, sharp lower boundary   |                     |      | Plough soil   | 1    |
| 0.41 – 1.0          | 20.23-19.64 | Marl. Light grey brown silty clay, friable and without structure becoming clay from 0.70. No horizontal banding observed. Fairly heavily iron stained from 0.84. |                     |      | Lacustrine/lake edge deposits   | 2    |
| 1.00-1.44           | 19.64-19.20 | Mid grey brown silty clay with iron staining. Clear lower boundary.  |                     |      | Lacustrine/lake edge deposits   | 2    |
| 1.44-2.0            | 19.20-18.64 | Grey siltstone over Red brown mudstone.  |                     |      | Edwalton member of the Sidmouth Mudstone Formation of the Mercia Mudstone Group | 5    |

| <b>Location:</b>    |               | 470553.07<br>340646.21   | <b>Borehole ID:</b> | BR20 | <b>Comments:</b> 113291 Bingham   |      |
|---------------------|---------------|--|---------------------|------|---|------|
| <b>Level (top):</b> |               | 20.6m OD   | <b>Drg:</b>         |      |   |      |
| Depth               |               | Sediment description   |                     |      | Interpretation  | Unit |
| Mbg                 | mOD           |  |                     |      |   |      |
| 0 – 0.13            | 20.6 – 20.47  | Void   |                     |      | Compression gap   |      |
| 0.13 – 0.39         | 20.47 – 20.21 | Dark brown silty clay loam, disturbed gradual lower boundary                                       |                     |      | Plough soil   | 1    |
| 0.39 – 1.65         | 20.21 – 18.95 | Marl. Light grey brown silty clay becoming clay with depth with darker fine clay bands throughout. |                     |      | Lacustrine/lake edge deposits   | 2    |
| 1.65–2.74           | 18.95 – 17.86 | Dark grey sandy clay with occasional fine horizontal banding                                       |                     |      | Early lake deposits   | 3    |
| 2.74 – 3.0          | 17.86 – 17.6  | Red brown mudstone   |                     |      | Edwalton member of the Sidmouth Mudstone Formation of the Mercia Mudstone Group | 5    |



| <b>Location:</b>    |             | 470512.16<br>340704.93  | <b>Borehole ID:</b> | BR21 | <b>Comments:</b> 113291 Bingham   |             |
|---------------------|-------------|---|---------------------|------|---|-------------|
| <b>Level (top):</b> |             | 20.68m OD   | <b>Drg:</b>         |      |   |             |
| <b>Depth</b>        |             | <b>Sediment description</b>   |                     |      | <b>Interpretation</b>   | <b>Unit</b> |
| Mbg                 | mOD         |   |                     |      |   |             |
| 0 – 0.49            | 20.68-20.19 | Dark brown silty clay loam with common roots. Clear lower boundary.   |                     |      | Plough soil   | 1           |
| 0.49– 1.75          | 20.19-18.93 | Marl. Light grey brown silty clay becoming clay with depth with darker fine clay bands from 1.00. Some vertical roots, becoming iron stained from 1.52. Clear lower boundary. |                     |      | Lacustrine/lake edge deposits   | 2           |
| 1.75 – 2.0          | 18.93-18.68 | Dark grey sandy silty clay with occasional fine horizontal banding and some vertical roots. Slightly wet with some iron staining.   |                     |      | Early lake deposits?  | 3           |
| 2.0 – 2.75          | 18.68-17.93 | Medium to dark grey very silty clay, very compact. Clear lower boundary.  |                     |      | Early lake deposits/geology?  | 4           |
| 2.75 – 3.0          | 17.93-17.68 | Red brown mudstone with common gypsum crystal inclusions.   |                     |      | Edwalton member of the Sidmouth Mudstone Formation of the Mercia Mudstone Group | 5           |

| <b>Location:</b>    |               | 470492.49<br>340719.09   | <b>Borehole ID:</b> | BR22 | <b>Comments:</b> 113291 Bingham   |             |
|---------------------|---------------|--|---------------------|------|---|-------------|
| <b>Level (top):</b> |               | 20.61m OD  | <b>Drg:</b>         |      |   |             |
| <b>Depth</b>        |               | <b>Sediment description</b>  |                     |      | <b>Interpretation</b>   | <b>Unit</b> |
| Mbg                 | mOD           |  |                     |      |   |             |
| 0 – 0.10            | 20.61 – 20.51 | Void   |                     |      | Compression gap   |             |
| 0.10 – 0.4          | 20.51 – 20.21 | Dark brown silty clay loam, disturbed gradual lower boundary (with Gypsum inclusions)              |                     |      | Plough soil   | 1           |
| 0.4 – 1.5           | 20.21 – 19.61 | Marl. Light grey brown silty clay becoming clay with depth with darker fine clay bands throughout. |                     |      | Lacustrine/lake edge deposits   | 2           |
| 1.5 – 2.0           | 19.61 – 18.61 | Dark grey sandy clay with occasional fine horizontal banding                                       |                     |      | Early lake deposits/geology?  | 3           |
| 2.0 – 2.1           | 18.61 – 18.51 | Void   |                     |      | Compression gap   |             |
| 2.1 – 2.56          | 18.51 – 18.05 | Dark grey sandy clay with occasional fine horizontal banding                                       |                     |      | Early lake deposits/geology?  | 3           |
| 2.56 – 3.0          | 18.05 – 17.61 | Red brown mudstone   |                     |      | Edwalton member of the Sidmouth Mudstone Formation of the Mercia Mudstone Group | 5           |





| <b>Location:</b>    |                 | 470472.10<br>340733.73   | <b>Borehole ID:</b> | BR23 | <b>Comments:</b> 113291 Bingham   |      |
|---------------------|-----------------|--|---------------------|------|---|------|
| <b>Level (top):</b> |                 | 20.65m OD  | <b>Drg:</b>         |      |   |      |
| Depth               |                 | Sediment description   |                     |      | Interpretation  | Unit |
| Mbg                 | mOD             |  |                     |      |   |      |
| 0 – 0.4             | 20.65-<br>20.25 | Dark brown silty clay loam with common roots. Clear lower boundary.  |                     |      | Plough soil   | 1    |
| 0.4 – 1.40          | 20.25-<br>19.25 | Marl. Light grey brown silty clay becoming more compact clay with depth. Some iron staining and gypsum crystals from 0.75. No horizontal banding observed. Clear lower boundary. |                     |      | Lacustrine/lake edge deposits   | 2    |
| 1.40-<br>1.78       | 19.25-<br>18.87 | Marl. Light grey brown silty clay with vertical roots and fine horizontal banding. Clear lower boundary.   |                     |      | Lacustrine/lake edge deposits   | 2    |
| 1.78-<br>2.62       | 18.87-<br>18.03 | Dark grey sandy silty clay with horizontal roots, no horizontal banding observed, becoming rocky with depth. Clear lower boundary.   |                     |      | Early lake deposits/geology?  | 3    |
| 2.62 – 3.0          | 18.03-<br>17.65 | Red brown mudstone.  |                     |      | Edwalton member of the Sidmouth Mudstone Formation of the Mercia Mudstone Group | 5    |

| <b>Location:</b>    |                 | 470430.72<br>340762.91  | <b>Borehole ID:</b> | BR25 | <b>Comments:</b> 113291 Bingham   |      |
|---------------------|-----------------|---|---------------------|------|---|------|
| <b>Level (top):</b> |                 | 20.64m OD   | <b>Drg:</b>         |      |   |      |
| Depth               |                 | Sediment description  |                     |      | Interpretation  | Unit |
| Mbg                 | mOD             |   |                     |      |   |      |
| 0 – 0.77            | 20.64-<br>19.87 | Dark brown silty clay loam with common roots. Becomes slightly paler with white ?gypsum inclusions from 0.42-0.67. Sharp lower boundary.                        |                     |      | Plough soil   | 1    |
| 0.77-<br>1.24       | 19.87-<br>19.40 | Marl. Light grey brown silty clay becoming clay with depth with darker fine clay bands towards the bottom. Some iron staining at the top. Clear lower boundary. |                     |      | Lacustrine/lake edge deposits   | 2    |
| 1.24 – 1.53         | 19.40-<br>19.11 | Marl. Light brown silty clay with vertical roots. Horizontally banded with paler (?marly) lenses. Occasional iron stain. Clear lower boundary.                  |                     |      | Lacustrine/lake edge deposits   | 2    |
| 1.53-<br>2.60       | 19.11-<br>18.04 | Mid blue grey very silty clay, compact with occasional vertical roots. Very friable. Clear lower boundary.  |                     |      | Early lake deposits/geology?  | 4    |
| 2.6 – 3.0           | 18.04-<br>17.64 | Grey siltstone over Red brown mudstone  |                     |      | Edwalton member of the Sidmouth Mudstone Formation of the Mercia Mudstone Group | 5    |



| <b>Location:</b>    |               | 470410.99<br>340777.04   | <b>Borehole ID:</b> | BR26 | <b>Comments:</b> 113291 Bingham |      |
|---------------------|---------------|--|---------------------|------|---------------------------------|------|
| <b>Level (top):</b> |               | 20.64m OD  | <b>Drg:</b>         |      |                                 |      |
| Depth               |               | Sediment description   |                     |      | Interpretation                  | Unit |
| Mbg                 | mOD           |  |                     |      |                                 |      |
| 0 – 0.10            | 20.64 – 20.54 | Void   |                     |      | Compression gap                 |      |
| 0.10 – 0.36         | 20.54 – 20.20 | Dark brown silty clay loam, disturbed gradual lower boundary                                       |                     |      | Plough soil                     | 1    |
| 0.36 – 1.0          | 20.20 – 19.64 | Marl. Light grey brown silty clay becoming clay with depth with darker fine clay bands throughout. |                     |      | Lacustrine/lake edge deposits   | 2    |
| 1.0 – 2.6           | 19.64 – 18.04 | Dark grey sandy clay with occasional fine horizontal banding                                       |                     |      | Early lake deposits/geology?    | 3    |
| 2.6 – 3.0           | 18.04 – 17.64 | Grey mud/siltstone   |                     |      | Geology                         | 5    |

| <b>Location:</b>    |             | 470391.11<br>340791.26   | <b>Borehole ID:</b> | BR27 | <b>Comments:</b> 113291 Bingham   |       |
|---------------------|-------------|--|---------------------|------|---|-------|
| <b>Level (top):</b> |             | 20.67m OD  | <b>Drg:</b>         |      |   |       |
| Depth               |             | Sediment description   |                     |      | Interpretation  | Unit  |
| Mbg                 | mOD         |  |                     |      |   |       |
| 0 – 0.3             | 20.67-20.37 | Dark brown silty clay loam with common roots. Clear lower boundary.  |                     |      | Plough soil   | 1     |
| 0.3 – 1.25          | 20.37-19.42 | Marl. Light grey brown silty clay becoming clay with depth with darker fine clay bands throughout. Horizontal roots throughout with some iron stain and more pronounced horizontal banding at 0.65-0.78. Clear lower boundary. |                     |      | Lacustrine/lake edge deposits   | 2     |
| 1.25 – 2.0          | 19.42-18.67 | Dark grey clay with occasional fine horizontal banding to 1.53 then becoming less horizontally banded to base. Occasional freshwater snail shells ? <i>Lymnaea</i> sp. Occasional vertical roots.                              |                     |      | ? Alluvium/Early lake deposits  | 3/4 ? |
| 2.0 – 2.51          | 18.67-18.16 | Medium to dark blue grey very silty clay, very compact with occasional siltstone inclusions. Clear lower boundary.   |                     |      | Early lake deposits/geology?  | 4     |
| 2.51 – 3.0          | 18.16-17.67 | Red brown mudstone with pockets of Grey Siltstone.   |                     |      | Edwalton member of the Sidmouth Mudstone Formation of the Mercia Mudstone Group | 5     |



| <b>Location:</b>    |                  | 470372.64<br>340804.44   | <b>Borehole ID:</b> | BR28 | <b>Comments:</b> 113291 Bingham |             |
|---------------------|------------------|--|---------------------|------|---------------------------------|-------------|
| <b>Level (top):</b> |                  | 20.63m OD  | <b>Drg:</b>         |      |                                 |             |
| <b>Depth</b>        |                  | <b>Sediment description</b>  |                     |      | <b>Interpretation</b>           | <b>Unit</b> |
| Mbg                 | mOD              |  |                     |      |                                 |             |
| 0 –<br>0.10         | 20.63 –<br>20.53 | Void   |                     |      | Compression gap                 |             |
| 0.10 –<br>0.45      | 20.53 –<br>20.18 | Dark brown silty clay loam, disturbed gradual lower boundary                                       |                     |      | Plough soil                     | 1           |
| 0.45 –<br>2.8       | 20.18 –<br>17.83 | Marl. Light grey brown silty clay becoming clay with depth with darker fine clay bands throughout. |                     |      | Lacustrine/lake edge deposits   | 2           |
| 2.8 –<br>3.0        | 17.83 –<br>17.63 | Grey mud/siltstone   |                     |      | Geology                         | 5           |

| <b>Location:</b>    |                  | 470309.03<br>340849.85   | <b>Borehole ID:</b> | BR31 | <b>Comments:</b> 113291 Bingham   |             |
|---------------------|------------------|--|---------------------|------|---|-------------|
| <b>Level (top):</b> |                  | 20.81m OD  | <b>Drg:</b>         |      |   |             |
| <b>Depth</b>        |                  | <b>Sediment description</b>  |                     |      | <b>Interpretation</b>   | <b>Unit</b> |
| Mbg                 | mOD              |  |                     |      |   |             |
| 0 –<br>0.25         | 20.81 –<br>20.56 | Dark brown silty clay loam with common roots. Clear lower boundary.  |                     |      | Plough soil   | 1           |
| 0.25 –<br>1.41      | 20.56 –<br>19.40 | Marl. Light grey brown silty clay becoming clay with depth with darker fine clay bands throughout. Gradual lower boundary.   |                     |      | Lacustrine/lake edge deposits   | 2           |
| 1.41-<br>2.10       | 19.40-<br>18.71  | Dark greyish brown sandy clay with occasional fine horizontal banding. Becoming softer and slightly darker in colour with depth. Occasional vertical roots and small stones. Gradual lower boundary. |                     |      | Early lake deposits?  | 3           |
| 2.10-<br>2.62       | 18.71-<br>18.19  | Medium to dark grey very silty clay, very compact with occasional siltstone inclusions. Gradual lower boundary.  |                     |      | Early lake deposits/geology?  | 4           |
| 2.62-<br>3.00       | 18.19-<br>17.81  | Red brown mudstone. Very friable and structureless.  |                     |      | Edwalton member of the Sidmouth Mudstone Formation of the Mercia Mudstone Group | 5           |



| <b>Location:</b>    |               | 470289.17<br>340864.74  | <b>Borehole ID:</b> | BR32 | <b>Comments:</b> 113291 Bingham   |      |
|---------------------|---------------|---|---------------------|------|---|------|
| <b>Level (top):</b> |               | 20.85m OD   | <b>Drg:</b>         |      |   |      |
| Depth               |               | Sediment description  |                     |      | Interpretation  | Unit |
| Mbg                 | mOD           |   |                     |      |   |      |
| 0 – 0.4             | 20.85 – 20.45 | Dark brown silty clay loam  |                     |      | Plough soil   | 1    |
| 0.4 – 1.1           | 20.45 – 19.75 | Marl. Light grey brown silty clay becoming clay with depth with darker fine clay bands throughout.          |                     |      | Lacustrine/lake edge deposits   | 2    |
| 1.1 – 2.0           | 19.75 – 18.85 | Dark grey sandy clay with occasional fine horizontal banding  |                     |      |   | 3    |
| 2.0 – 2.1           | 18.85 – 18.15 | Dark grey sandy clay becoming medium/dark grey very compact silty clay with occasional siltstone inclusions |                     |      |   | 3/4  |
| 2.1 – 3.0           | 18.15 – 17.85 | Red brown mudstone  |                     |      | Edwalton member of the Sidmouth Mudstone Formation of the Mercia Mudstone Group | 5    |

| <b>Location:</b>    |               | 470268.8<br>340864.74  | <b>Borehole ID:</b> | BR33 | <b>Comments:</b> 113291 Bingham   |      |
|---------------------|---------------|--|---------------------|------|---|------|
| <b>Level (top):</b> |               | 20.88m OD  | <b>Drg:</b>         |      |   |      |
| Depth               |               | Sediment description   |                     |      | Interpretation  | Unit |
| Mbg                 | mOD           |  |                     |      |   |      |
| 0 – 0.4             | 20.88 – 20.48 | Dark brown silty clay loam   |                     |      | Plough soil   | 1    |
| 0.4 – 1.35          | 20.48 – 19.53 | Marl. Light grey brown silty clay becoming clay with depth with darker fine clay bands throughout. |                     |      | Lacustrine/lake edge deposits   | 2    |
| 1.35 – 2.0          | 19.53 – 18.88 | Dark grey sandy clay with occasional fine horizontal banding                                       |                     |      |   | 3    |
| 2.0 – 2.7           | 18.88 – 18.18 | Medium to dark grey very silty clay, very compact with occasional siltstone inclusions             |                     |      |   | 4    |
| 2.7 – 3.0           | 18.18 – 17.88 | Red brown mudstone   |                     |      | Edwalton member of the Sidmouth Mudstone Formation of the Mercia Mudstone Group | 5    |



| <b>Location:</b>    |             | 470248.81<br>340893.53  | <b>Borehole ID:</b> | BR34 | <b>Comments:</b> 113291 Bingham   |      |
|---------------------|-------------|---|---------------------|------|---|------|
| <b>Level (top):</b> |             | 20.93m OD   | <b>Drg:</b>         |      |   |      |
| Depth               |             | Sediment description  |                     |      | Interpretation  | Unit |
| Mbg                 | mOD         |   |                     |      |   |      |
| 0 – 0.28            | 20.93-20.56 | Dark brown silty clay loam with common roots. Sharp lower boundary.   |                     |      | Plough soil   | 1    |
| 0.28 – 1.55         | 20.56-19.29 | Marl. Light grey brown silty clay becoming fairly compact clay with depth with darker fine clay bands throughout. Some iron staining at 0.42-0.65. Vertical roots throughout. Gradual lower boundary. |                     |      | Lacustrine/lake edge deposits   | 2    |
| 1.55-2.0            | 19.29-18.84 | Dark grey sandy clay with occasional fine horizontal banding and vertical roots. Fairly wet at base.  |                     |      | Early lake deposits?  | 3    |
| 2.0 – 2.12          | 18.84-18.72 | Medium to dark grey very silty clay, very compact with occasional siltstone inclusions. Gradual lower boundary. Clear lower boundary.   |                     |      | Early lake deposits/geology?  | 4    |
| 2.12 – 2.91         | 18.72-17.93 | Red brown mudstone  |                     |      | Edwalton member of the Sidmouth Mudstone Formation of the Mercia Mudstone Group | 5    |

| <b>Location:</b>    |               | 470643.72<br>340536.51   | <b>Borehole ID:</b> | BR39 | <b>Comments:</b> 113291 Bingham |      |
|---------------------|---------------|--|---------------------|------|---------------------------------|------|
| <b>Level (top):</b> |               | 21.09m OD  | <b>Drg:</b>         |      |                                 |      |
| Depth               |               | Sediment description   |                     |      | Interpretation                  | Unit |
| Mbg                 | mOD           |  |                     |      |                                 |      |
| 0 – 0.15            | 21.09 – 20.94 | Void   |                     |      | Compression gap                 |      |
| 0.15 – 0.6          | 20.94 – 20.49 | Dark brown silty clay loam, disturbed gradual lower boundary                                       |                     |      | Plough soil                     | 1    |
| 0.6 – 2.1           | 20.49 – 18.99 | Marl. Light grey brown silty clay becoming clay with depth with darker fine clay bands throughout. |                     |      | Lacustrine/lake edge deposits   | 2    |
| 2.1 – 3.0           | 18.99 – 18.09 | Red brown mudstone   |                     |      | Geology                         | 5    |



| <b>Location:</b>    |               | 470604.96<br>340558.03   | <b>Borehole ID:</b> | BR40                          | <b>Comments:</b> 113291 Bingham |  |
|---------------------|---------------|--|---------------------|-------------------------------|---------------------------------|--|
| <b>Level (top):</b> |               | 20.66m OD  | <b>Drg:</b>         |                               |                                 |  |
| Depth               |               | Sediment description   |                     | Interpretation                | Unit                            |  |
| Mbg                 | mOD           |  |                     |                               |                                 |  |
| 0 – 0.1             | 20.66 – 20.56 | Void   |                     | Compression gap               |                                 |  |
| 0.1 – 0.35          | 20.66 – 20.31 | Dark brown silty clay loam, compact, small fragments of CBM disturbed gradual lower boundary       |                     | Plough soil                   | 1                               |  |
| 0.35 – 0.5          | 20.31 – 20.16 | Gypsum   |                     |                               |                                 |  |
| 0.5 – 1.4           | 20.16 – 19.26 | Marl. Light grey brown silty clay becoming clay with depth with darker fine clay bands throughout. |                     | Lacustrine/lake edge deposits | 2                               |  |
| 1.4 – 3.0           | 19.26 – 17.66 | Red brown mudstone   |                     | Geology                       | 5                               |  |

| <b>Location:</b>    |               | 470566.85<br>340577.85   | <b>Borehole ID:</b> | BR41                          | <b>Comments:</b> 113291 Bingham |  |
|---------------------|---------------|--|---------------------|-------------------------------|---------------------------------|--|
| <b>Level (top):</b> |               | 20.71m OD  | <b>Drg:</b>         |                               |                                 |  |
| Depth               |               | Sediment description   |                     | Interpretation                | Unit                            |  |
| Mbg                 | mOD           |  |                     |                               |                                 |  |
| 0 – 0.10            | 20.71 – 20.61 | Void   |                     | Compression gap               |                                 |  |
| 0.10 – 0.36         | 20.61 – 20.35 | Dark brown silty clay loam, compact, disturbed clear lower boundary                                |                     | Plough soil                   | 1                               |  |
| 0.36 – 0.46         | 20.35 – 20.25 | Gypsum inclusions  |                     |                               |                                 |  |
| 0.46 – 1.5          | 20.25 – 19.21 | Marl. Light grey brown silty clay becoming clay with depth with darker fine clay bands throughout. |                     | Lacustrine/lake edge deposits | 2                               |  |
| 1.5 – 3.0           | 19.21 – 17.71 | Red brown mudstone   |                     | Geology                       | 5                               |  |



| <b>Location:</b>    |               | 470528.57<br>340597.86   | <b>Borehole ID:</b> | BR42 | <b>Comments:</b> 113291 Bingham |      |
|---------------------|---------------|--|---------------------|------|---------------------------------|------|
| <b>Level (top):</b> |               | 20.67m OD  | <b>Drg:</b>         |      |                                 |      |
| Depth               |               | Sediment description   |                     |      | Interpretation                  | Unit |
| Mbg                 | mOD           |  |                     |      |                                 |      |
| 0 – 0.12            | 20.67 – 20.55 | Void   |                     |      | Compression gap                 |      |
| 0.12 – 0.36         | 20.55 – 20.31 | Dark brown silty clay loam, compact, disturbed clear lower boundary                                |                     |      | Plough soil                     | 1    |
| 0.36 – 1.6          | 20.31 – 19.07 | Light grey brown silty clay becoming clay with depth with darker fine clay bands throughout. Marl. |                     |      | Lacustrine/lake edge deposits   | 2    |
| 1.6 – 3.0           | 19.07 – 17.67 | Red brown mudstone   |                     |      | Geology                         | 5    |

| <b>Location:</b>    |               | 470491.69<br>340616.76  | <b>Borehole ID:</b> | BR43 | <b>Comments:</b> 113291 Bingham |      |
|---------------------|---------------|---|---------------------|------|---------------------------------|------|
| <b>Level (top):</b> |               | 20.72m OD   | <b>Drg:</b>         |      |                                 |      |
| Depth               |               | Sediment description  |                     |      | Interpretation                  | Unit |
| Mbg                 | mOD           |   |                     |      |                                 |      |
| 0 – 0.10            | 20.72 – 20.62 | Void  |                     |      | Compression gap                 |      |
| 0.10 – 0.30         | 20.62 – 20.42 | Dark brown silty clay loam, compact, disturbed clear lower boundary   |                     |      | Plough soil                     | 1    |
| 0.30 – 0.54         | 20.42 – 20.18 | Marl. Light grey brown silty clay becoming clay with depth with darker fine clay bands throughout.                        |                     |      | Lacustrine/lake edge deposits   | 2    |
| 0.54 – 0.60         | 20.18 – 20.12 | Gypsum inclusions   |                     |      |                                 |      |
| 0.60 – 1.4          | 20.12 – 19.32 | Marl. Light grey brown silty clay becoming clay with depth with darker fine clay bands throughout.                        |                     |      | Lacustrine/lake edge deposits   | 2    |
| 1.4 – 1.7           | 19.32 – 19.02 | Orange mottled, well rooted, light grey brown silty clay becoming clay with depth with darker fine clay bands throughout. |                     |      | Lacustrine/lake edge deposits   | 2    |
| 1.7 – 2.7           | 19.02 – 18.02 | Dark grey sandy clay with occasional fine horizontal banding  |                     |      | Early lake deposits/geology?    | 3    |
| 2.7 – 3.0           | 18.02 – 17.72 | Red brown mudstone  |                     |      | Geology                         | 5    |

|                  |  |                        |                     |      |                                 |  |
|------------------|--|------------------------|---------------------|------|---------------------------------|--|
| <b>Location:</b> |  | 470577.63<br>340491.92 | <b>Borehole ID:</b> | BR45 | <b>Comments:</b> 113291 Bingham |  |
|------------------|--|------------------------|---------------------|------|---------------------------------|--|



| <b>Level (top):</b> |             | 20.77m OD   | <b>Drg:</b> |   |             |
|---------------------|-------------|---|-------------|---|-------------|
| <b>Depth</b>        |             | <b>Sediment description</b>   |             | <b>Interpretation</b>   | <b>Unit</b> |
| Mbg                 | mOD         |   |             |   |             |
| 0 – 0.33            | 20.77-20.44 | Dark brown silty clay loam, common roots. Clear lower boundary.   |             | Plough soil   | 1           |
| 0.33 – 1.00         | 20.44-19.77 | Marl. Light grey brown silty clay becoming more compact clay with depth (from 0.54) with darker fine clay bands throughout.   |             | Lacustrine/lake edge deposits   | 2           |
| 1.00 – 1.7          | 19.77-19.07 | Dark greenish grey sandy silty clay with occasional fine horizontal banding. Becoming darker in colour and patchy with iron staining from 1.60. Clear lower boundary. |             | Early lake deposits/geology?  | 3           |
| 1.7 – 2.0           | 19.07-18.77 | Red brown mudstone.   |             | Edwalton member of the Sidmouth Mudstone Formation of the Mercia Mudstone Group | 5           |

| <b>Location:</b>    |             | 470537.07<br>340505.87  | <b>Borehole ID:</b> | BR46  | <b>Comments:</b> 113291 Bingham |
|---------------------|-------------|---|---------------------|---|---------------------------------|
| <b>Level (top):</b> |             | 20.70m OD   | <b>Drg:</b>         |   |                                 |
| <b>Depth</b>        |             | <b>Sediment description</b>   |                     | <b>Interpretation</b>   | <b>Unit</b>                     |
| Mbg                 | mOD         |   |                     |   |                                 |
| 0 – 0.38            | 20.70-20.32 | Dark brown silty clay loam with common roots. Sharp lower boundary.   |                     | Plough soil   | 1                               |
| 0.38 – 1.0          | 20.32-19.70 | Marl. Light grey brown silty clay becoming iron stained clay with depth with darker fine clay bands throughout.                 |                     | Lacustrine/lake edge deposits   | 2                               |
| 1.0 – 1.28          | 19.70-19.42 | Dark greenish grey sandy silty clay with occasional fine horizontal banding. Friable with gypsum nodules. Clear lower boundary. |                     |   | 3                               |
| 1.28 – 2.0          | 19.42-18.70 | Red brown mudstone.   |                     | Edwalton member of the Sidmouth Mudstone Formation of the Mercia Mudstone Group | 5                               |

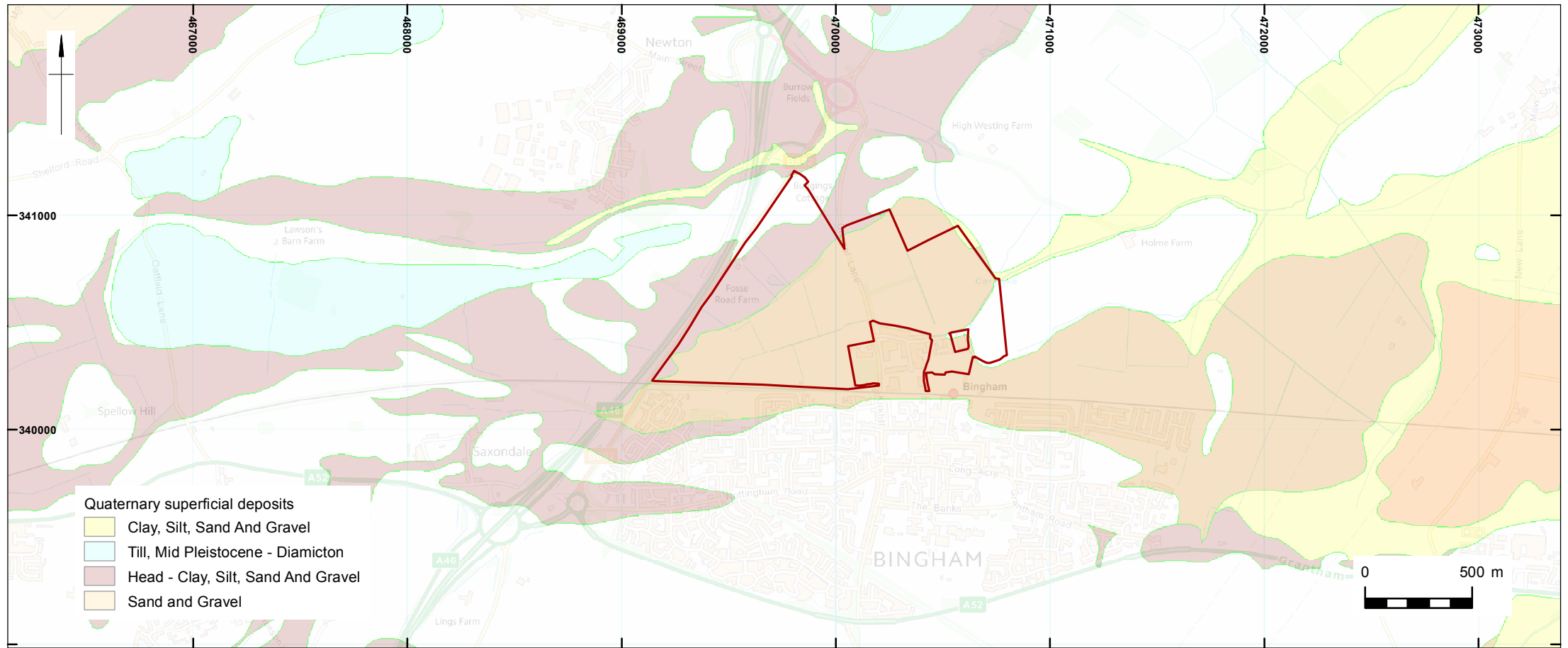
| <b>Location:</b>    |             | 470497.08<br>340519.72  | <b>Borehole ID:</b> | BR47                          | <b>Comments:</b> 113291 Bingham |
|---------------------|-------------|---|---------------------|-------------------------------|---------------------------------|
| <b>Level (top):</b> |             | 20.77m OD   | <b>Drg:</b>         |                               |                                 |
| <b>Depth</b>        |             | <b>Sediment description</b>   |                     | <b>Interpretation</b>         | <b>Unit</b>                     |
| Mbg                 | mOD         |   |                     |                               |                                 |
| 0 – 0.32            | 20.77-20.45 | Dark brown silty clay loam with common roots. Clear lower boundary.   |                     | Plough soil                   | 1                               |
| 0.32-1.00           | 20.45-19.77 | Marl. Light grey brown silty clay becoming compact grey clay with depth (from 0.40) with darker fine clay bands throughout. Iron staining towards base with common white ?marly inclusions. Clear lower boundary. |                     | Lacustrine/lake edge deposits | 2                               |



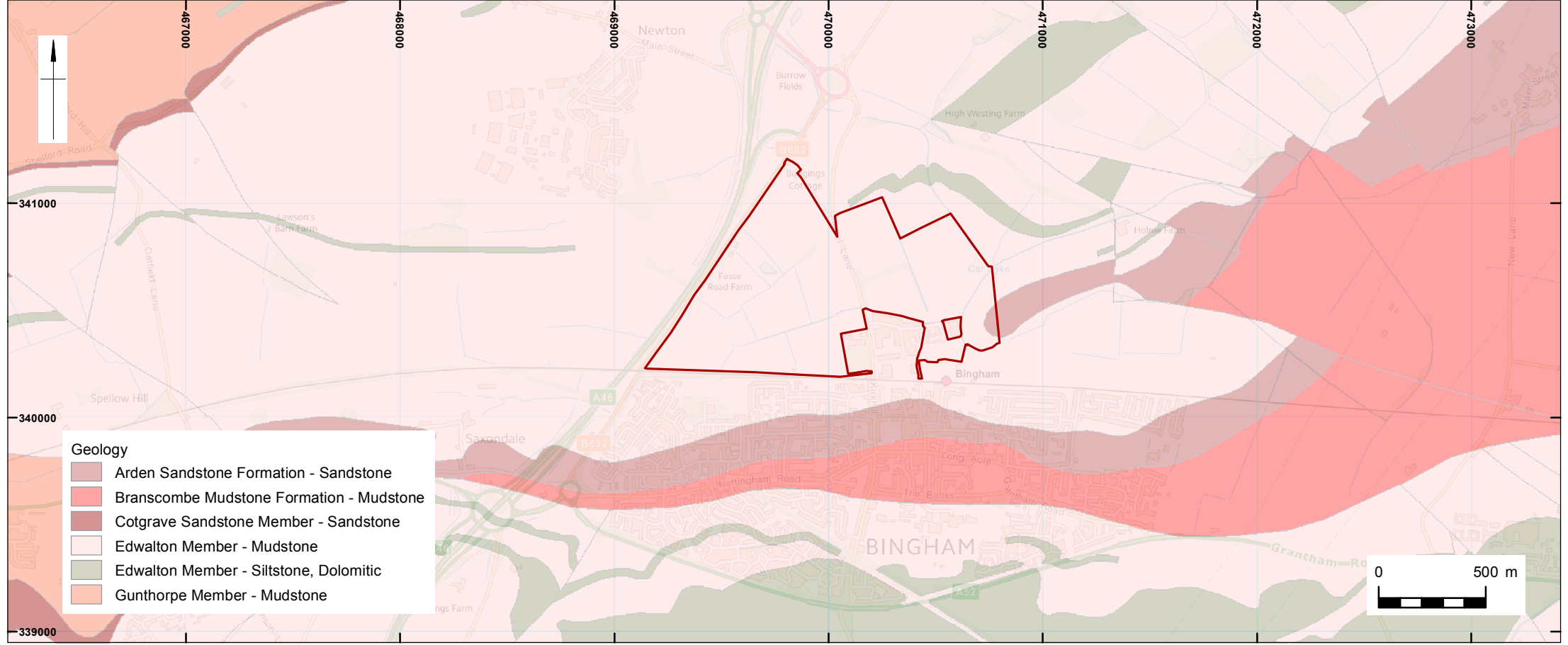


| <b>Location:</b>    |             | 470497.08<br>340519.72   | <b>Borehole ID:</b> | BR47  | <b>Comments:</b> 113291 Bingham |
|---------------------|-------------|--|---------------------|---|---------------------------------|
| <b>Level (top):</b> |             | 20.77m OD  | <b>Drg:</b>         |   |                                 |
| Depth               |             | Sediment description   |                     | Interpretation  | Unit                            |
| Mbg                 | mOD         |  |                     |   |                                 |
| 1.00 – 1.47         | 19.77-19.30 | Dark greenish grey sandy silty clay with occasional fine horizontal banding. Clear lower boundary. |                     | Early lake deposits/geology?  | 3                               |
| 1.47 – 2.00         | 19.30-18.77 | Red brown mudstone.  |                     | Edwalton member of the Sidmouth Mudstone Formation of the Mercia Mudstone Group | 5                               |

| <b>Location:</b>    |             | 470457.89<br>340533.14   | <b>Borehole ID:</b> | BR48  | <b>Comments:</b> 113291 Bingham |
|---------------------|-------------|--|---------------------|---|---------------------------------|
| <b>Level (top):</b> |             | 20.92m OD  | <b>Drg:</b>         |   |                                 |
| Depth               |             | Sediment description   |                     | Interpretation  | Unit                            |
| Mbg                 | mOD         |  |                     |   |                                 |
| 0 – 0.4             | 20.92-20.52 | Dark brown silty clay loam, common roots, clear lower boundary.  |                     | Plough soil   | 1                               |
| 0.4 – 1.0           | 20.52-19.92 | Mid grey brown silty clay becoming darker greenish grey compact clay with depth with darker fine clay bands throughout.  |                     | Lacustrine/lake edge deposits   | 2                               |
| 1.0 – 1.81          | 19.92-19.11 | Dark greenish grey compact sandy silt with occasional iron mottling and vertical iron stained roots. Occasional lumps of waterlogged plant material. Clear lower boundary. |                     | Early lake deposits?  | 3                               |
| 1.81 – 2.0          | 19.11-18.92 | Red brown mudstone.  |                     | Edwalton member of the Sidmouth Mudstone Formation of the Mercia Mudstone Group | 5                               |




Bingham Quaternary superficial deposits



Bingham Geology



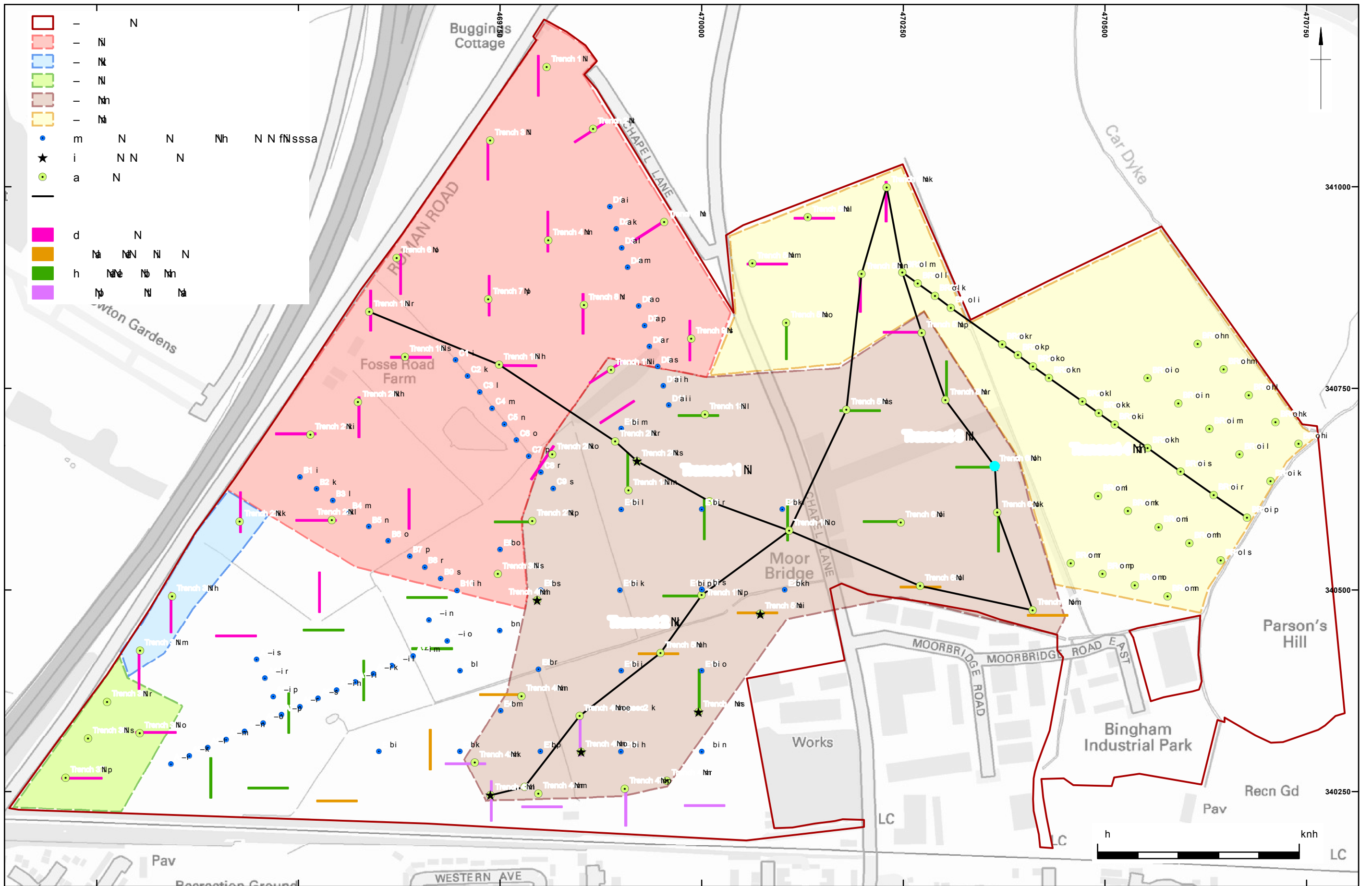
 Application boundary

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Plans showing the location of the Site, Quaternary superficial deposits and Geology as mapped by the British Geological Survey

Figure 1

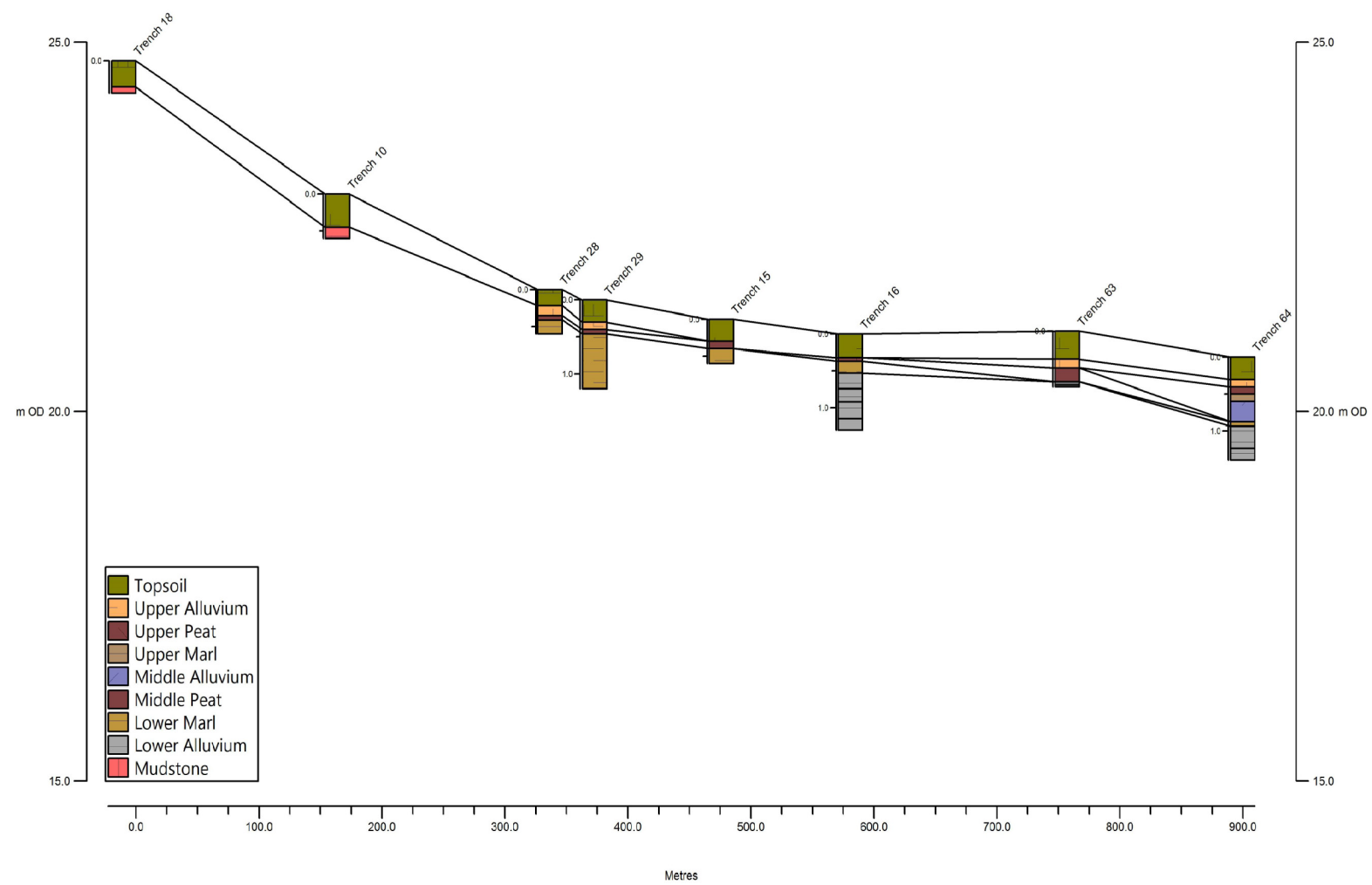
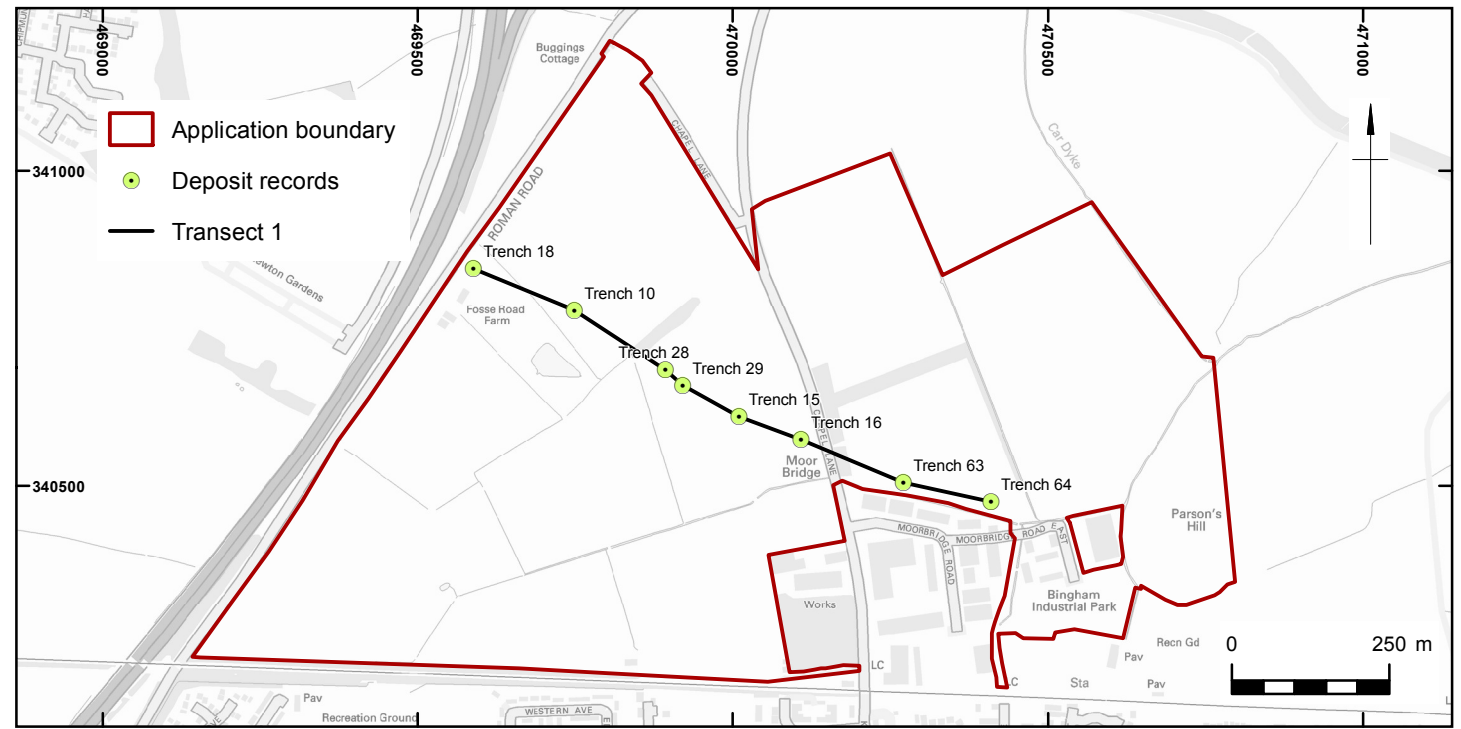


Legend symbols and site labels:  
 □ (red) - N  
 □ (pink) - Ni  
 □ (blue) - Nk  
 □ (green) - Ni  
 □ (grey) - Ni  
 □ (yellow) - Ni  
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Buggins Cottage  
 Fosse Road Farm  
 Moor Bridge Works  
 Bingham Industrial Park  
 Parson's Hill  
 Recreation Ground  
 WESTERN AVE

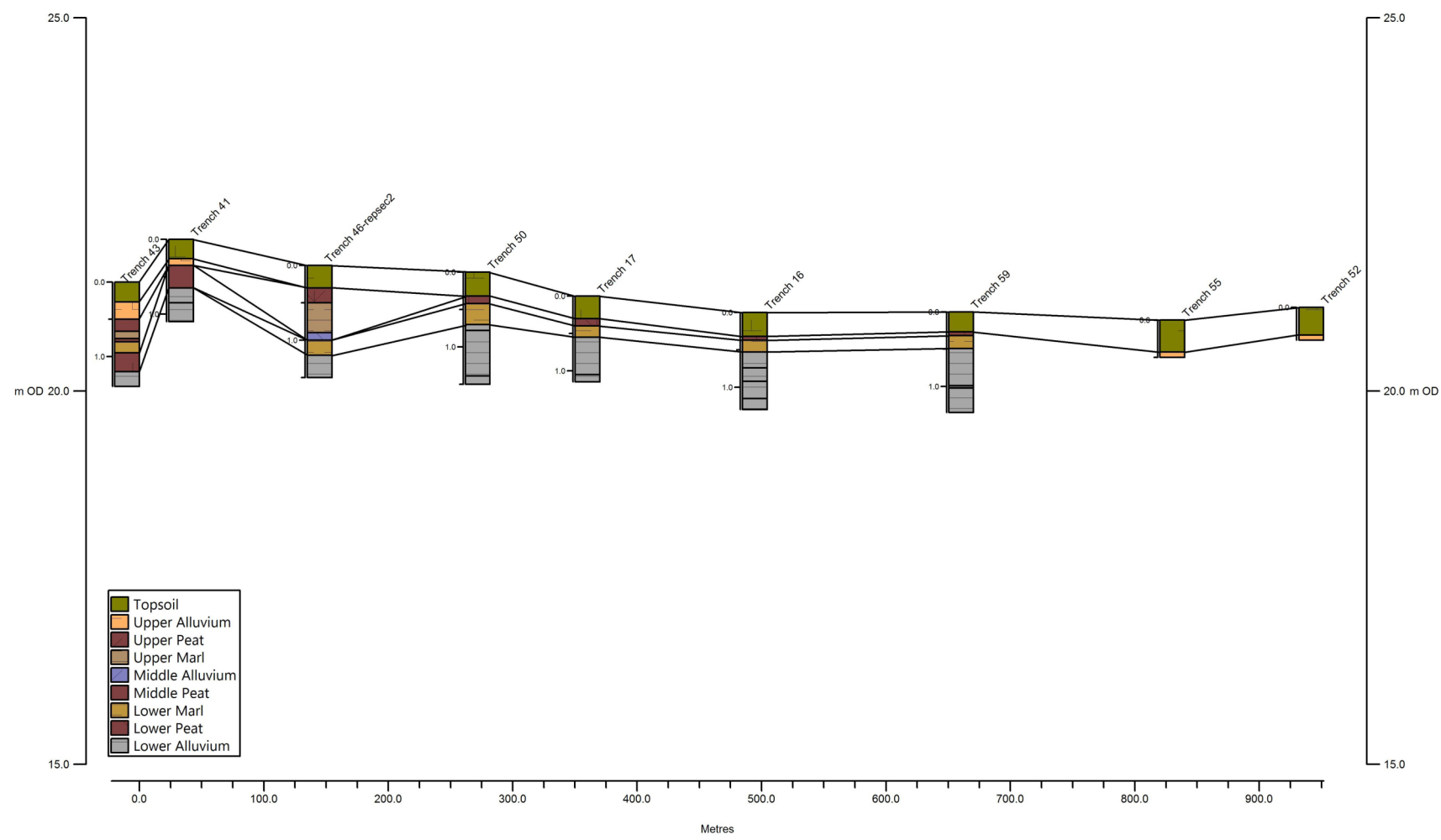
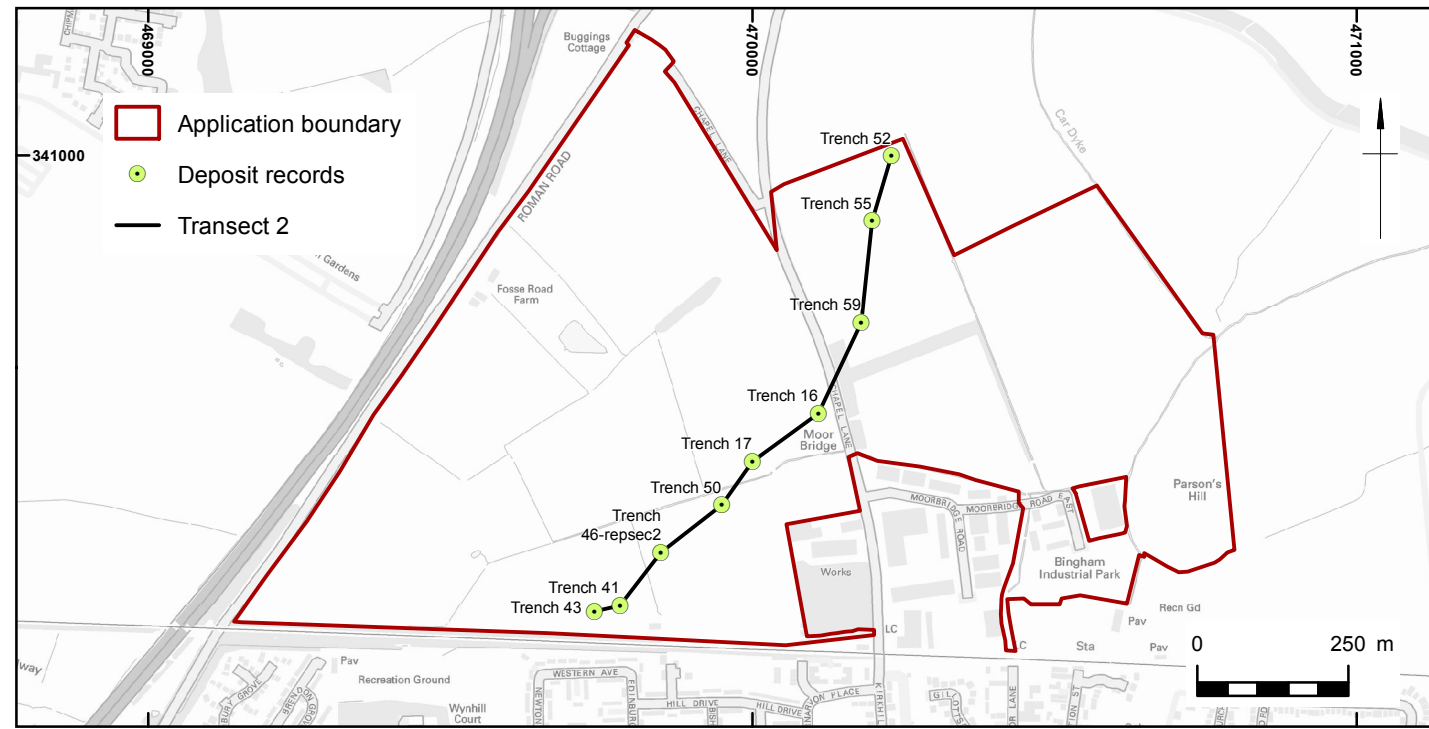
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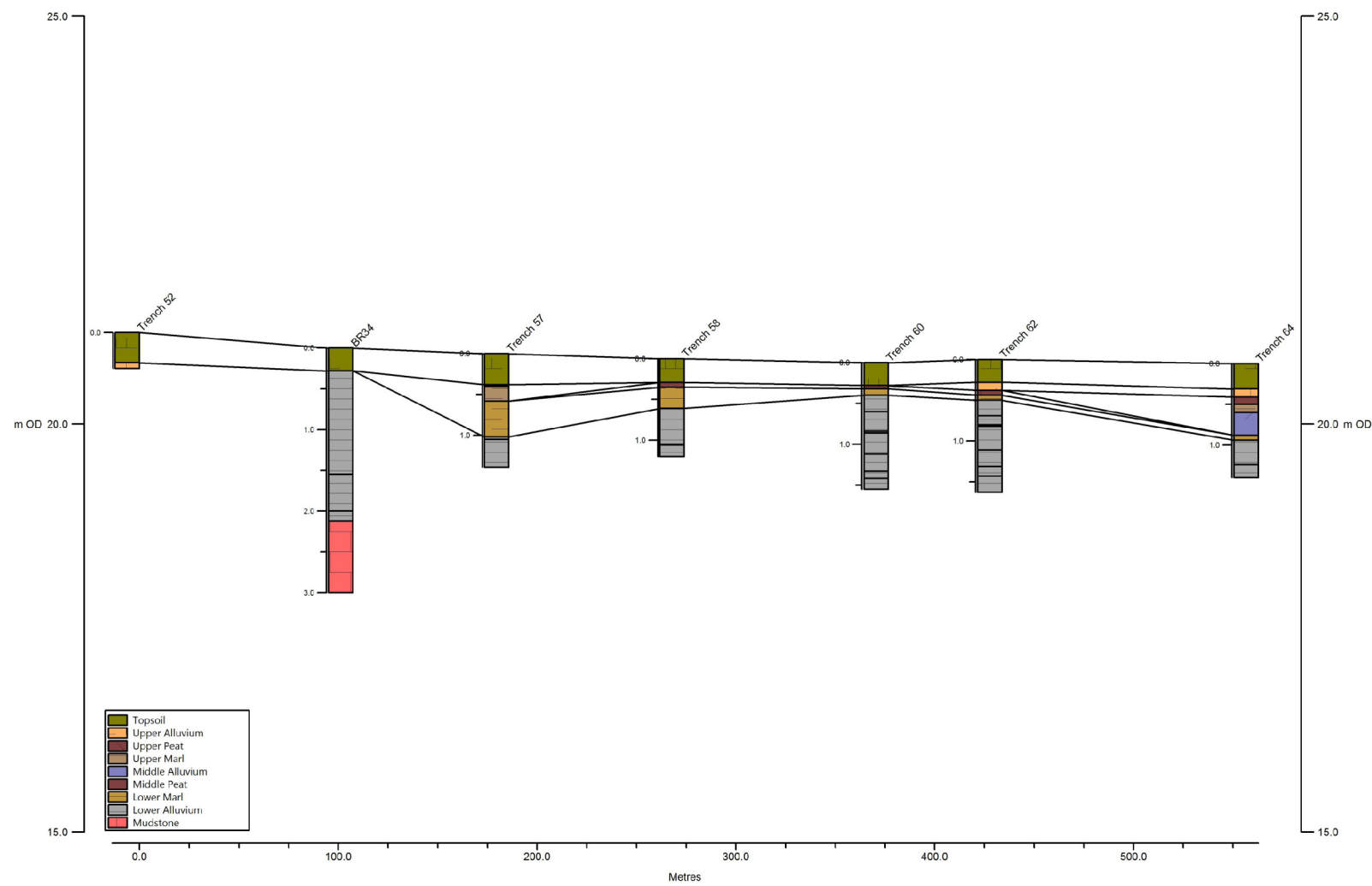
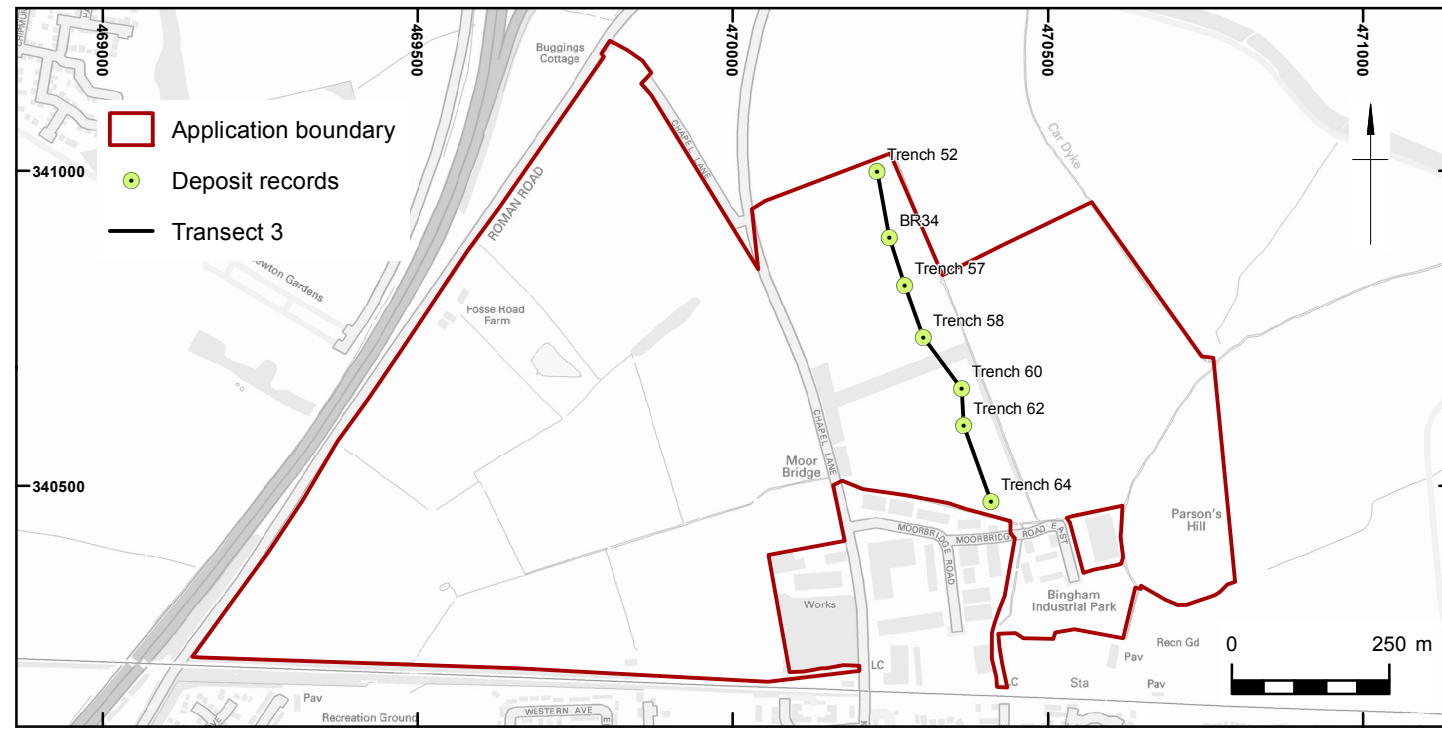
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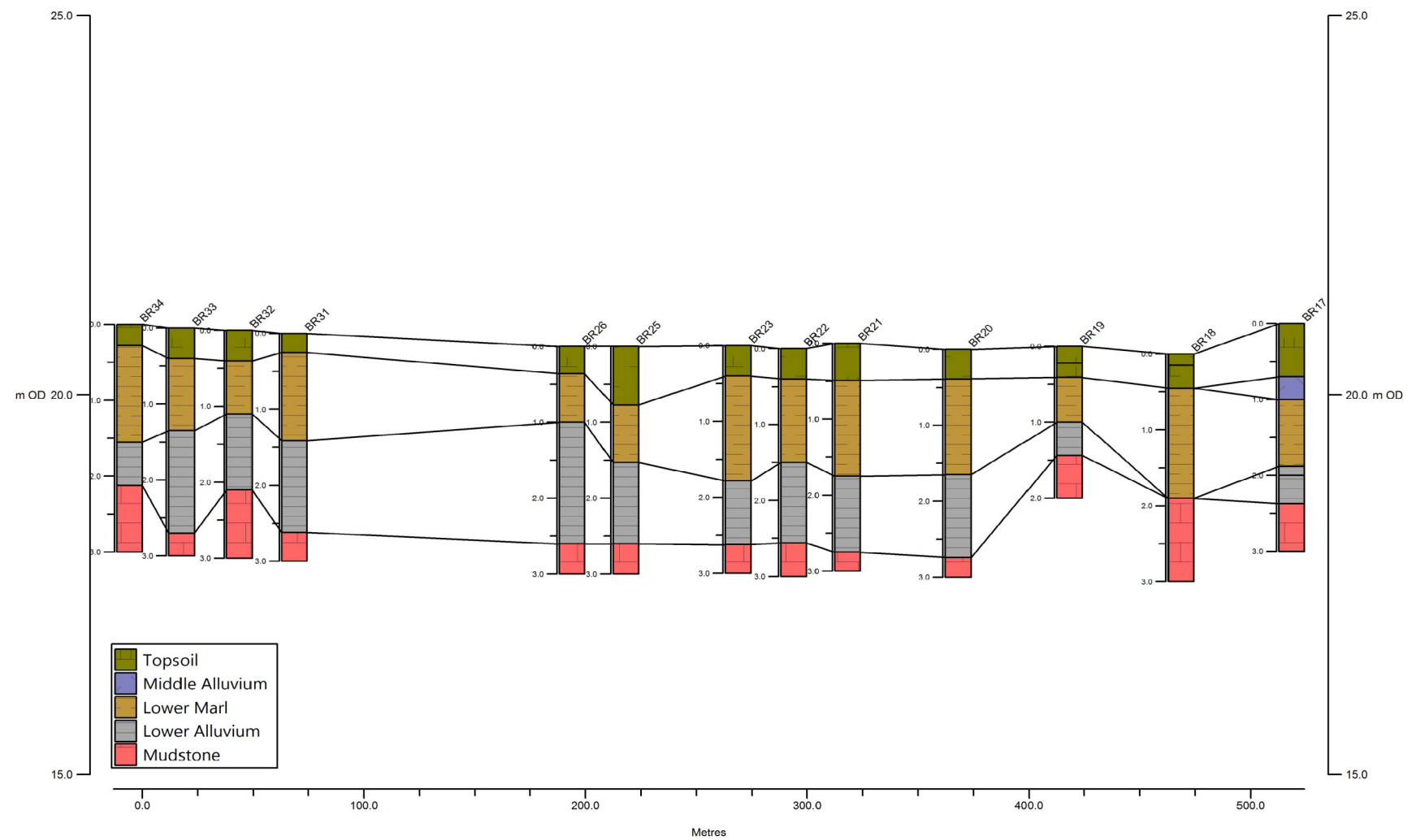
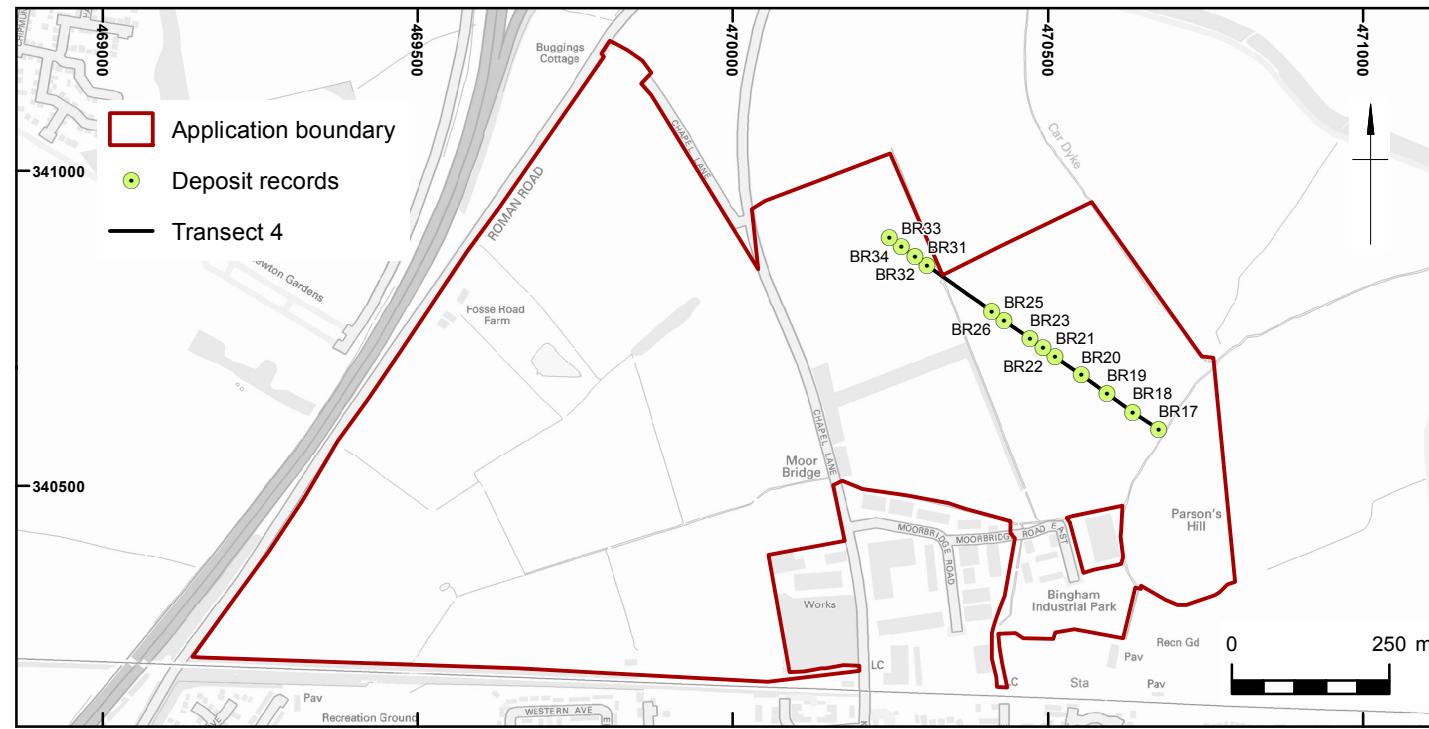
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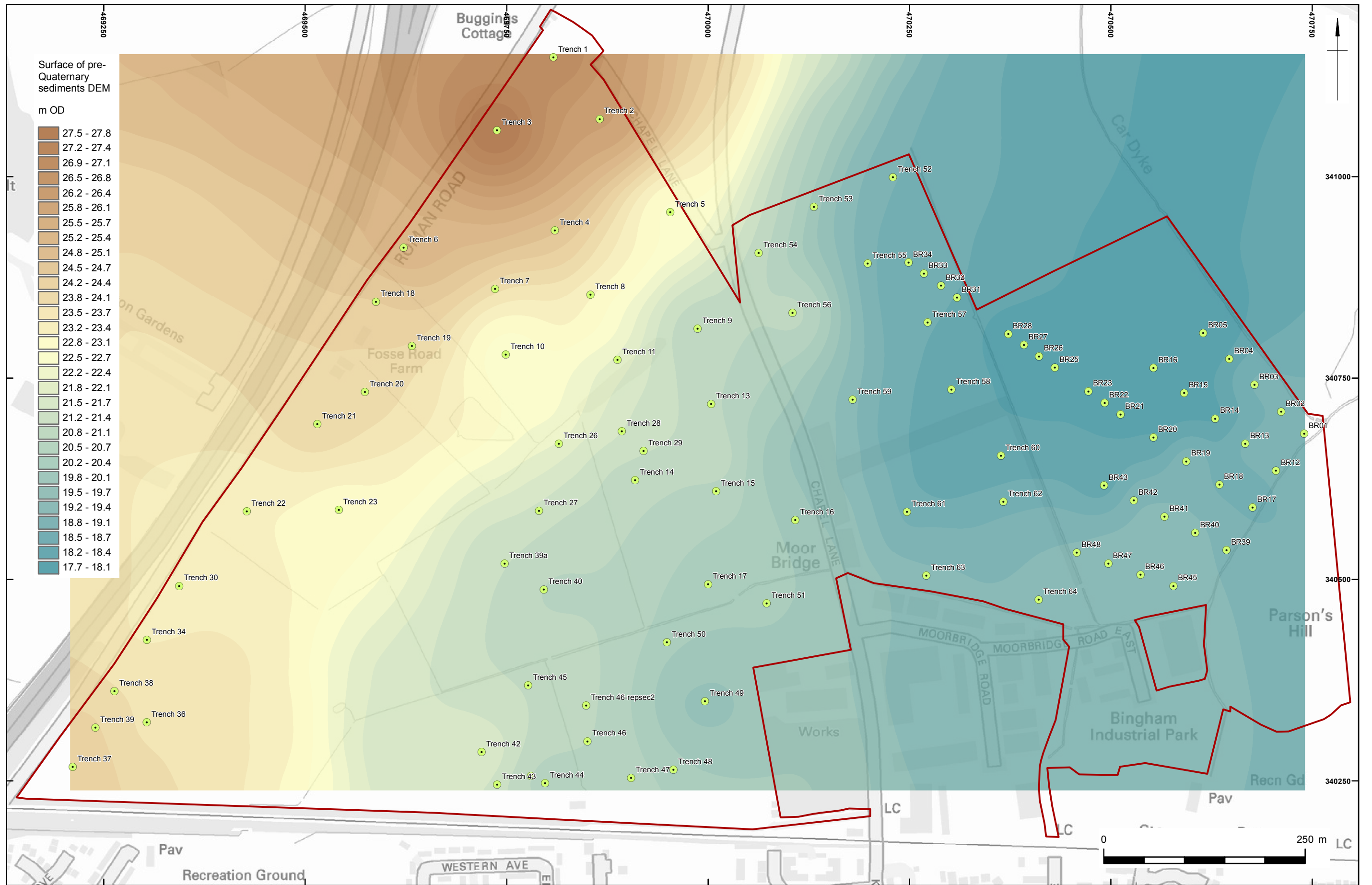
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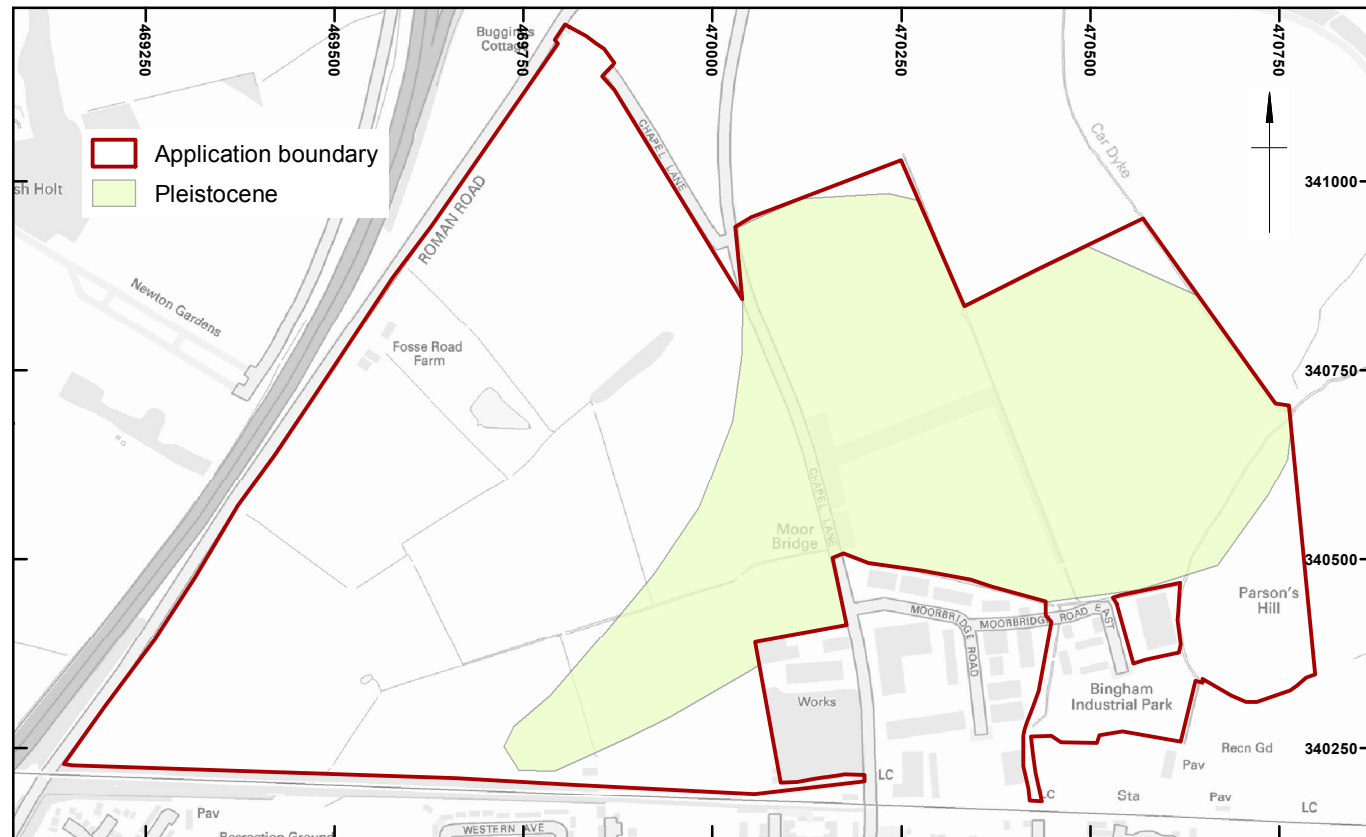
- Application boundary
- Deposit records

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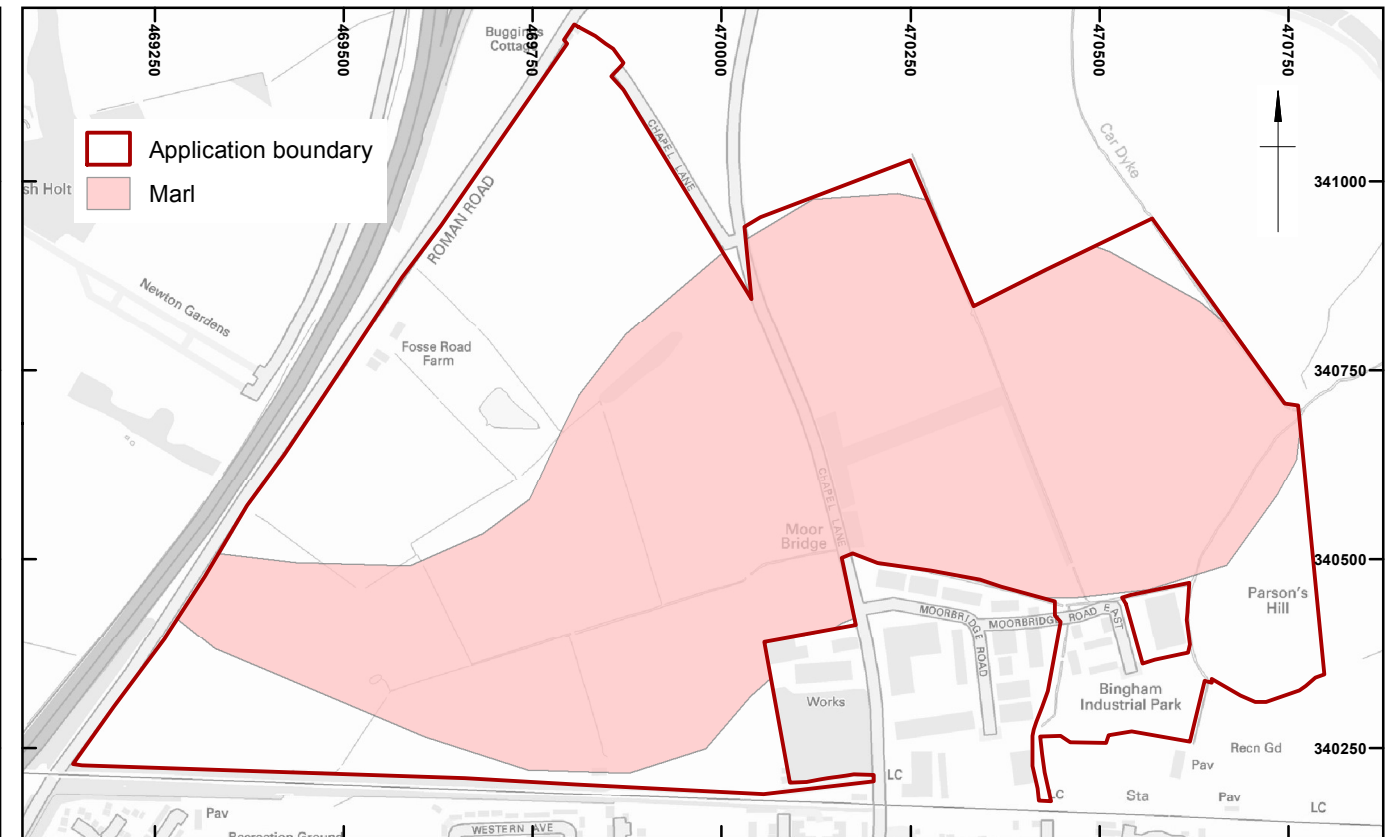
Digital Elevation Model of the Bedrock

Figure 7

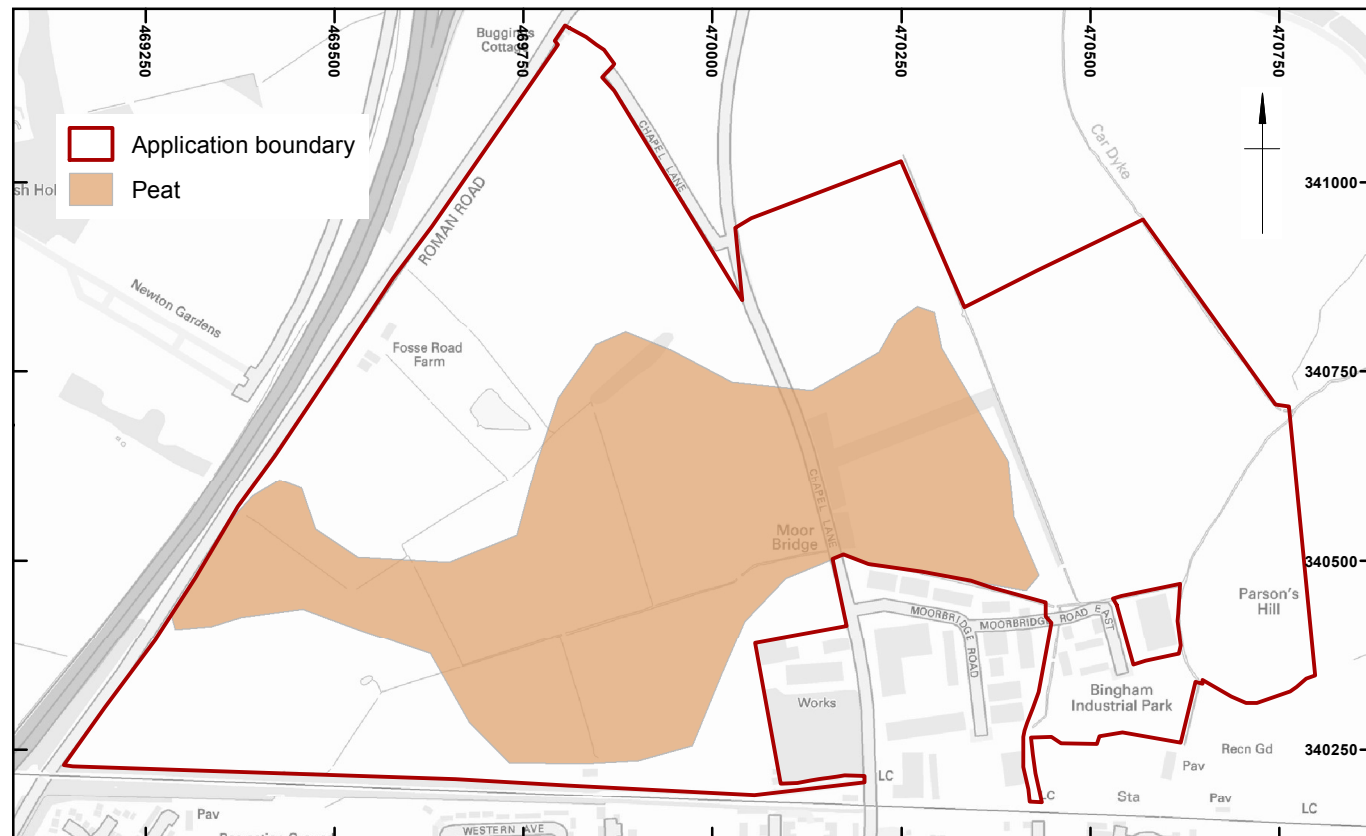




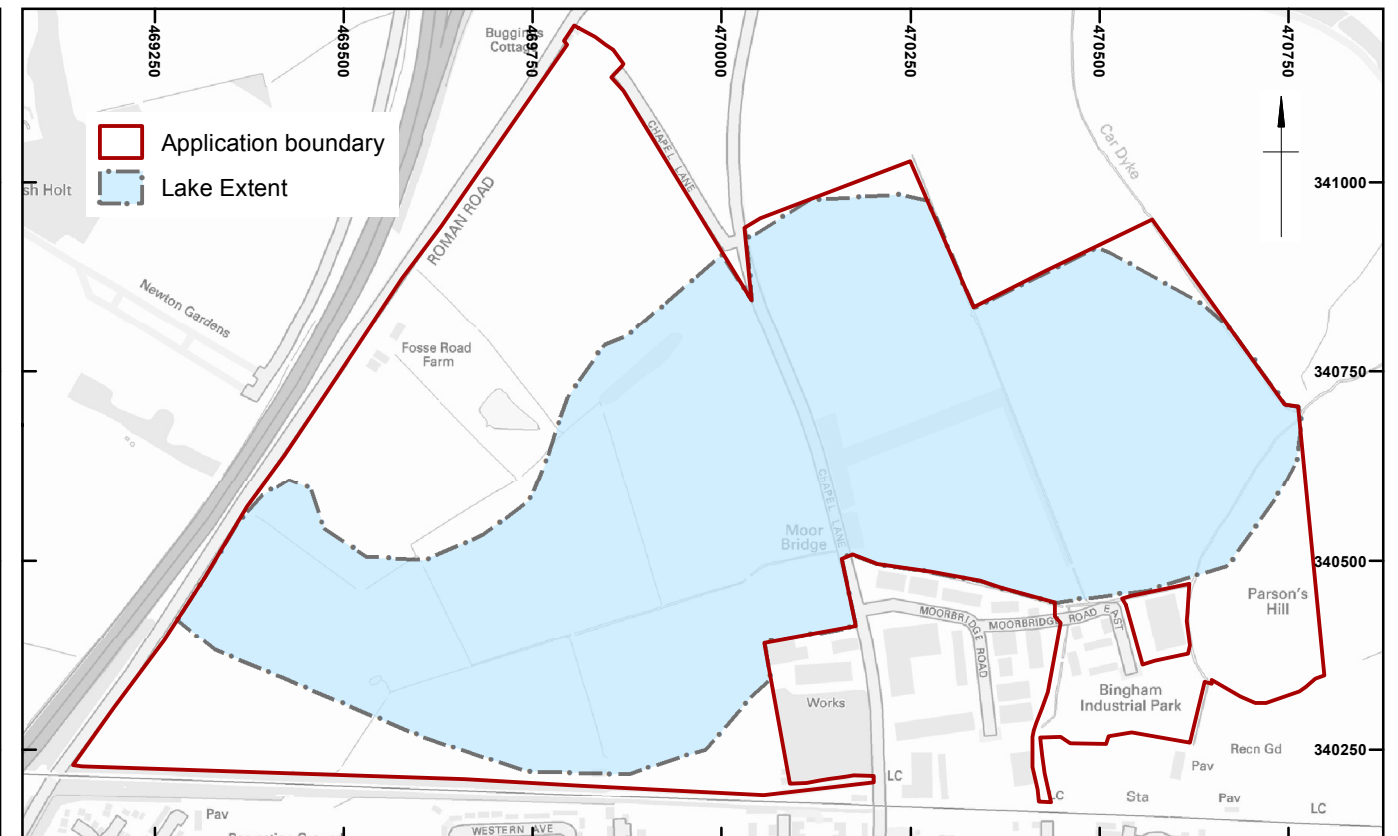
A) Pleistocene lake deposits



B) Marl deposits



C) Peat deposits



D) interpreted extent of former lake



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| Date:  | 23/08/2016  | Revision Number: | 0     |
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