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# The Cedars Park Anglian Water Pipeline: a palaeoenvironmental assessment of floodplain deposits around the River Gipping

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# The Cedars Park Anglian Water Pipeline: a palaeoenvironmental assessment of floodplain deposits around the River Gipping

by

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**Summary**

*Birmingham Archaeo-Environmental undertook sedimentary coring at Cedars Park, Baylham, to complement the geoarchaeological investigations being undertaken along the route of a proposed Anglian Water pipeline.*

*Fieldwork identified a stratigraphic archive on the River Gipping floodplain that consisted of alluvial fine sands, silts and clays underlain by an organic unit of palaeoenvironmental potential. Coring terminated within basal sands and gravels below the organic deposit. One phase of in-situ organic accumulation is concluded to have occurred since sedimentation began at the site. Although a precise timescale for the development of the sedimentary sequence is unknown, it is suggested that the deposits may date back to the Mid- to Late-Holocene (c. 2-5,000 yrs BP).*

*In order to fully understand the palaeoenvironmental history of the site, it is proposed that pollen and beetle assessments are undertaken on the organic unit. AMS radiocarbon dating should also be undertaken on the base and top of the unit to establish the timing of the onset and cessation of organic deposition.*

**KEYWORDS:** Cedars Park, Baylham, Suffolk, River Gipping, peat, Alluvium

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# The Cedars Park Anglian Water Pipeline: a palaeoenvironmental assessment of floodplain deposits around the River Gipping

## 1. INTRODUCTION

The route of a pipeline has been proposed by Anglian Water to run between Creeting St Mary and Baylham Pumping Station, situated within the central Gipping Valley, immediately north of Ipswich, Suffolk. The route was shown to cut across the floodplain of the River Gipping, in which there is believed to be a high potential for the preservation of palaeoenvironmental remains. As a consequence, it was concluded that an initial stratigraphic survey of the floodplain deposits associated with the pipeline route was required in order to establish the palaeoenvironmental potential of the sedimentary archive. A programme of sedimentary coring was therefore required.

Birmingham Archaeo-Environmental were subcontracted to collect sedimentary sequences for stratigraphic and palaeoenvironmental assessments. This report presents the results of palaeoenvironmental investigations (sedimentary coring, recording, sampling and stratigraphic assessment) associated with this scheme of work.

The aim of the work was threefold:

- To identify, record, characterise and sample organic deposits, encountered during the stratigraphic survey.
- To assess this material for biological preservation (suitable for pollen and beetle assessments) and identify suitable samples for radiocarbon dating.
- To provide a detailed understanding of the subsurface stratigraphy of any organic-rich deposits and fine grained silts and clays, which might aid in the development of archaeological prospection strategies.

## 2. METHODS

*2.1 Borehole Survey*

At the time of fieldwork, the majority of the proposed pipeline route along the floodplain of the River Gipping comprised pastoral and arable farm land.

The principle ground disturbance to result from the proposed pipeline route would involve surface stripping associated with the easement (believed to be 15m in width), and the cutting for the pipe trench, believed to be *c*. 0.40m wide. The pipe would be laid in an open-cut trench with directional drilling at the river crossing. As a consequence, the stratigraphic survey was restricted to coring within the 15m wide easement area of the pipeline route.

A site visit was undertaken over a three-day period from 9th-11th July 2007, during which sedimentary coring took place along the proposed pipeline route (see Figure 1 for core locations relative to the pipeline). Core locations were chosen to ensure a clear spatial

understanding of the stratigraphy across the pipeline route was gained.

Cores were extracted using a manual gauge 'Eijkelcamp' corer. Coring was continued until bedrock or sands and gravels were encountered. Where sediments of palaeoenvironmental potential were encountered, a sample core was extracted in 1m length sections and transferred into 1m lengths of plastic guttering for storage and transport.

*2.2 Stratigraphic Analysis*

Whilst an initial assessment of the sedimentary archive was made on-site, detailed stratigraphic analysis of selected cores was undertaken at the Birmingham Archaeo-Environmental laboratory at the University of Birmingham. Each 1.0m section of sample was carefully opened ensuring the enclosed stratigraphy remained intact prior to recording and sampling. Sediments were recorded using the Troels-Smith (1955) classification scheme. The scheme breaks down a sediment sample into four main components and allows the inclusion of extra components that are also present, but that are not dominant. Key physical properties of the sediment layers are also identified according to darkness (Da), stratification (St), elasticity (El), dryness of the sediment (Dr) and the sharpness of the upper sediment boundary (UB). A summary of the sedimentary and physical properties classified by Troels-Smith (1955) and the nomenclature used is provided in Table 1. A full stratigraphic breakdown of the cores is provided in Appendix I.

# 3. PRELIMINARY RESULTS OF FIELDWORK

A total of 16 cores were taken along the proposed pipeline route (see Figure 1 for core locations and Figure 2 and 3 for selected site photographs). Whilst there was stratigraphic variation across the site, similarities existed between groups of cores. For example, cores located proximal to the River Gipping (BH 1-5) were stratigraphically similar, whilst those located proximal to the railway line (BH 6-12) were also similar to one another. The depth at which basal sands and gravels were encountered varied in depth between cores from 0.45m and 3.10m, at which point coring was terminated due to the inability to penetrate the underlying sediments.

The general stratigraphy of cores proximal to the River Gipping (BH1-5) consisted of up to *c*. 2.50m of light brown and yellow-brown clays, silts and sands, which were underlain by a dark brown-black well-humified peat (increasing in sand content with depth). The peat horizon was found to overlie basal sands and gravels, at which point coring was terminated, typically at a depth of 2.90m. Cores extracted from the northeastern floodplain of the River Gipping (BH15 and BH16) contained predominantly orange-brown coarse sands and gravels, with no organic deposits evident.

Cores taken proximal to the railway line (BH6-12) comprised well sorted fine brown sands underlain by coarse orange-brown sands and gravels. The depth at which the sands and gravels were encountered rarely exceeded 0.70m. The elevation of the land surface proximal to the railway line is much higher than that proximal to the

River Gipping (where BH1-5 were taken).

Two extra cores were taken further south along the proposed pipeline route (BH13 and BH14), in which light brown clays, silts and sands were evident overlying basal sands and gravels.

# 4. CONCLUSIONS

The stratigraphic archive encountered along the proposed pipeline route suggests considerable palaeoenvironmental variation exists within this section of the Gipping Valley. The upper *c*. 2.00m of fine sands, silts and clays encountered in floodplain cores (BH1-5, BH15-16) are concluded to be alluvium derived from the River Gipping. Variations in grain size are likely to be a reflection of fluctuations in the flow regime of, and proximity to, the River Gipping.

Underlying the alluvial sequence, deposits with palaeoenvironmental potential were encountered. A well-humified peat deposit with varying sand content was evident, commonly at a depth of *c*. 2.00-2.50m. This is indicative of a period of *in-situ* organic accumulation during the floodplain's depositional history. It is suggested that the deposit encountered is likely to represent organic accumulation in a backwater lagoonal environment. The deposits are unlikely to represent a palaeochannel feature (e.g. meander cutoff) due to the relatively widespread nature of the organic unit across the floodplain, combined with the lack of topographic anomalies (commonly associated with palaeochannels) across the area in question. Although the age of the organic unit is unknown at present, a Mid- to Late-Holocene timescale is suggested.

Cores extracted proximal to the railway line were found to be at a considerably higher elevation than those closer to the contemporary River Gipping. Medium brown sands and orange-brown sands and gravels typified the stratigraphy with no evidence of organic remains. The nature and elevation of the deposits suggests that this section of the pipeline route is located on a former river terrace of the River Gipping, in which no deposits of palaeoenvironmental potential are likely to be encountered. The river terrace sands and gravels are likely to date back to either the Devensian glacial or Early Holocene period, whilst the fine sands encountered overlying the sands and gravels are likely to have developed through a combination of weathering of the underlying sediments and agricultural activity.

# 5. RECOMMENDATIONS FOR FURTHER ANALYSIS

The site location of Core 1 was revisited and sampled for palaeoenvironmental consideration. The stratigraphy encountered within Core 1 was considered most representative of the deposits present within the River Gipping floodplain affected by the proposed pipeline route.

One phase of peat accumulation is believed to have occurred. It is proposed that any palaeoenvironmental assessments undertaken should concentrate on these peat deposits. Therefore in order to obtain an understanding of the palaeoenvironmental conditions responsible for the development of the

peat unit, the following assessment is suggested:

- Pollen assessment throughout the *c*. 0.60m thick peat unit at regular 0.10m intervals (7 samples in total) in order to assess the palaeoecological conditions present at the time of deposition. It is recommended that samples from within the peat unit are assessed for pollen at 2.50m, 2.60m, 2.70m, 2.80m, 2.90m, 3.00m and 3.10m depth.

- The remaining deposits from the peat unit should be bulked into top (2.50-2.70m), middle (2.70-2.90m) and bottom (2.90-3.10m) samples to be assessed for beetle remains (3 samples in total).

- Radiocarbon dating is also suggested on suitable wood fragments or bulk organic samples from the top and base of the peat unit (2 samples in total) to establish the timing of the onset and cessation of peat deposition. Samples should be taken from *c*. 2.50m and 3.10m depth.

## 6. ARCHIVE

The core sampled during fieldwork (Core 1) is currently stored by Birmingham Archaeo-Environmental, University of Birmingham, Edgbaston, Birmingham, B15 2TT. In addition, original core logs, location plans, photographs and associated material are stored within Birmingham Archaeo-Environmental.

## ACKNOWLEDGEMENTS

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## REFERENCES

Troels-Smith, J. (1955). Karakterisering af lose jordater (characterisation of unconsolidated sediments). *Denmarks Geologiske Undersogelse*, Series IV/3, 10, 73.

| Degree of Darkness | |
|---|---|
| nig.4 | black |
| nig.3 | |
| nig.2 | |
| nig.1 | |
| nig.0 | white |

| Degree of Stratification | |
|---|---|
| strf.4 | well stratified |
| strf.3 | |
| strf.2 | |
| strf.1 | |
| strf.0 | no stratification |

| Degree of Elasticity | |
|---|---|
| elas.4 | very elastic |
| elas.3 | |
| elas.2 | |
| elas.1 | |
| elas.0 | no elasticity |

| Degree of Dryness | |
|---|---|
| sicc.4 | very dry |
| sicc.3 | |
| sicc.2 | |
| sicc.1 | |
| sicc.0 | water |

| | Sharpness of Upper Boundary |
|---|---|
| lim.4 | < 0.5mm |
| lim.3 | < 1.0 & > 0.5mm |
| lim.2 | < 2.0 & > 1.0mm |
| lim.1 | < 10.0 & > 2.0mm |
| lim.0 | > 10.0mm |

| | | | |
|---|---|---|---|
| | *Sh* | *Substantia humosa* | Humous substance, homogeneous microscopic structure |
| *I Turfa* | *Tb* | *T. bryophytica* | Mosses +/- humous substance |
| | *Tl* | *T. lignosa* | Stumps, roots, intertwined rootlets, of ligneous plants |
| | *Th* | *T. herbacea* | Roots, intertwined rootlets, rhizomes of herbaceous plants |
| *II Detritus* | *Dl* | *D. lignosus* | Fragments of ligneous plants >2mm |
| | *Dh* | *D. herbosus* | Fragments of herbaceous plants >2mm |
| | *Dg* | *D. granosus* | Fragments of ligneous and herbaceous plants <2mm >0.1mm |
| *III Limus* | *Lf* | *L. ferrugineus* | Rust, non-hardened. Particles <0.1mm |
| *IV Argilla* | *As* | *A.steatodes* | Particles of clay |
| | *Ag* | *A. granosa* | Particles of silt |
| *V Grana* | *Ga* | *G. arenosa* | Mineral particles 0.6 to 0.2mm |
| | *Gs* | *G. saburralia* | Mineral particles 2.0 to 0.6mm |
| | *Gg(min)* | *G. glareosa minora* | Mineral particles 6.0 to 2.0mm |
| | *Gg(maj)* | *G. glareosa majora* | Mineral particles 20.0 to 6.0mm |
| | *Ptm* | *Particulae testae molloscorum* | Fragments of calcareous shells |

**Table 1** Physical and sedimentary properties of deposits according to Troels-Smith (1955)

**Figure 2:** A view north, looking over the River Gipping. Photograph taken proximal to the location of BH1 (see Figure 1).

**Figure 3:** Looking south along the floodplain of the River Gipping, next to the car park off Mill Lane. Photograph taken proximal to the location of BH11 (see Figure 1).

# APPENDIX I

## Core Stratigraphy

*Refer to Table 1 for summary of sedimentary classification scheme of Troels-Smith (1955)*

**Core 1 (TM10784 BNG53098)**

| | | | | | |
|---|---|---|---|---|---|
| 0.00-0.30m | Da | St | El | Dr | UB |
| | 3 | 0 | 1 | 3 | - |
| | Sh2, Ga1, Ag1, As+, Th+, Ptm+ | | | | |
| | Dark brown sandy organic topsoil | | | | |
| 0.30-0.50m | Da | St | El | Dr | UB |
| | 2+ | 0 | 0 | 3 | 1 |
| | Ag2, Ga1, Sh1, Th+, As+, Ggmin+ | | | | |
| | Medium grey-brown organic-rich sandy silt | | | | |
| 0.50-1.05m | Da | St | El | Dr | UB |
| | 2+ | 0 | 0 | 3 | 1 |
| | Ag2, As2, Sh+, Ptm+, Ga+, Dg+ | | | | |
| | Medium brown clayey silt | | | | |
| 1.05-1.42m | Da | St | El | Dr | UB |
| | 2 | 0 | 0 | 3 | 1 |
| | Ag3, As1, Sh+, Ptm+, Lf+ | | | | |
| | Light brown (iron mottled) clayey silt | | | | |
| 1.42-1.65m | Da | St | El | Dr | UB |
| | 3 | 0 | 0 | 3 | 2 |
| | Ag2, As1, Sh1, Ga+, Dg+ | | | | |
| | Dark brown organic-rich clayey silt | | | | |
| 1.65-2.02m | Da | St | El | Dr | UB |
| | 2+ | 0 | 0 | 3 | 1 |
| | Ag3, As1, Sh+ | | | | |
| | Light grey-brown clayey silt | | | | |
| 2.02-2.50m | Da | St | El | Dr | UB |
| | 3 | 0 | 0 | 3 | 1 |
| | Ag2, As1, Sh1, Th+, Dg+ | | | | |
| | Medium-dark brown organic-rich clayey silt | | | | |
| 2.50-2.62m | Da | St | El | Dr | UB |
| | 3 | 0 | 1 | 3 | 1 |
| | Ag2, As1, Sh1, Th+, Dg+ | | | | |
| | Dark brown very well humified peat | | | | |
| 2.62-3.04m | Da | St | El | Dr | UB |
| | 3 | 0 | 1 | 2+ | 1 |
| | Sh2, Ag1, Ga1, Th+, Dg+, Ptm+ | | | | |
| | Dark brown well humified peat with abundant sand and silt | | | | |
| 3.04-3.10m | Da | St | El | Dr | UB |
| | 3 | 0 | 1 | 3 | 1 |
| | Sh2, Dg2, Ag+, As+ | | | | |
| | Dark brown very well humified peat | | | | |
| *>3.10m* | *Gravels encountered* | | | | |

**Core 2 (TM 10775 BNG 53091)**

| | | | | | |
|---|---|---|---|---|---|
| 0.00-0.20m | Da | St | El | Dr | UB |
| | 2+ | 0 | 0 | 3 | - |
| | Ag2, Dh1, Sh1, Th+, Ptm+ | | | | |
| | Medium brown organic-rich silt topsoil | | | | |
| 0.20-0.40m | Da | St | El | Dr | UB |
| | 2 | 0 | 0 | 3 | 1 |
| | Ag2, As1, Sh1, Ga+, Dh+, Th+ | | | | |
| | Light yellow-brown organic-rich clayey silt | | | | |
| 0.40-0.95m | Da | St | El | Dr | UB |
| | 2 | 0 | 0 | 3 | 1 |
| | Ag2, As2, Lf+, Sh+, Th+ | | | | |
| | Light yellow-brown iron mottled clayey silt | | | | |
| 0.95-1.24m | Da | St | El | Dr | UB |
| | 2+ | 0 | 0 | 2+ | 1 |
| | Ag2, As1, Sh1, Ga+, Th+ | | | | |
| | Medium grey-brown organic clayey silt | | | | |
| 1.24-1.55m | Da | St | El | Dr | UB |
| | 2+ | 0 | 0 | 2+ | 2 |
| | Ag2, As1, Ga1, Sh+, Lf+ | | | | |
| | Orange-brown iron mottled clayey silt | | | | |
| 1.55-1.70m | Da | St | El | Dr | UB |
| | 2+ | 0 | 0 | 2 | 1 |
| | Ga2, Ag2, As+, Lf+ | | | | |
| | Orange-brown silty sand | | | | |
| 1.70-2.06m | Da | St | El | Dr | UB |
| | 2 | 0 | 0 | 2 | 2 |
| | Ga4, Ag+, Ptm+, Sh+ | | | | |
| | Light grey shelly sand | | | | |
| 2.06-2.45m | Da | St | El | Dr | UB |
| | 3+ | 0 | 1 | 2 | 2 |
| | Sh2, Dg1, Ga1, As+, Ptm+ | | | | |
| | Dark brown-black well humified sandy peat | | | | |
| 2.45-2.60m | Da | St | El | Dr | UB |
| | 3 | 0 | 2 | 2 | 1 |
| | Sh3, Dg1, Ga+, Ptm+ | | | | |
| | Dark brown very well humified peat | | | | |
| 2.60-2.70m | Da | St | El | Dr | UB |
| | 3+ | 0 | 1 | 2 | 2 |
| | Sh2, Dg1, Ga1, As+, Ptm+ | | | | |
| | Dark brown-black well humified sandy peat | | | | |
| *>2.70m* | *Gravels encountered* | | | | |

**Core 3 (TM 10770 BNG 53057)**

| | | | | | |
|---|---|---|---|---|---|
| 0.00-0.25m | Da | St | El | Dr | UB |
| | 2+ | 0 | 1 | 3 | - |
| | Ag2, Sh1, Dg1, Th+, As+ | | | | |
| | Medium brown organic-rich silt topsoil | | | | |
| 0.25-0.45m | Da | St | El | Dr | UB |
| | 2 | 0 | 0 | 3 | 1 |
| | Ag2, As1, Sh1, Dg+, Lf+ | | | | |
| | Yellow-brown clayey silt | | | | |
| 0.45-1.50m | Da | St | El | Dr | UB |
| | Ag2, As2, Lf+, Sh+, Th+ | | | | |
| | Light yellow-brown clayey silt | | | | |
| | *Becoming orange brown (iron mottling) with depth* | | | | |
| 1.50-1.66m | Da | St | El | Dr | UB |
| | 2+ | 0 | 0 | 2 | 1 |
| | Ga2, Ag1, Ggmin1, As+ | | | | |
| | Orange gravely silty sand | | | | |
| 1.66-2.10m | Da | St | El | Dr | UB |
| | 3 | 0 | 0 | 2 | 1 |
| | Sh2, Ag2, Dg+, As+ | | | | |
| | Grey-brown organic-rich silt | | | | |
| 2.10-2.90m | Da | St | El | Dr | UB |
| | 3+ | 1 | 1 | 2 | 2 |
| | Dg2, Dh1, Sh1, Ag+, Ga+, Dl+, Ptm+ | | | | |
| | Dark brown-black very well humified peat with occasional sand horizons | | | | |

*>2.90m Gravel encountered*

Core 4 (TM 10875 BNG 53019)

| | | | | | |
|---|---|---|---|---|---|
| 0.00-0.30m | Da | St | El | Dr | UB |
| | 2+ | 0 | 0 | 3 | - |
| | Ag2, As1, Sh1, Th+, Dh+, Dg+ | | | | |
| | Grey-brown organic clayey silt topsoil | | | | |
| 0.30-1.25m | Da | St | El | Dr | UB |
| | 2+ | 0 | 0 | 3 | 1 |
| | Ag2, As2, Lf+, Sh+ | | | | |
| | Grey-brown (iron mottled) clayey silt | | | | |
| 1.25-1.75m | Da | St | El | Dr | UB |
| | 2+ | 0 | 0 | 3 | 1 |
| | Ag2, as1, Ga1, Lf+, Sh+ | | | | |
| | Orange-brown sandy clayey silt | | | | |
| 1.75-1.90m | Da | St | El | Dr | UB |
| | 3 | 0 | 1 | 2 | 1 |
| | Ag2, As1, Sh1, Ga+, Th+ | | | | |
| | Dark grey-brown organic clayey silt | | | | |
| 1.90-2.30m | Da | St | El | Dr | UB |
| | Ag2, Sh2, Dg+, As+, Dh+ | | | | |
| | Dark grey-brown organic-rich silt | | | | |
| 2.30-2.90m | Da | St | El | Dr | UB |
| | 3+ | 0 | 1+ | 2 | 2 |
| | Dg2, Sh1, Ga1, Th+, Dh+, Ptm+, Ag+ | | | | |
| | Dark brown-black sandy very well humified peat | | | | |

*>2.90m Gravels encountered*

Core 5 (TM 10802 BNG 52988)

| | | | | | |
|---|---|---|---|---|---|
| 0.00-0.35m | Da | St | El | Dr | UB |
| | 3 | 0 | 0 | 3 | - |
| | Ag2, As1, Sh1, Ptm+, Ga+, Dg+, Dh+ | | | | |
| | Medium brown organic silt topsoil | | | | |
| 0.35-0.45m | Da | St | El | Dr | UB |
| | 2+ | 0 | 0 | 3 | 1 |
| | Ag2, As2, Sh+, Dg+, Ptm+, Lf+ | | | | |
| | Light grey-brown clayey silt | | | | |
| 0.45-0.80m | Da | St | El | Dr | UB |
| | 2+ | 0 | 0 | 3 | 1 |
| | Ag2, As1, Ga1, Sh+, Lf+ | | | | |
| | Light grey-brown (with iron mottling) slightly sandy clayey silt | | | | |
| 0.80-1.10m | Da | St | El | Dr | UB |
| | 2+ | 0 | 0 | 3 | 2 |
| | Ga2, Ag1, Ggmin1, Ggmaj+, As+, Lf+ | | | | |
| | Orange-brown gravely silty sand | | | | |
| 1.10-1.40m | Da | St | El | Dr | UB |
| | 2+ | 0 | 0 | 2+ | 1 |
| | Ga2, Ag1, Ptm1, Ggmin+, Sh+ | | | | |
| | Orange-brown shell-rich silty sand | | | | |
| 1.40-1.60m | Unsampled | | | | |
| 1.60-1.80m | Da | St | El | Dr | UB |
| | 3 | 0 | 0 | 2 | 1 |
| | Ga2, Ag1, Sh1, Ptm+, Dl+, Dh+ | | | | |
| | Dark grey silty sand with organic mottling | | | | |
| 1.80-2.20m | Da | St | El | Dr | UB |
| | 2+ | 0 | 0 | 1+ | 1 |
| | Ga2, Ggmin1, Ggmaj1, Ag+ | | | | |
| | Orange brown sands and gravels | | | | |
| *>2.20m* | *Gravels encountered* | | | | |

Core 6 (TM 10846 BNG 52929)

| | | | | | |
|---|---|---|---|---|---|
| 0.00-0.20m | Da | St | El | Dr | UB |
| | 2+ | 0 | 0 | 3 | - |
| | Ga3, Sh1, Ggmin+, Ggmaj+, Ag+, Ptm+, Th+ | | | | |
| | Light brown slightly organic fine sand | | | | |
| 0.20-0.35m | Da | St | El | Dr | UB |
| | 2+ | 0 | 0 | 3 | 1 |
| | Ga4, Sh+, Ag+, Ggmin+ | | | | |
| | Light brown sand | | | | |
| 0.35-0.65m | Da | St | El | Dr | UB |
| | 2 | 0 | 0 | 3 | 1 |
| | Ga3, Ggmin1, Ggmaj+, Ag+ | | | | |
| | Orange-brown gravely sand | | | | |
| *>0.65m* | *Gravels encountered* | | | | |

Core 7 (TM 10900 BNG 52845)

| | | | | | |
|---|---|---|---|---|---|
| 0.00-0.30m | Da | St | El | Dr | UB |
| | 2+ | 0 | 0 | 3 | - |
| | Ga4, Sh+, Ggmin+, Ggmaj+, Th+, Ag+ | | | | |
| | Light brown sand | | | | |
| 0.30-0.50m | Da | St | El | Dr | UB |
| | Ga3, Ggmaj1, Ggmin+, Ag+ | | | | |
| | Orange brown gravely sand | | | | |

*>0.50m Gravels encountered*

Core 8 (TM 10958 BNG 52754)

| | | | | | |
|---|---|---|---|---|---|
| 0.00-0.40m | Da | St | El | Dr | UB |
| | 2+ | 0 | 0 | 3 | - |
| | Ga4, Sh+, Ggmin+, Th+, Ag+ | | | | |
| | Light brown sand | | | | |
| 0.40-0.70m | Da | St | El | Dr | UB |
| | 2+ | 0 | 0 | 3 | 1 |
| | Ga4, Ag+, Ggmin+, Ggmaj+ | | | | |
| | Orange-brown sand | | | | |
| 0.70-0.80m | Da | St | El | Dr | UB |
| | 2+ | 0 | 0 | 3 | 1 |
| | Ga3, Ggmaj1, Ggmin+, Ag+ | | | | |
| | Orange-brown gravely sand | | | | |

*>0.80m Gravels encountered*

Core 9 (TM 11008 BNG 52655)

| | | | | | |
|---|---|---|---|---|---|
| 0.00-0.30m | Da | St | El | Dr | UB |
| | 3 | 0 | 0 | 3 | - |
| | Ga3, Ggmin1, Ggmaj+, Ag+, Sh+ | | | | |
| | Dark grey-brown gravely sand | | | | |
| 0.30-0.45m | Da | St | El | Dr | UB |
| | 2+ | 0 | 0 | 3 | 1 |
| | Ga2, Ggmin1, Ggmaj1, Ag+ | | | | |
| | Orange-brown sands and gravels | | | | |

*>0.45m Gravels encountered*

Core 10 (TM 11054 BNG 52589)

| | | | | | |
|---|---|---|---|---|---|
| 0.00-0.25m | Da | St | El | Dr | UB |
| | 3 | 0 | 0 | 3 | - |
| | Sa3, Sh1, Ggmin+, Ggmaj+, Ag+ | | | | |
| | Dark brown organic sand | | | | |
| 0.25-0.80m | Da | St | El | Dr | UB |
| | 2+ | 0 | 0 | 3 | 1 |
| | Ga4, Ag+, Ggmin+, Sh+ | | | | |
| | Light orange-brown sand | | | | |
| 0.80-0.90m | Da | St | El | Dr | UB |
| | 2+ | 0 | 0 | 3 | 1 |
| | Ga2, Ggmin1, Ggmaj1, Ag+ | | | | |
| | Light orange-brown sands and gravels | | | | |
| *>0.90m* | *Gravels encountered* | | | | |

Core 11 (TM 11135 BNG 52577)

| | | | | | |
|---|---|---|---|---|---|
| 0.00-0.35m | Da | St | El | Dr | UB |
| | 2+ | 0 | 0 | 3 | - |
| | Ga3, Ggmaj1, Ggmin+, Sh+ | | | | |
| | Medium brown gravely sand with occasional organic mottling | | | | |
| 0.35-0.75m | Da | St | El | Dr | UB |
| | 2 | 0 | 0 | 3 | 1 |
| | Ga2, Ggmin1, Ggmaj1, Gg+ | | | | |
| | Orange brown sands and gravels | | | | |
| *>0.75m* | *Gravels encountered* | | | | |

Core 12 (TM 11181 BNG 52505)

| | | | | | |
|---|---|---|---|---|---|
| 0.00-0.10m | Da | St | El | Dr | UB |
| | 2+ | 0 | 0 | 3 | - |
| | Ga4, Ggmin+, Ggmaj+, Sh+, Ag+ | | | | |
| | Medium brown sand with occasional gravel | | | | |
| 0.10-0.20m | Da | St | El | Dr | UB |
| | 2+ | 0 | 0 | 3 | 1 |
| | Ga3, Ag1, Sh+ | | | | |
| | Medium brown silty sand with occasional organic mottling | | | | |
| 0.20-0.40m | Da | St | El | Dr | UB |
| | 2+ | 0 | 0 | 3 | 1 |
| | Ga3, Ggmin1, Ggmaj+, Ag+ | | | | |
| | Orange-brown gravely sand | | | | |
| 0.40-0.70m | Da | St | El | Dr | UB |
| | 2+ | 0 | 0 | 3 | 1 |
| | Ga2, Ggmin1, Ggmaj1, Ag+, Gg+ | | | | |
| *>0.70m* | *Gravels encountered* | | | | |

Core 13 (TM 11318 BNG 52318)

| | | | | | |
|---|---|---|---|---|---|
| 0.00-0.10m | Da | St | El | Dr | UB |
| | 2+ | 0 | 0 | 3 | - |
| | Ag2, Sh1, As1, Th+ | | | | |
| | Medium brown organic clayey silt | | | | |
| 0.10-0.40m | Da | St | El | Dr | UB |
| | 2 | 0 | 0 | 3 | 1 |
| | Ag2, As2, Ga+, Sh+ | | | | |
| | Light brown clayey silt | | | | |
| 0.40-0.65m | Da | St | El | Dr | UB |
| | 1+ | 0 | 0 | 3 | 1 |
| | Ag3, As1, Lf+, Sh+ | | | | |
| | Light grey (with iron mottling) clayey silt | | | | |
| 0.65-1.70m | Da | St | El | Dr | UB |
| | 2+ | 0 | 0 | 3 | 1 |
| | Ag2, As1, Ga1, Sh+, Lf+, Ptm+ | | | | |
| | Orange brown slightly sandy clayey silt | | | | |
| 1.70-0.80m | Da | St | El | Dr | UB |
| | 3 | 0 | 0+ | 2 | 1 |
| | Ag2, Sh2, As++, Dh+ | | | | |
| | Dark grey-brown organic-rich silt | | | | |
| 1.80-2.10m | Da | St | El | Dr | UB |
| | 3+ | 0 | 0+ | 2 | 1 |
| | Sh2, Ag1, Dg1, Th+, Dh+ | | | | |
| | Dark brown-black silty well humified peat | | | | |
| 2.10-2.70m | Da | St | El | Dr | UB |
| | 3+ | 0 | 0 | 2 | 1 |
| | Ptm1, Sh1, Ga1, Ag1, As+, Dh+, Dl+, Ggmin+, Ggmaj+ | | | | |
| | Dark brown-black organic shell-rich sandy silt | | | | |

*>2.70m* *Gravels encountered*

Core 14 (TM 11344 BNG 52272)

| | | | | | |
|---|---|---|---|---|---|
| 0.00-0.20m | Da | St | El | Dr | UB |
| | 2+ | 0 | 0 | 3 | - |
| | Ag2, As1, Sh1, Th+, Ptm+ | | | | |
| | Medium brown organic clayey silt | | | | |
| 0.20-0.65m | Da | St | El | Dr | UB |
| | Ag2, As2, Sh+ | | | | |
| | Light brown clayey silt | | | | |
| 0.65-1.05m | Da | St | El | Dr | UB |
| | 2 | 0 | 0 | 3 | 1 |
| | Ag3, As1, Lf+, Sh+ | | | | |
| | Light grey (with iron mottling) clayey silt | | | | |
| 1.05-1.65m | Da | St | El | Dr | UB |
| | 2+ | 0 | 0 | 3 | 1 |
| | Ga2, Ag2, As+ | | | | |
| | Grey-brown sandy silt | | | | |
| *>1.65m* | *Gravels encountered* | | | | |

Core 15 (TM10803 BNG 53119)

| | | | | | |
|---|---|---|---|---|---|
| 0.00-0.05m | Da | St | El | Dr | UB |
| | 3 | 0 | 1 | 3 | - |
| | Dh2, Sh1, Ag1, Th+, Dg+, Ggmin_, Dl+ | | | | |
| | Dark brown silty organic topsoil | | | | |
| 0.05-0.35m | Da | St | El | Dr | UB |
| | 2+ | 0 | 0 | 3 | 1 |
| | Ag2, As1, Sh1, Dh+, Th+, Ggmin+ | | | | |
| | Medium brown organic clayey silt | | | | |
| 0.35-0.80m | Da | St | El | Dr | UB |
| | 2+ | 0 | 0 | 3 | 1 |
| | Ag2, As1, Ggmaj1, Ggmin+, Sh+, Lf+ | | | | |
| | Light orange-brown gravely clayey silt | | | | |
| 0.80-1.80m | Da | St | El | Dr | UB |
| | 2+ | 0 | 0 | 3 | 1 |
| | Ga2, Ag1, Ggmin1, As+, Ggmaj+, Lf+ | | | | |
| | Orange-brown gravely silty sand | | | | |
| 1.80-3.10m | Da | St | El | Dr | UB |
| | 2+ | 0 | 0 | 2 | 1 |
| | Ga4, Ggmin+, Ggmaj+, Ag+, Gg+ | | | | |
| | Orange-brown sands | | | | |
| >3.10m | Gravels encountered | | | | |

Core 16 (TM 10811 BNG53128)

| | | | | | |
|---|---|---|---|---|---|
| 0.00-0.15m | Da | St | El | Dr | UB |
| | 2+ | 0 | 0 | 3 | - |
| | Ag2, As1, Ga1, Th+, Sh+ | | | | |
| | Medium brown slightly sandy clayey silt | | | | |
| 0.15-0.30m | Da | St | El | Dr | UB |
| | 2+ | 0 | 0 | 3 | 1 |
| | Ga2, Ggmin1, Ag1, Ggmaj+ | | | | |
| | Medium brown gravely silty sand | | | | |
| 0.30-0.60m | Da | St | El | Dr | UB |
| | Ga2, Ggmin1, Ggmaj1, Ag+ | | | | |
| | Orange-brown gravely sand | | | | |
| 0.60-0.80m | Da | St | El | Dr | UB |
| | Ga1, Gg1, Ggmin1, Ggmaj1 | | | | |
| | Orange-brown sands and gravels | | | | |
| *>0.80m* | *Gravels encountered* | | | | |