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# Epworth Sewage Treatment Works, Epworth, North Lincolnshire

Archaeological Evaluation Report



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September 2014



# **Epworth Sewage Treatment Works, Epworth, North Lincolnshire**

## **Archaeological Evaluation Report**

**Prepared for:**

North Midland Construction PLC  
Nunn Close  
The County Estate  
Huthwaite  
Sutton-in-Ashfield  
Nottinghamshire

**Prepared by:**

Wessex Archaeology  
Unit R6, Riverside Block  
Sheaf Bank Business Park  
Prospect Road  
Sheffield  
South Yorkshire  
S2 3EN

[www.wessexarch.co.uk](http://www.wessexarch.co.uk)

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# Epworth Sewage Treatment Works, Epworth, North Lincolnshire

## Archaeological Evaluation Report

### Summary

Wessex Archaeology was commissioned by NMC Nomenca to carry out an archaeological evaluation ahead of a programme of works comprising the extension of an existing sewage treatment works and erection of associated structures at the Severn Trent Water sewage treatment works located at West End Road, Epworth, North Lincolnshire (hereafter 'the Site'), national grid reference (NGR) 476020 406626 (**Figure 1**).

A total of five 10m by 3m trenches were excavated across the Site to accompany the results of a previous archaeological watching brief undertaken on the excavation of five machine-excavated test-pits during geotechnical and geo-environmental site investigations in order to determine the archaeological potential of the Site, as well as to inform any mitigation strategy prior to the impact of the development.

No archaeological features were uncovered during the evaluation.

The results of Trenches 1 and 2 (Area 1), to the immediate east of the parallel South Engine and Folly Drains, showed a 0.3m thick layer of topsoil overlaid a loose sandy natural geology that was at least 1m in depth.

The results of Trenches 3 to 5 (Area 2), between South Engine Drain and the River Torne to the west, showed a 0.2-0.68m thick layer of topsoil overlaid a 0.08-0.54m thick layer of wind-blown sand which sealed a buried topsoil averaging 0.2m thick. Evidence of a soil bank was uncovered in Trench 5, to the west, which may be associated with the canalization of the River Torne (New Engine Drain) around the turn of the 19<sup>th</sup> century. A low lying pond lay to the east of the bank.

Trenches 3 to 5 also revealed a peat layer below the buried soil at an average depth of 1.07m below ground level (bgl). The layer measured between 0.1 and 0.24m thick and may have archaeological significance, related to previously excavated Bronze Age features which were uncovered some 50m from the south western corner of the Site. It is considered that the proposed development will have little effect on significant archaeological remains within the upper levels of construction. However, given the potential significance of the peat layer, monitoring in the form of an archaeological strip, map and record will likely be needed to mitigate the potential of significant archaeological remains being disturbed, and to allow further peat sampling, along the route of the proposed outflow pipe in Area 2.

The project archive has been compiled according to the Written Scheme of Investigation (WSI) (Wessex Archaeology 2014a) and is fully cross-referenced and indexed. It is currently held by Wessex Archaeology under the project code **87971** and will be transferred to the North Lincolnshire Museum under the accession code **EPAZ**.



# **Epworth Sewage Treatment Works, Epworth, North Lincolnshire**

## **Archaeological Evaluation Report**

### **Acknowledgements**

Wessex Archaeology was commissioned by NMC Nomenca and are grateful to John Tidy in this regard. Wessex Archaeology would also like to thank Alison Williams, the North Lincolnshire Council Historic Environment Record Officer, for her involvement in the project. The project was managed for Wessex Archaeology by Richard O'Neill and fieldwork was supervised by Neil Dransfield. This report was compiled by Neil Dransfield, with contributions by Ellen Simmons (environmental remains) and Elina Brook (finds). The illustrations were prepared by Alix Sperr.



# Epworth Sewage Treatment Works, Epworth, North Lincolnshire

## Archaeological Evaluation Report

### 1 INTRODUCTION

#### 1.1 Project background

- 1.1.1 Wessex Archaeology were commissioned by NMC Nomenca, 'the Client', to carry out an archaeological evaluation by trial trenching as part of a programme of works comprising the extension of an existing sewage treatment works and erection of associated structures at the Severn Trent Water sewage treatment works located at West End Road, Epworth, North Lincolnshire (hereafter 'the Site'), national grid reference (NGR) 476020 406626 (**Figure 1**).
- 1.1.2 The archaeological evaluation followed the completion of a desk-based assessment (DBA; Wessex Archaeology 2012) and an archaeological watching brief undertaken on the excavation of five machine-excavated test-pits during geotechnical and geo-environmental site investigations. The results of these have informed the current programme of archaeological works. The evaluation comprised trial trenching in the area of proposed groundworks, to further characterise potential archaeological remains that may survive on the Site
- 1.1.3 A Written Scheme of Investigation (WSI) set out the strategy and methodology by which Wessex Archaeology (2014a) implemented the archaeological evaluation. All works undertaken conformed to current industry best practice and guidance (English Heritage 2006; Institute for Archaeologists 2008). The WSI was submitted to NMC Nomenca and the North Lincolnshire Council Historic Environment Record Officer (Alison Williams) for approval prior to fieldwork commencing.

#### 1.2 The Site

- 1.2.1 The Site (**Figure 1**) is located adjacent to the Epworth Sewage Treatment Works (STW), c.3.5km northwest of Epworth and c.2km west of Belton. The Site is surrounded by agricultural land and a nature reserve. The Site is bounded to the west by the River Torne and bisected by the parallel South Engine and Folly Drains.
- 1.2.2 The Site lies at approximately 4m above Ordnance Datum (aOD) and lies on Mercia Mudstone with superficial aeolian sand deposits. Around the Site areas of peat are known to exist, and an area of peat was identified during the archaeological watching brief.





## 2 ARCHAEOLOGICAL BACKGROUND

### 2.1 Introduction

- 2.1.1 The following information on the Site is summarised from the results of previous DBA (Wessex Archaeology 2012) and additional notes from monitoring of Site Investigation works.
- 2.1.2 There is no known evidence for activity dating to the Prehistoric or Romano-British periods within the Site boundary, though evidence for prehistoric activity has been recorded just to the immediate south-west corner of the Site at the current Torne Bank Fishery. The archaeological fieldwork associated with the extraction of sand and construction of a new pond recorded two peat deposits dating from the late Glacial period (11190-10700 BC) and the early Post-glacial period (9350 and 8230 BC). Analysis indicated that the area was once marshland on the edge of a slow moving river or freshwater pond showing no evidence of human action. The same trial trenching revealed two pits filled with water-derived deposits which contained burnt stones and two flint flakes dated to the Bronze Age.
- 2.1.3 Approximately 420m south of the Site a Neolithic blade was found during field walking in 1988.
- 2.1.4 Place names and early medieval documentary evidence suggest occupation in the area during the Anglo Saxon period at this time. Epworth was named in the Domesday Book of 1086 as Epeurde. The manor of Epworth was given by William the Conqueror to Nigel D'Alibini, before reverting to the crown.
- 2.1.5 The Church in Epworth sits on a rise of land at the centre of a complex of possible medieval activity, suggesting it forms the focus of the town c.3.6km southeast from the Site. Epworth lay within the Isle of Axeholme, delineated by wetlands surrounding the Rivers Idle, Trent and the Old Don. The Site itself would have lain within the common wetlands that provided important resources including hay, peat, as well as wood fish and fowl.
- 2.1.6 Analysis of aerial photographs has identified a group of around 50 rectangular pits, measuring approximately 6x2m, 500m northeast of the Site. It is likely that the features represent Retting Pits for the processing of Flax and dating to the medieval or post-medieval period. Further cropmark evidence shows, to the west of this group, a possible peat working site along with an undated curving field boundary and a small rectangular enclosure which may be contemporary.
- 2.1.7 In 1626 Royal approval was given for the draining of Hatfield Chase to the west of the Site. This required the reorganising the watercourses, including the rivers Idle and Torne. This required a new drain being raised, known as New Torne, which passed alongside the Site.
- 2.1.8 With the enclosure of Epworth Common by Act of Parliament in 1795, £20,000 was made available for land improvements. The enclosure award included the construction of the South Engine Drain (also known as the New Idle River), and the Folly Drain shortly after, both of which pass through the Site. The plan accompanying the award produced in 1803 (Lincolnshire Archive ref: Epworth PAR/17) illustrates the eastern part of the Site was divided into a series of characteristic enclosures with straight boundaries, whilst the western part of the Site lay within a larger irregular field.



2.1.9 In 1909 the Hatfield Moor branch of the Axeholme Joint Railway was constructed along the southern edge of the Site between Epworth and Sandtoft. The line cut across the southern corner of the western part of the Site. This line operated until its closure in 1963, when the line was dismantled.

2.1.10 The Site remained undeveloped until the construction of the Epworth Sewage Treatment Works, appearing on the 1967-1971 Ordnance Survey map.

## 2.2 Previous archaeological investigations

2.2.1 Monitoring during the excavation of test pits (**Figure 1**) during site investigation works noted that natural, undisturbed sands were generally encountered at a depth of between 0.7 and 1.1m below ground level (bgl). A band of peat was also identified in Test-Pit 3 (**Figure 1**) at a depth of 2.2m bgl with the natural being encountered at c.4m bgl in this pit.

## 3 PROJECT AIMS

### 3.1 General aims

3.1.1 The general aim of the project was to seek preservation *in-situ* for identified features of importance, and to ensure that all other surviving evidence relating to former activity on the Site was **preserved by record** during archaeological works.

3.1.2 The general aims of the evaluation can be summarised as:

- *to determine the extent, condition, character, significance and date of any archaeological deposits encountered that will be removed or disturbed by groundworks.*
- *to accurately record the location and stratigraphy of areas excavated.*
- *to prepare a comprehensive record and report of any archaeological deposits or structures or artefacts identified.*
- *to gain an understanding of the development of the Site.*
- *to put the results of the evaluation in context.*
- *to assist in the preparation of an appropriate mitigation strategy.*

### 3.2 Specific aims

3.2.1 The results of the evaluation have been used to determine the requirement for, and form of, further archaeological works required to mitigate against the effects of any groundworks to be undertaken by NMC Nomenca as part of the current scheme (Wessex Archaeology 2014b).

## 4 METHODOLOGY

### 4.1 Fieldwork methodology

4.1.1 The below is a summary of the detailed methodology contained in the WSI (Wessex Archaeology 2014a) and a full description can be found there.



4.1.2 The evaluation comprised the excavation of five trenches measuring 10m by 3m (**Figure 1**).

## **4.2 Machine excavation**

4.2.1 Topsoil and subsoil were removed using a mechanical excavator fitted with a toothless ditching bucket, working under the continuous direct supervision of a suitably experienced archaeologist. Overlying soil layers were removed in a series of level spits down to the archaeological horizon at the upper level of the natural geology.

## **4.3 Hand excavation**

4.3.1 Natural features were sampled sufficiently to establish their origin and to characterise any related human activity.

4.3.2 No archaeological archaeological features were uncovered apart from a bunded bank which was probably associated with the canalization of the River Torne.

## **4.4 Recording**

4.4.1 All recording was undertaken using Wessex Archaeology pro forma recording sheets and a continuous unique numbering system. A stratigraphic matrix was compiled to record the relationships between deposits in the blank trenches. A full trench by trench context listing is appended to this report (**Appendix 1**).

4.4.2 All trenches were located in relation to the OS grid and representative sections and elevations of archaeological deposits were drawn at 1:10 and 1:20.

4.4.3 Photographs were taken of all trenches and deposits to produce a photographic record consisting of digital images to a resolution of at least 10 megapixel.

## **4.5 Specialist strategies**

### *Artefacts*

4.5.1 A single stratified artefact was recovered and taken to Wessex Archaeology offices in Sheffield for processing and assessment. A sherd of modern whiteware, a fragment of modern brick and a lump of concrete were noted in the topsoil and not retained.

### *Environmental*

4.5.2 Environmental samples of the peat deposit were taken due to the possible association of the prehistoric evidence previously uncovered at the Torne Bank Fishery. The collection and processing of environmental samples was undertaken in accordance with English Heritage guidelines (English Heritage 2011).

4.5.3 The residues and sieved fractions of the bulk environmental soil samples will be recorded and retained with the project archive. For charred material, bulk samples of 40 litres in volume will be taken for processing by flotation. All samples will be floated on a 250-300mm mesh and the heavy residues washed over a 0.5-1mm mesh. The heavy residues will be scanned with a magnet to recover micro-slugs.



## 5 ARCHAEOLOGICAL RESULTS

### 5.1 Introduction

5.1.1 The evaluation consisted of five trenches measuring 10m x 3m, numbered **1** to **5** (**Figure 1**). **Trenches 1** and **2** were located to the east of the parallel South Engine and Folly Drains, within the footprint of the new Settlement Tanks and Oxidation Ditches (Area 1). The stratigraphy in these trenches was identical. **Trenches 3** to **5** were located to the west of South Engine Drain along the proposed line of the new outflow pipe to the western limit of the Site at the River Torne (Area 2). **Trenches 3** and **4** (**Figures 2** and **3**) had similar stratigraphic profiles and **Trench 5** (**Figure 4**) will be discussed separately.

5.1.2 **Trenches 1** to **4** were archaeologically sterile. Natural and overburden deposits were recorded and a full context record is listed in **Appendix 1**. **Trench 5** uncovered evidence of banking, probably associated with the canalization of the River Torne. Notable deposits are referred to in the text in **bold** font.

5.1.3 **Trenches 3** to **5** were moved slightly to the south-west of their initial alignment to reflect the new alignment of the proposed outflow pipe.

### 5.2 General summary

#### *Natural geology*

5.2.1 The underlying natural geology in Area 1 was uncovered 0.3m bgl and consisted of a light yellow loose sand which was at least 1m thick (**Plate 1**). Pink and grey mottling indicated root disturbance and some evidence of plough scarring was observed in **Trench 2** (**Plate 2**).

5.2.2 The natural sand in Area 2 was uncovered between 1.15 and 1.5m bgl. Patches of bioturbatory mottling and root/animal disturbance were observed at this depth; however, a buried soil and possible pond (see below) above this layer suggested that the former land surface was much lower (0.76m) than the current land surface.

#### *Natural peat layer*

5.2.3 **Trenches 3** and **4** uncovered a 0.2-0.26m thick layer of peat (**304, 404/406 Sections 1** and **2, Figures 2** and **3; Plate 3**) immediately above the natural sand and a depth of 1-1.16m bgl. A similar peat layer **508** in **Trench 5** (**Section 3, Figure 4**) was thinner at 0.1m thick and petered out towards the eastern end of the trench. Given the potential significance of the deposit in light of the deposits previously recorded at Torne Bank Fisheries, the deposit was sampled for dating and environmental evidence (see **Section 7** below). The samples confirmed a wetland/grassland environment during the formation of the deposit with species morphologically similar to pioneer woodland trees making up the burnt material. It was not clear whether the burning was due to natural or human activity. The charcoal samples recovered were not large enough for radiocarbon dating.

#### *Buried soil layer*

5.2.4 **Trenches 3, 4** and **5** revealed a buried grey/brown silty sand soil (**303, 403/405, 507**) above the peat deposits (**Sections 1-3, Figures 2-4**). The deposit was similar in characteristics to the overlying topsoil indicating that this layer had formed a former agricultural land surface in the past. The excavations revealed that the deposit was between 0.74 and 0.86m bgl suggesting that the former land surface was much lower than the present. A single sherd of pottery from **403** (**Section 2, Figure 3**) indicated a post-medieval date for this deposit. The buried soil was sealed by an aeolian sand (**302, 402**), c.0.08-0.18m thick, suggesting a period of agricultural inactivity.



### *Topsoil*

- 5.2.5 The topsoil was predominantly a mid-yellowish brown loose silty sand with vegetal roots and rootlets in the upper horizon. The deposit was 0.3m deep in Area 1 and a much deeper 0.6-0.68m in Area 2.
- 5.2.6 Artefact recovery across the Site was very low and a single modern (19<sup>th</sup>/20<sup>th</sup> century) whiteware pottery sherd was noted in **Trench 2** topsoil **201**. A modern frogged brick and a large lump of concrete were also noted in deposit **502** in **Trench 5**, confirming the modernity of this deposit (see below). These finds were discarded in the field.

## **5.3 Trench 5**

- 5.3.1 Similar to **Trenches 3** and **4**, a buried soil **507** immediately overlay the lower peat deposit **508** in **Trench 5** (**Section 3, Figure 4**). Overlying the buried soil was a 0.46m thick layer of orangey grey mixed silty sand **506** which extended from the western limit of excavation (loe) and sloped sharply down to a point to the east (**Section 3, Figure 4; Plate 4**). It seemed likely that this deposit formed part of a purposive bank that may have been landscaped as part of the canalizing or re-dredging of the River Torne to the immediate west. Two layers of sloping material overlay this which contained organic material **504** and topsoil characteristics **505** implying that they had formed on the slope of the bank (**Section 3, Figure 4**). To the east of these deposits, in a slight hollow depression in the upper surface of **507** was a black clayey sand **503** with an undulating upper surface. This deposit was interpreted as the fill of a waterlogged area/ pond that may have formed in the low lying ground surface next to the bank.
- 5.3.2 The bank edge and waterlogged area/ pond fill were then overlain by a 0.54m thick layer of sand **502** containing a modern frogged brick and a concrete block. It seems likely that this was a modern made ground to level the area prior to the modern usage as an agricultural field in the topsoil **501**.

## **6 FINDS**

### **6.1 Summary**

- 6.1.1 A single undiagnostic body sherd of coarse redware was found in buried soil layer **403**. This is likely to be of post-medieval date.

## **7 ENVIRONMENTAL**

### **7.1 Introduction**

- 7.1.1 Two bulk samples, each of twenty litres in volume, were taken from layer **404** and layer **508** which were peat layers preserved below buried soils, in order to evaluate the presence and preservation of palaeo-environmental remains. The samples were processed for the recovery and assessment of waterlogged plant remains, charred plant remains and wood charcoal.

### **7.2 Waterlogged plant remains, charred plant remains and wood charcoal**

- 7.2.1 Sub-samples of the bulk samples were processed for the recovery of waterlogged plant macrofossils broadly following the techniques outlined in Kenward et al (1980). A two litre sub-sample of soil was disaggregated in water, before being processed by gently washing

material through a stack of sieves of mesh size 1mm, 500µm and 250µm. Material from each size sieve fraction was stored in 70% dilute ethanol and distilled water in airtight glass jars and kept refrigerated, in accordance with English Heritage guidelines for the curation of waterlogged macroscopic and invertebrate remains (Robinson, 2008). A five litre sub-sample was also retained for potential processing for invertebrate macrofossils and pollen, should this be deemed appropriate.

- 7.2.2 The remainder of the bulk samples were processed by standard flotation methods using a water separation machine. Floating material was collected on a 300µm mesh, and the remaining heavy residue retained in a 1mm mesh. The flot and heavy residue were air dried. The > 2mm fraction of the heavy residues were fully sorted for organic remains and artefacts and weighed. Where no potential for the recovery of < 2mm artefacts, such as fish bone was noted, the < 2mm fraction of the heavy residues were also then weighed and discarded.
- 7.2.3 The samples were assessed in accordance with English Heritage guidelines for environmental archaeology assessments (Jones, 2011). The main aim of this assessment was to determine the concentration, diversity, state of preservation and suitability for use in radiocarbon dating, of any archaeobotanical material present within the samples. A further aim was to evaluate the potential of this material to provide evidence for the function of the contexts, the economy of the site or for the nature of the local environment.
- 7.2.4 A preliminary assessment of the samples was made by scanning under a low power binocular microscope (x7-x45) and recording the abundance of the main classes of material present. This data is recorded in **Appendix 3**. Preliminary identification of plant material was carried out by comparison with material in the reference collections at the Department of Archaeology, University of Sheffield and various reference works (e.g. Cappers et al, 2006). Plant nomenclature follows Stace (2010).
- 7.2.5 Sample 1 from the peat layer context **404** consisted of fairly well humified organic material with a high proportion of roots. A moderate density of wood charcoal was present along with a low density of charred grass seeds, small charred twigs and charred tuber / rhizome fragments. A low density and diversity of seeds preserved by anoxic waterlogging were also present along with a moderate density of bark fragments.
- 7.2.6 Sample 2 from peat layer context **508** consisted of very well humified organic material with a moderate proportion of roots. A low density of wood charcoal and small charred twigs was present, along with a high density of charred sub-circular fungal sclerotia. A very low density and diversity of seeds preserved by anoxic waterlogging were also present along with moss fragments and invertebrate macrofossils.

### 7.3 Further potential

#### *Charred plant remains*

- 7.3.1 The relatively abundant charred sub-circular fungal sclerotia from soil dwelling fungi, present in sample 1 from peat layer **404**, indicates the possibility of burning due either to natural or anthropogenic processes. No further analysis of the charred plant assemblage in the samples would however be recommended due to the paucity of material present.
- 7.3.2 No charred plant remains suitable for use in radiocarbon dating were present.

#### *Wood charcoal*

- 7.3.3 The wood charcoal fragments present in sample 1 from peat layer **404** are largely of diffuse porous taxa, with weak ring curvatures suggesting the presence of generally larger



branches or trunk material. Many of the fragments appear morphologically similar to Betulaceae (birch, alder, hornbeam or hazel) although further identification was not possible using low power microscopy.

- 7.3.4 The wood charcoal fragments present in sample 2 from peat layer **508** are also largely of diffuse porous taxa.
- 7.3.5 The wood charcoal assemblage present in sample 1 from layer **404** would be suitable for further analysis. Such analysis would be expected to provide information concerning the full range of wood taxa present as well as the state of the wood before burning and also to possibly provide information concerning woodland management and the local environment.
- 7.3.6 No round wood of sufficient size for use in radiocarbon dating was present in the samples. Radiocarbon dating may be carried out using the wood charcoal fragments present in sample 1, although this would be affected by the potential long life of the material. Further analysis of the wood charcoal assemblage present in sample 1 may however yield some fragments with strong ring curvatures suitable for radiocarbon dating.

#### *Waterlogged plant remains*

- 7.3.7 The waterlogged plant macrofossil assemblage present in sample 1 from peat layer **404** includes seeds commonly associated with damp soils such as *Montia fontana* ssp. *chondrosperma* (blinks), *Juncus* spp. (rushes) and *Isolepis setacea* (bristle club-rush). Seeds commonly associated with disturbed soils and grassland include *Rumex acetosella* (sheep's sorrel), *Atriplex* sp. (orache), *Carduus* / *Cirsium* spp. (thistles) and *Poaceae* (grasses).
- 7.3.8 The waterlogged plant macrofossil assemblage present in sample 2 from peat layer **508** includes only seeds of *Juncus* spp. (rushes) and *Poaceae* (grasses).
- 7.3.9 No further analysis of the waterlogged plant macrofossil assemblage in the samples would be recommended due to the low density and diversity of material present. Processing of additional material for invertebrate remains would also be unlikely to yield sufficient material for detailed analysis.
- 7.3.10 No waterlogged plant macrofossils suitable for radiocarbon dating were present.

## **8 DISCUSSION**

### **8.1 Summary**

- 8.1.1 A total of five 10 by 3m trenches were excavated across the Site. The evaluation uncovered no archaeological remains.
- 8.1.2 Two trenches (1 and 2) in Area 1 revealed a 0.3m thick layer of topsoil overlying the natural sand.
- 8.1.3 Three trenches (3, 4 and 5) in Area 2 were much deeper revealing the natural sand geology between 1.15 and 1.5m bgl. The trenches also revealed a much deeper stratigraphy with a layer of peat immediately above the sand and a buried former topsoil sealing the peat. Pockets of aeolian sands overlay the buried soil and the overlying topsoil was much deeper than Area 1, at c.0.6m thick.



## 8.2 Conclusions

- 8.2.1 The archaeological results for Area 1 uncovered a simple stratigraphy revealing the natural sand overlain by a 0.3m thick layer of agricultural topsoil. No archaeological remains were uncovered.
- 8.2.2 Area 2 revealed a much deeper overburden to the natural sand which was uncovered at a depth between 1.16 and 1.5m bgl.
- 8.2.3 A layer of peat was uncovered immediately above the sand which may have archaeological significance owing to the results of previous excavations at the Torne Bank Fishery some 50m away from the south-west corner of the Site, across the canalized River Torne. Here the peat was dated to 11190-10700 BC and the early Post-glacial period (9350 and 8230 BC). Analysis indicated that the area was once marshland on the edge of a slow moving river or freshwater pond showing no evidence of human action. The same trial trenching revealed two pits which contained burnt stones and two flint flakes dated to the Bronze Age. The samples from this evaluation confirmed a wetland/grassland environment during the formation of the deposit with species morphologically similar to pioneer woodland trees making up the burnt material. It was not clear whether the burning was due to natural or human activity. The charcoal samples recovered were not large enough for radiocarbon dating.
- 8.2.4 Above the peat was a buried soil with topsoil characteristics suggesting that the former agricultural land surface was some 0.8m lower than today. A single sherd of pottery recovered from the layer dated the deposit to the post-medieval period. The buried soil was overlain by a 0.08-0.18m thick layer of wind-blown sand suggesting a period of agricultural inactivity following the buried soil.
- 8.2.5 Given the potential significance of the peat layer in light of previous excavation results to the south-west, the potential for uncovering archaeological remains associated with this deposit remains a possibility. Further sampling of the peat may be possible during the mitigation phase of construction works to assess contemporaneity of deposits with those identified at the Torne Bank Fishery and/ or to add to the local geological history.

## 9 STORAGE AND CURATION

### 9.1 Museum

- 9.1.1 The project archive resulting from the excavation will be deposited with North Lincolnshire Museum. The Museum has agreed in principle to accept the project archive on completion of the project, under the accession code **EPAZ**.

### 9.2 Preparation of archive

- 9.2.1 The complete site archive, which will include paper records and digital data, will be prepared following the standard conditions for the acceptance of excavated archaeological material by the North Lincolnshire Museum, and in general following nationally recommended guidelines (SMA 1995; IfA 2009; Brown 2011; ADS 2013). All archive elements will be marked with the site/accession code, and a full index will be prepared.





### **9.3 Discard policy**

- 9.3.1 Wessex Archaeology follows the guidelines set out in Selection, Retention and Dispersal (Society of Museum Archaeologists (SMA) 1993), which allows for the discard of selected artefact and ecofact categories which are not considered to warrant any future analysis. Any discard of artefacts will be fully documented in the project archive.
- 9.3.2 The discard of environmental remains and samples follows nationally recommended guidelines (SMA 1993; 1995; English Heritage 2002).

### **9.4 Security copy**

In line with current best practice (e.g. Brown 2011), on completion of the project a security copy of the written records will be prepared, in the form of a digital PDF/A file. PDF/A is an ISO-standardised version of the Portable Document Format (PDF) designed for the digital preservation of electronic documents through omission of features ill-suited to long-term archiving.



## 10 REFERENCES

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Wessex Archaeology, 2014b. Epworth STW, Epworth, North Lincolnshire. Written Scheme of Investigation for Archaeological Mitigation. WA 87971.02.



## 11 APPENDICES

### 11.1 Appendix 1: Trench context tables

<b>Trench 1</b>		<b>Dimensions: 10 x 3m Max depth: 1m</b>
<b>Context</b>	<b>Description</b>	<b>Depth (m)</b>
101	Topsoil – Mid yellowish brown loose silty sand with rootlets in the upper 0.05m and vegetation remains over	0 – 0.3
102	Natural – Light pinkish yellow loose sand with pinkish brown mottling due to bioturbation	0.3 - 1+

<b>Trench 2</b>		<b>Dimensions: 10 x 3m Max depth: 0.38m</b>
<b>Context</b>	<b>Description</b>	<b>Depth (m)</b>
201	Topsoil – Mid yellowish brown loose silty sand with rootlets in the upper 0.05m and vegetation remains over	0 – 0.28
202	Natural – Light yellow loose sand with mottled greyish to light brown mottling due to bioturbation and plough scars	0.28 – 0.38+

<b>Trench 3</b>		<b>Dimensions: 10 x 3.6m Max depth: 1.7m (max)</b>
<b>Context</b>	<b>Description</b>	<b>Depth (m)</b>
301	Topsoil – Mid yellowish brown loose silty sand with rootlets in the upper 0.25m and vegetation over	0 – 0.6
302	Subsoil – Yellow sand band (0.03m) over mixed orange and grey loose, compacted sand – Aeolian deposit	0.6 – 0.78
303	Buried Soil – Mid yellowish grey loose silty sand	0.78 – 1
304	Peat Layer – Greyish black clayey silt with extant root and rootlets within. Very distinct horizon to 303 above but undulates to 305 below	1 – 1.2 (max)
305	Natural – Light yellowish grey sand with orangey streaks and punctuated by 304 above. Large irregularly shaped and edged bioturbatory areas of disturbance from a combination of tree and possible animal burrowing were encountered	1.2 – 1.7
306	Natural – Mottled orange/greyish compacted loose clean sand below 305	1.7+

<b>Trench 4</b>		<b>Dimensions: 10 x 3.1m Max depth: 1.5m</b>
<b>Context</b>	<b>Description</b>	<b>Depth (m)</b>
401	Topsoil – Mid yellowish brown loose silty sand with rootlets in the upper 0.25m and vegetation over	0 – 0.68
402	Subsoil – Mid orangey yellow loose sand – Aeolian deposit	0.68 – 0.74
403	Buried Soil – Dark greyish brown loose silty sand	0.74 – 0.92
404	Peat Layer – Mid brown clayey silt with high organic compound containing root and rootlets below 405	1.16 – 1.42
405	Lower Buried Soil – Mid yellow brown loose silty sand	0.92 – 1.16
406	Lower Peat/Sand Band – Black with grey mottling, mixture of clayey silt sand below 404	1.42 – 1.5
407	Natural – Light greyish (leached) loose sand in patches immediately below the peat	1.5+
408	Natural – Orange loose sand with patches of bioturbatory mottling in patches where the peat is thinner or non-existent	1.5+



<b>Trench 5</b>		<b>Dimensions: 10 x 3.2m Max depth: 1.5m (ave.)</b>
<b>Context</b>	<b>Description</b>	<b>Depth (m)</b>
501	Topsoil – Mid yellowish brown loose silty sand with rootlets in the upper 0.25m and vegetation over	0 – 0.32
502	Made Ground Sand – Light orangey yellow loose sand filling a hollow depression formed by underlying layers	0.32 – 0.86
503	Pond Layer – Black clayey sand with undulating upper surface below the made ground sand	0.86 – 1.1
504	Outer Bank Layer – Dark grey mottled silty sand sloping down from west to east above 505	0.35 – 1.15 (0.25 thick at centre)
505	Bank Edge – Suimilar material to 504 above with a much higher proportion of organic material probably from vegetation on the former bank edge	0.35 – 0.9 (0.15m thick)
506	Bank Edge – Triangular shaped soil sloping sharply down from west to east made up of an orangey grey mixed silty sand situated to the east of the canalized River Torne	0.44 – 0.9
507	Buried Soil – Mid yellowish grey/brown loose silty sand. Thickest to west of trench and gradually petering out to the east	0.85 – 1.05
508	Peat Layer – Layer of peaty silty clay extending from the western trench edge and petering out some 2m to east. Occasional patches of similar material throughout	1.05 – 1.15
509	Sand Layer – Layer of greyish white (Leached) loose sand below the peat layer thickening to 0.35m towards the eastern end of the trench	1.15 – 1.35 (ave.)
510	Natural – Mixed orange/brownish loose sand, heavily bioturbated	1.35 – 1.5+
511	Natural – Orange loose sand below 510 with some bioturbatory disturbance	1.5+



## 11.2 Appendix 2: OASIS form

### OASIS DATA COLLECTION FORM: England

OASIS ID: wessexar1-188619

#### Project details

Project name	Epworth STW
Short description of the project	WB on geotechnical test pits - Evaluation of five trenches
Project dates	12-08-2014 -
Previous/future work	Yes / Yes
Type of project	Field evaluation
Site status	Local Authority Designated Archaeological Area
Current Land use	Cultivated Land 3 - Operations to a depth more than 0.25m

#### Project location

Country	England
Site location	NORTH LINCOLNSHIRE NORTH LINCOLNSHIRE EPWORTH Epworth STW
Postcode	DN9 1LE
Site coordinates	TA 476020 406626 53.8409661681 0.243613941042 53 50 27 N 000 14 37 E Point

Entered by	Neil Dransfield (n.dransfield@wessexarch.co.uk)
Entered on	29 August 2014

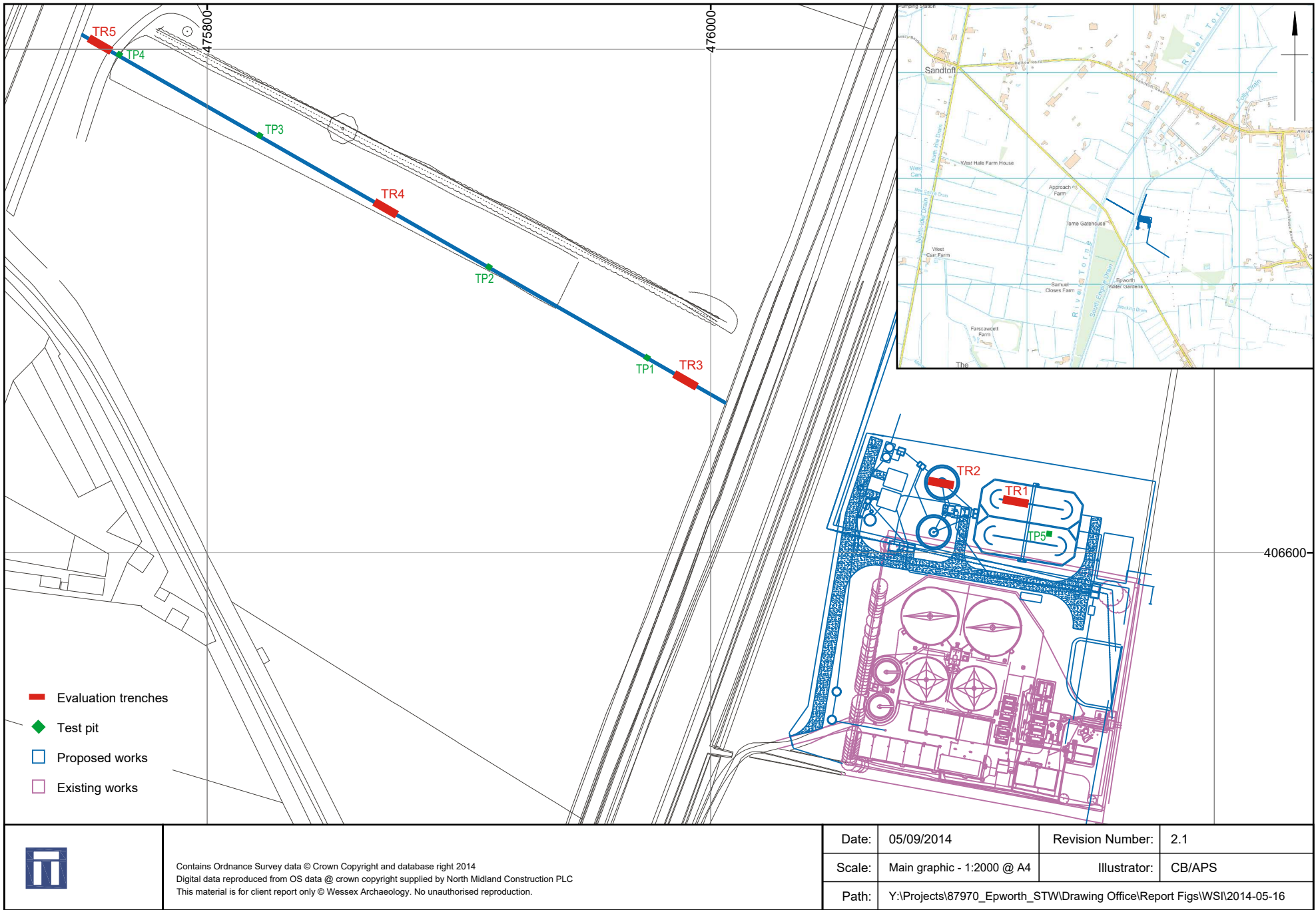


### 11.3 Appendix 3: Environmental data

Samples				Flot								
Feature	Context	Sample	Vol. Ltrs	Flot (ml)	% roots	Charred Plant Remains				Charcoal >4/2mm	Other	Analyses
						Grain	Chaff	Other	Comments			
/	404	1	13	350	90			B	<2mm Poaceae	89/196	A <2mm charred round wood. C charred tuber / rhizome	Wood charcoal
/	508	2	13	150	90					0/7	A* charred fungal sclerotia A <2mm charred round wood	None

Waterlogged Plant Remains			
Phase			
Trench			
Feature Type		Peat layer	Peat layer
Feature		/	/
Context		404	508
Sample		1	2
Volume (L)		2	2
<i>Viola</i> sp.	Violet	+	
<i>Rumex acetosella</i>	Sheep's sorrel	+	
<i>Atriplex</i>	Orache	+	
<i>Montia fontana</i> ssp. <i>chondrosperma</i>	Blinks	+	
<i>Carduus / Cirsium</i> spp.	Thistles	+	
<i>Juncus</i> sp.	Rush	+++	+++
<i>Isolepis setacea</i>	Bristle club-rush	+	
> 2 mm Poaceae	Large grass seed		+
Herbaceous plant roots / stems		++++	++++
Moss			+
Bark		++	
Charred fungal sclerotia			++
Charcoal >4/2		2/11	0/0
Invertebrate remains			+
Analysis		None	None

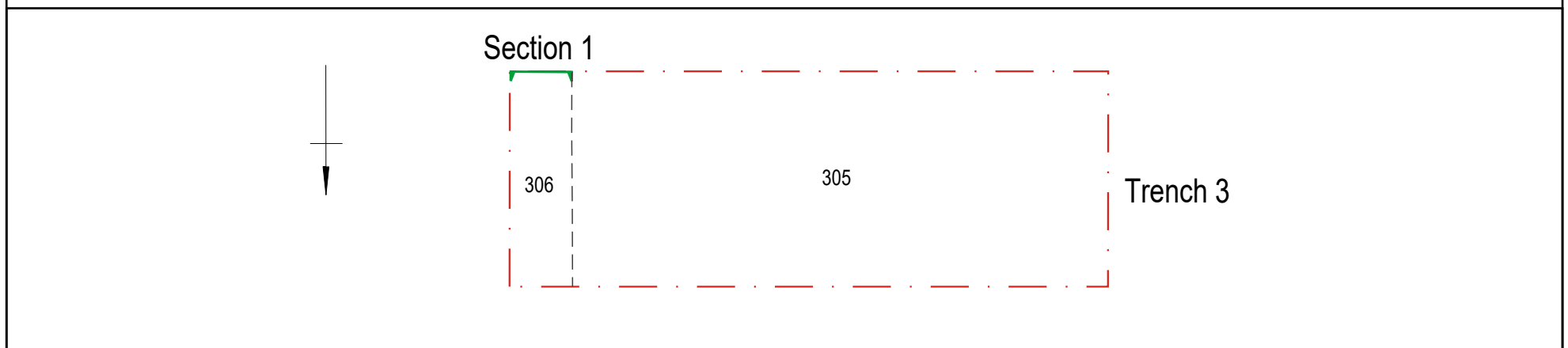
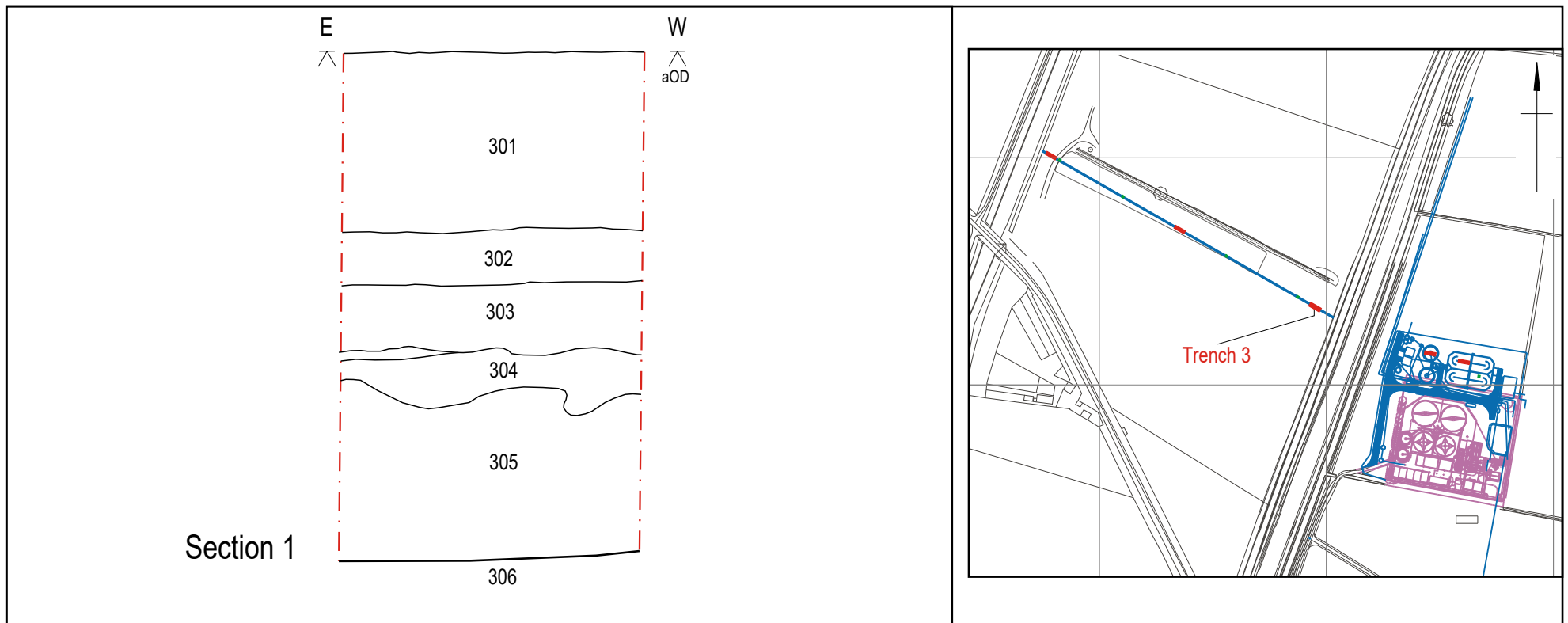
Key: + = <25, ++ = 25-50, +++ = >50, ++++ >100



Site location

Figure 1



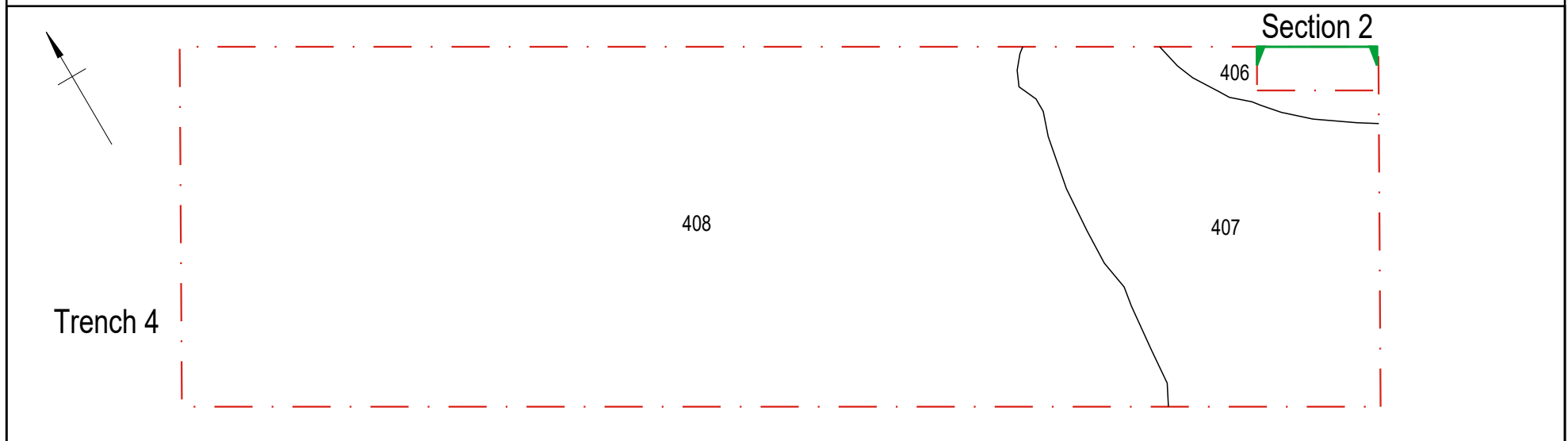
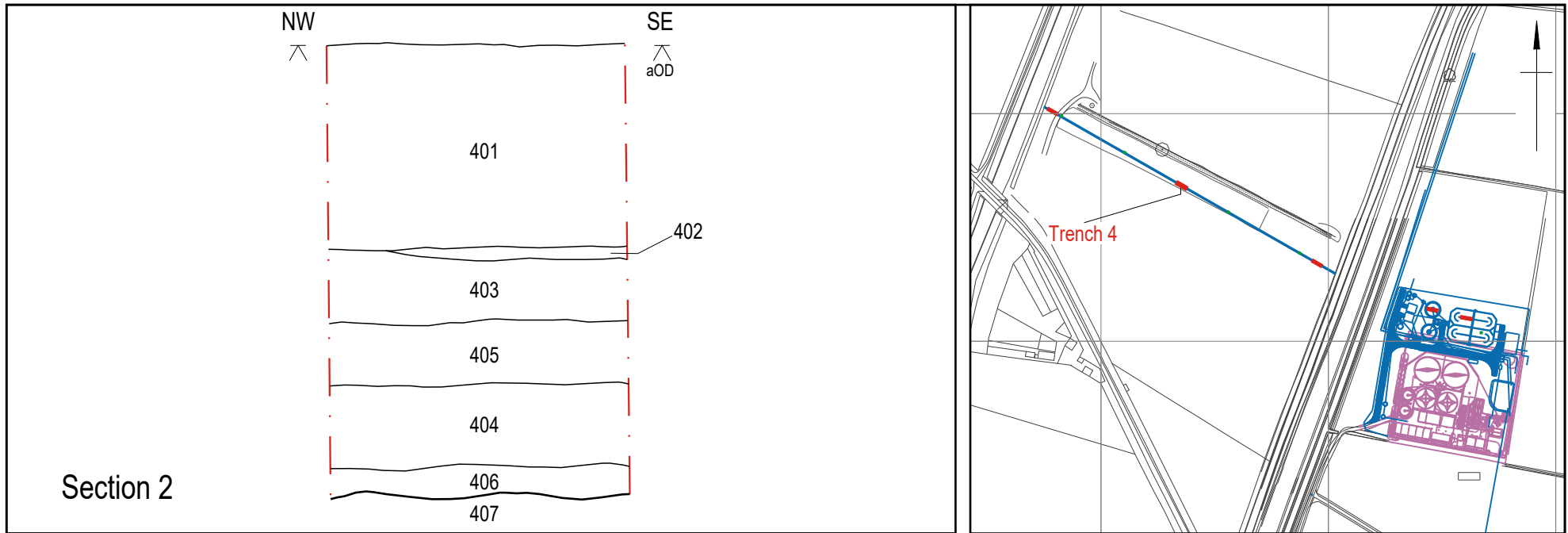



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Date:	08/09/2014	Revision Number:	2.1
Scale:	Section - 1:20 @ A4 Trench plan - 1:100 @ A4	Illustrator:	APS
Path:	Y:\Projects\87970_Epworth_STW\Drawing Office\Report Figs\WSI\2014-05-16		

Plan of Trench 3

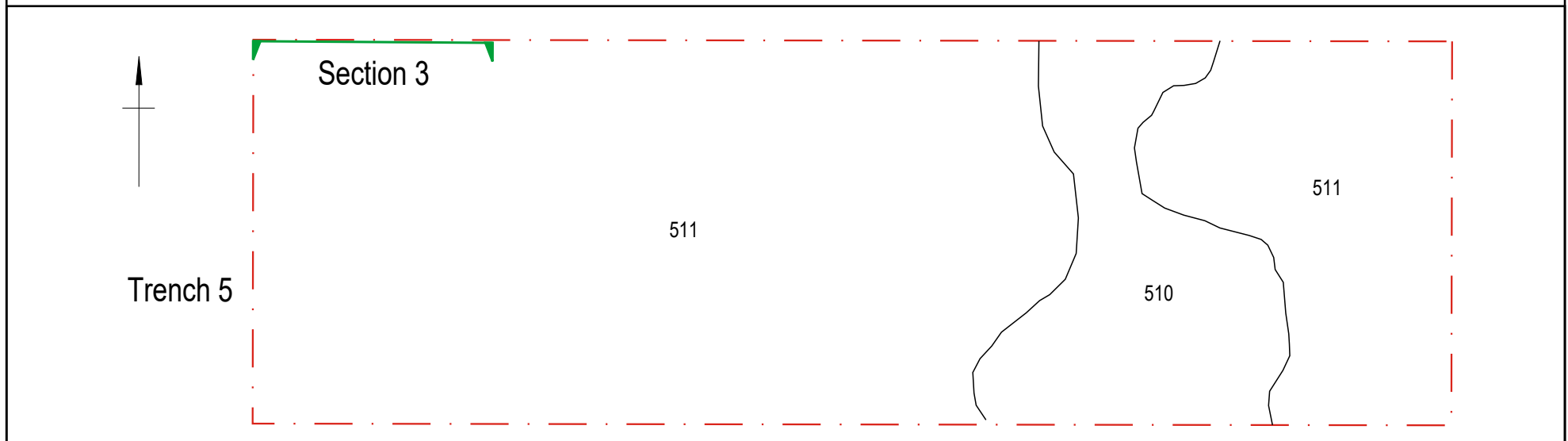
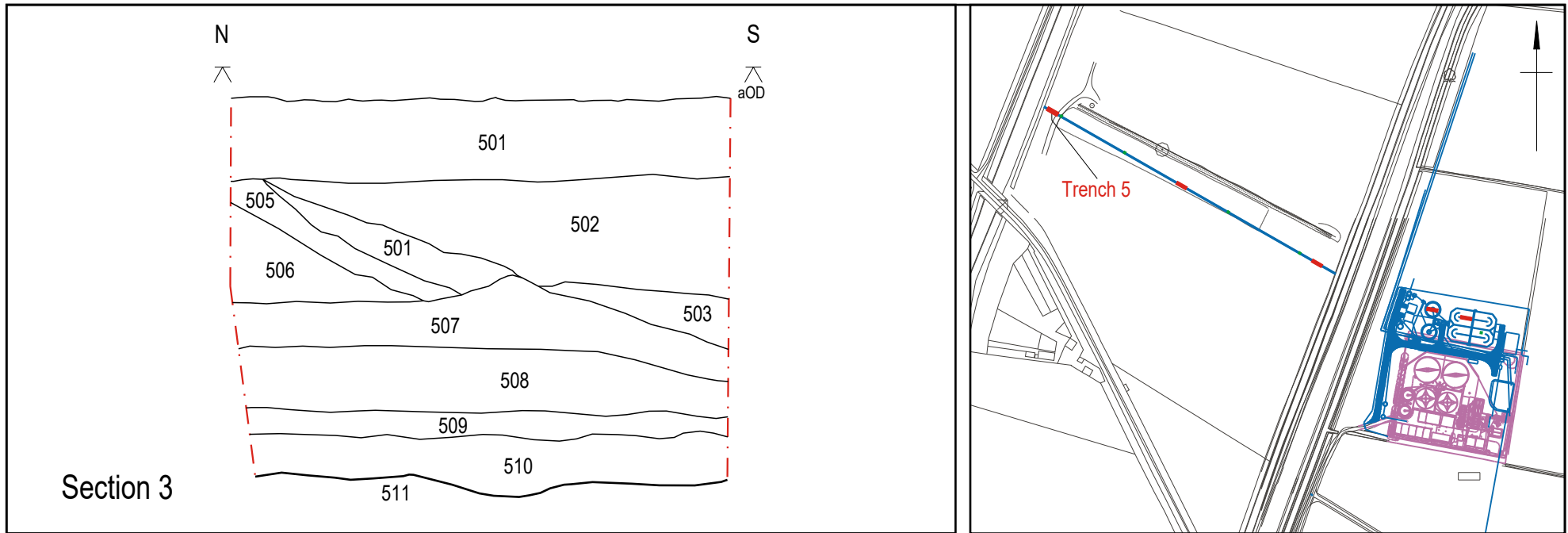
Figure 2



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Plan of Trench 4

Figure 3



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		Path:	Y:\Projects\87970_Epworth_STW\Drawing Office\Report Figs\WSI\2014-05-16		

Plan of Trench 5

Figure 4



Plate 1: Trench 1 stratigraphy



Plate 2: Trench 2 overview from east



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Plate 3: Trench 4 stratigraphy



Plate 4: Trench 5 stratigraphy

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Wessex Archaeology Ltd registered office Portway House, Old Sarum Park, Salisbury, Wiltshire SP4 6EB  
Tel: 01722 326867 Fax: 01722 337562 info@wessexarch.co.uk www.wessexarch.co.uk



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