

Report 2217



nau archaeology

## An Archaeological Watching Brief at the Britvic River Crossing, Norwich, Norfolk

ENF 124305

Prepared for  
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May 2010



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Location: Britvic River Crossing, west of Trowse Bridge, Norwich  
District: Norwich  
Grid Ref.: TG4448-7622 (North of River) TG 4448 7595 (South of River)  
HER No.: ENF 124305  
Client: Britvic Soft Drinks Ltd  
Dates of Fieldwork: 8, 10-12, 24-26 March, 6, 8, 13 April 2010

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## **Summary**

*An archaeological watching brief was conducted by NAU Archaeology for Britvic Soft Drinks Ltd at its facility in Norwich, Norfolk ahead of laying down an electricity supply cable across the River Wensum.*

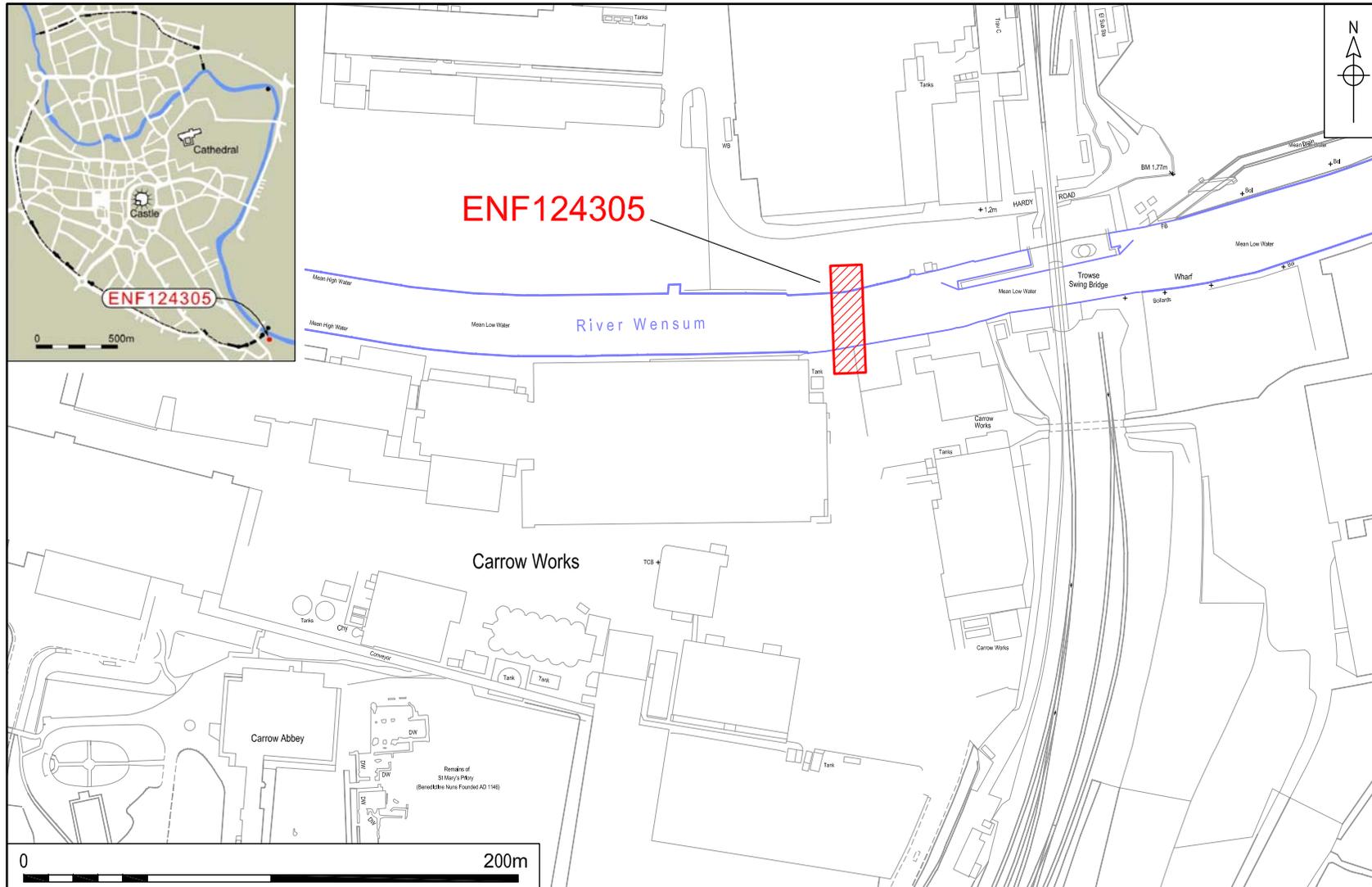
*Archaeologists monitored the mechanical excavation of two coffer dams on the north and south banks of the River Wensum and a connecting trench across the river bed in March and April of 2010. The archaeological fieldwork work and data from a previous geotechnical borehole survey identified that a significant depth (c.2m) of peat overlay sands and gravels on the north bank of the river. Though it is likely peat deposits also occurred along the south bank, they were apparently absent in the immediate area of the south coffer dam, perhaps removed by previous activity consolidating the river bank. No artefacts were recovered by the fieldwork, but significantly the project demonstrated the survival of a similar geological context, i.e. peat overlying river terrace sands and gravels, as was present at the nearby site of Carrow Road where prehistoric flint work had survived in situ. The depth of peat to the north of the river might enable the survival of organic archaeological remains at this location*

## **1.0 INTRODUCTION**

This work was undertaken to fulfil a planning condition set by Norwich City Council (Ref: 09/00600/F) and a Brief issued by Norfolk Landscape Archaeology (NLA Ref: CNF42541). The work was conducted in accordance with a Project Design and Method Statement prepared by NAU Archaeology (Ref. BAU 2217). This work was commissioned and funded by Britvic Soft Drinks Ltd.

This programme of work was designed to assist in defining the character and extent of any archaeological remains within the proposed redevelopment area, following the guidelines set out in *Planning and Policy Guidance Note 16: Archaeology and Planning* (Department of the Environment 1990). The results will enable decisions to be made by the Local Planning Authority about the treatment of any archaeological remains found.

The site archive is currently held by NAU Archaeology and on completion of the project will be deposited with the Norfolk Museums and Archaeology Service (NMAS), following the relevant policies on archiving standards.



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Figure 1. Site location. Scale 1:2500

## **2.0 GEOLOGY AND TOPOGRAPHY**

Fig.1

The site is located in the south east of Norwich within the flood plain of the River Wensum. The underlying geology in this part of Norfolk is Upper Chalk, in the area of the site overlaid by alluvium (Sheet 161 British Geological Society Solid and Drift edition). The 5m contour lies approximately 170m to the south of the River Wensum at this point.

The geology section of Mannvit Method Statement (Mannvit 2010) describes:

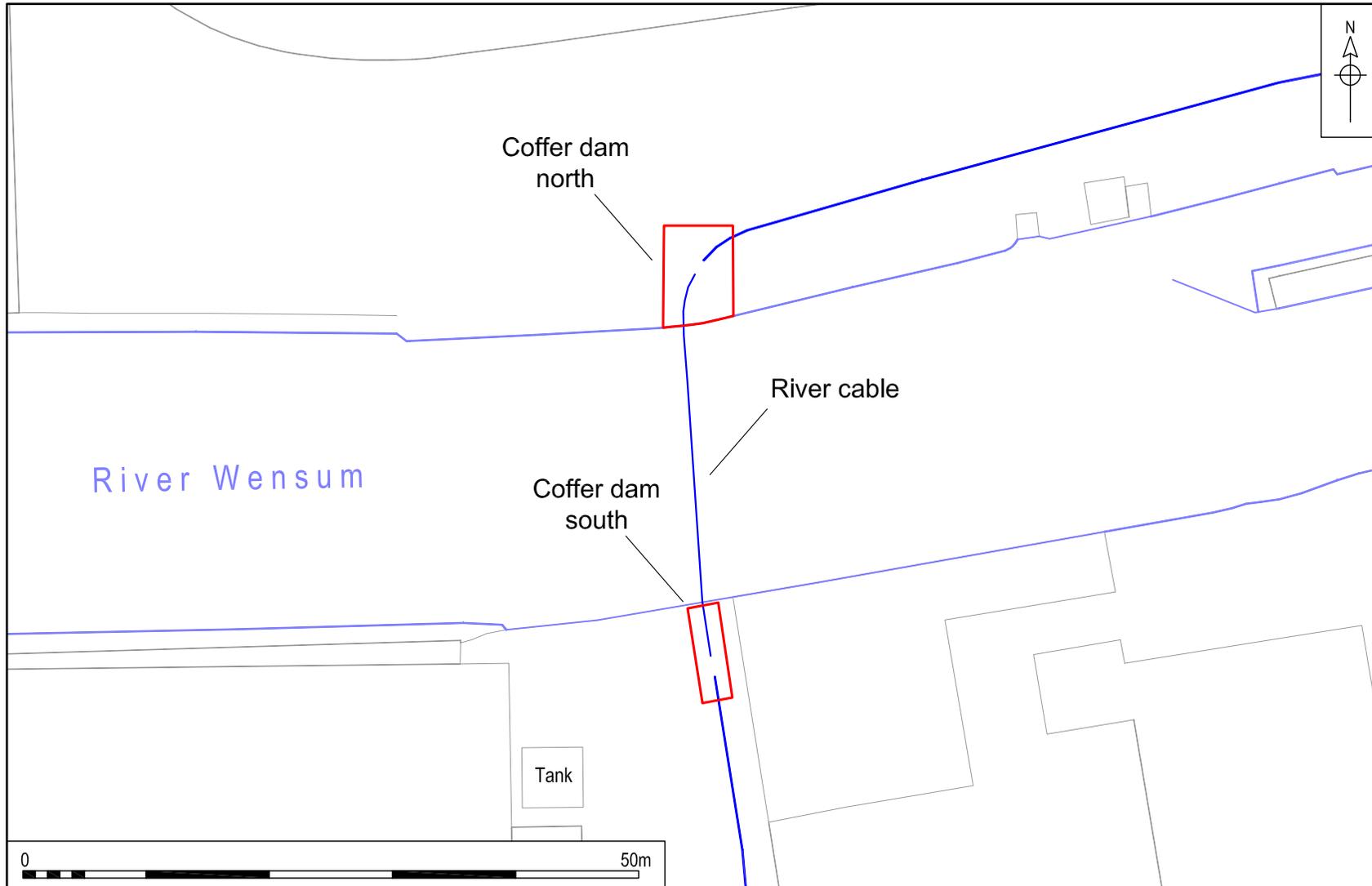
*Geological conditions in the Carrow area of Norwich are highly unusual because of the presence of deep ancient buried channels situated in proximity to the modern Wensum and Yare river valleys. These channels lie adjacent to and beneath the Carrow factory. The channels were filled with deposits of sand, silts, gravels and clay, during the Pleistocene and recent geological periods. In the historical past, river alluvium was deposited over the fluvio glacial deposits filling the two buried channels. The unusual ground conditions associated with the buried channels are compounded by the nature of the underlying Chalk bedrock at the factory. The depth to the Chalk bedrock varies from 4 metres to over 20 metres below ground (or river surface) level, being deepest along the centre lines of the buried channels. Probe sounding at the proposed crossing site was carried out in early June 2009. The hard bed comprises of sandy, stony gravel ('ballast'), and at its deepest level the top of the hard bed is at about -3.2m OD. The geology in the exploration holes, drilled in summer 2009 is similar to that described previously in boreholes in the area. In the upper part of the holes is a mixture of sand, silt and gravel, with peat (Fig. 3).*

## **3.0 ARCHAEOLOGICAL AND HISTORICAL BACKGROUND**

A search of the Norfolk Historic Environment Record (NHER) in the vicinity of the Britvic Site revealed the presence of archaeological remains spanning the Palaeolithic to 19th century. A selection of relevant entries are presented in the following section.

### **3.1 Prehistory**

An archaeological watching brief approximately 700m north-west of the Britvic site close to the River Wensum (Emery and Wiltshire 2000) NHER 26476 has provided a palynological analysis and some radiocarbon dates for peat deposits in a palaeochannel of the River Wensum. The findings suggest a pine, birch, oak and hazel forested Mesolithic (10,000 to 4001BC) landscape which had become more open by the Neolithic period (4000 to 2201BC), with cultivated soils present by the Bronze Age (2500 to 701BC). In the Iron Age (800BC to AD42) the remaining woodland cover had been further reduced. Radiocarbon dates from excavations elsewhere in Norwich suggest that peat developed diachronously across the Wensum floodplain in the early Holocene with the amelioration of cold conditions during the Younger Dryas/Loch Lomand at around 10,000 BP (uncal) (Murphy 1994).



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Figure 2. Location of coffer dams and river cable. Scale 1:500

Finds recovered from construction works in 1927-28 to the south of the River Wensum at the Carrow Works included hand axes identified by J.E. Sainty as Early Palaeolithic (500000 to 15001BC) Levallois flakes of Middle Palaeolithic date (150000 to 40001BC) and at least one tusk and teeth of a mammoth (Site record No 1158/ NHER No 473). Three flake-blades from the site are described as 'most likely of a Mousterian of Acheulian Tradition industry, if not Upper Palaeolithic' (Wymer 1985 p 60). A large flat backed blade core with opposing platforms recorded from railway construction works at Thorpe is considered possibly Upper Palaeolithic in date (40000 to 10001BC) (Robins 2006).

Excavations ahead of redevelopment at the Carrow Road football ground (NHER 26602) on the north of the Wensum recovered *c.*200 *in situ* lithics of Upper Palaeolithic date. A test pit and borehole survey at Riverside referred to in the Geology and Topography section of this report (Emery and Wiltshire *ibid*, Murphy 1997) mapped the extent, depth and character of the underlying deposits and revealed the presence of sand islands or bars below peat. Prehistoric activity at the Carrow Road site seems to have taken place on these sand islands or bars, suggesting activity was taking place on a sand bar or island in the river. Material from this period is extremely rare and this discovery is considered to be of national importance (Adams in prep). Other evidence from the site included Mesolithic flints Late prehistoric lithics dating from the Neolithic (4000 to 2201BC) and Bronze Age (2500 to 701BC) were also recorded from the Carrow Road site, as were medieval and post-medieval features, emphasising the extraordinary time depth of use of the Wensum Valley.

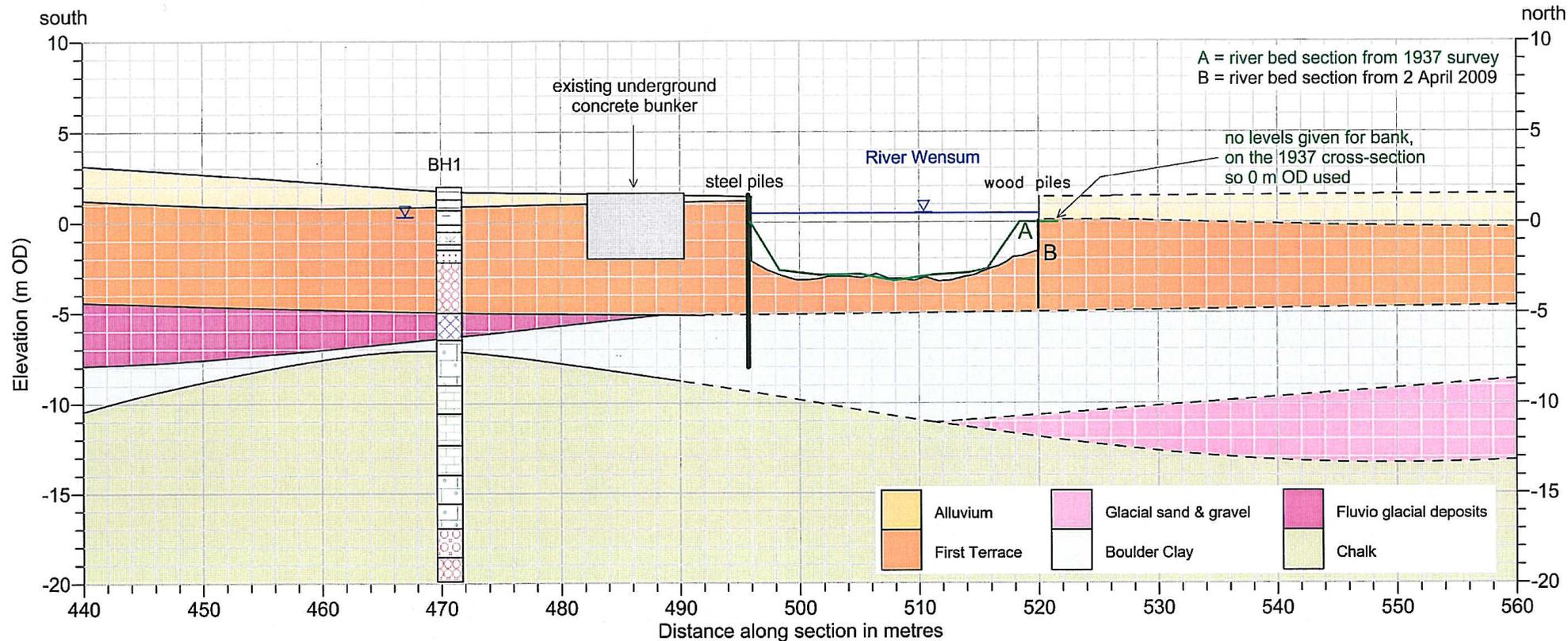
The mapping of Upper Palaeolithic Long Blade industries in Norfolk (Robins *ibid*) shows they are concentrated along larger river valleys and tributaries, with sites at Lynford (NHER 21499c2) Thetford (NHER 24849) and Hockwold cum Wilton (NHER 5307) appearing particularly rich in flint artefacts. Lithics at these sites appear to lie at interfaces between sands/gravels and overlying peats. Unfortunately these particular sites were all chance discoveries at which no further controlled excavations have taken place.

In 1887, on the southern side of the river some 60m to the north of the present site, a flint 'pick' was recovered. The 0.25m long implement was possibly actually an axehead and dated from the Mesolithic period (NHER 465).

### **3.2 Medieval**

Situated approximately 350m to the south-west of the site is Carrow Abbey (NHER 296), the site of a Benedictine Priory built in 1146 following a gift of land from King Stephen. The main surviving building is the Prioress' House, heavily altered in 1514. During the dissolution the majority of the buildings were destroyed, but the Prioress' House was presented by Henry VIII to Sir John Shelton.

The surviving foundations of the priory church and the eastern range of the monastic buildings are a Scheduled Monument. The church of St James, the parish church which stood on the site, was demolished when the priory was dissolved and no remains are visible.



**BOREHOLE BH1:**

|      |             |  |
|------|-------------|--|
| 2    | TOPSOIL     | Made ground : Tarmac   |
| 1    | TOPSOIL     | Made ground : black sandy gravel of angular to rounded fine to coarse flint, slag, brick and ash   |
| 0    | TOPSOIL     | Made ground : very soft to soft dark grey/black sandy slightly gravelly clay. Gravel is angular to sub-rounded fine and medium of black flint and chert. Possible quartzite      |
| -0.5 | SILT        | (A)  |
| -1   | PEAT        | Dark brown to brown spongy amorphous peat with rare fine gravel of chert Occasional gravel size pockets of sand & mica. Rare rootlets. Slight nitrogen odour (Alluvial Deposits) |
| -1.5 | PEAT        | As above but from 3.2 to 3.5 m becoming fibrous with depth   |
| -2   | SAND        | Dark grey and brown silty slightly gravelly sand. Gravel is angular and sub-angular fine chert and flint (First River Terrace Deposits)  |
| -3   | GRAVEL      | Dark brown and green sandy gravel of angular to rounded fine to coarse flint and quartzite. Occasional flint cobbles (First River Terrace Deposits)                              |
| -4   | CLAY        | Very soft to soft cream gravelly clay. Gravel is angular and sub-angular fine and medium of chalk (Upper Chalk)  |
| -5   | CHALK/FLINT | Flints and putty chalk   |
| -6   | CHALK       | Chalk  |
| -7   |             |  |
| -8   |             |  |
| -9   |             |  |
| -10  |             |  |



Figure 3. Geological section. Scale 1:500

### **3.3 Post-medieval to 19th Century**

Carrow House (NHER 26478) was constructed in 1861 on the site of Carrow Abbey (NHER 296). The house was extended in 1895, a conservatory added and a trapezoidal garden laid out in 1908. Extensions to the house, made in 1890, may have been by Boardman. The house has wood carving by James Minns, high quality internal decoration, and a conservatory with Art Nouveau stained glass and tessellated floors by Boulton and Paul.

The earliest part of the Carrow works (now the Britvic facility) is a factory complex first built in 1856 by the Colman family. Some parts of this complex are listed by English Heritage, including the main block 7/7A/8/8A, which is of brick and dates variously to 1870, 1881 and 1898. Block 60 a former barley and groat mill, is also listed, as is Block 92, parts of which date variously to 1857, 1874 and 1878. This building was the original offices to the paper mill yard. Other buildings in the complex date to around 1930.

The most recent archaeological intervention in the vicinity of the present site was a Watching Brief (NHER 52825) during the construction of two new storage silos lying some 370m to the south west of the current site (Boyle and Crawford 2009). An area of 50m<sup>2</sup> was monitored along with four smaller trenches for new stanchions. No archaeological features were encountered. It is likely, due to the presence of natural deposits in all of the stanchion trenches, that the area was landscaped prior to the construction of the current buildings, removing any flood deposits and gravels overlying the natural chalk along with any archaeological features. One trench showed a demolition layer probably related to the demolition of earlier buildings on the site.

## **4.0 METHODOLOGY**

The work required the laying of eight to twelve new conduits across the bed of the River Wensum and fairly extensive engineering works over an area of c. 86m<sup>2</sup> on both north and south banks of the river (Fig. 4).

The objective of this watching brief was to recover as much information as possible on the origins, date, development, phasing, spatial organisation, character, function, status, significance and the nature of social, economic and industrial activities on the site. The Brief required that the excavation examined the area inside the coffered embayments, to the depth of the gravels and further excavations and excavations in the river bed to be monitored by the archaeological contractor.

The health and safety considerations associated with the hazards of working within the coffered area combined with the requirements of the Environment Agency that no water was to be removed from the coffered areas curtailed manual excavation at the site. Instead examination was limited to observing material during its mechanical excavation from the coffered areas and deposition into lined skips. Archaeological work was limited to a rapid scan of machine excavated material as it was placed into skips. As a result no detailed record of the deposit sequence was obtained and no environmental samples were taken. As excavated material was stored in metal skips it was not possible to metal detect these deposits.

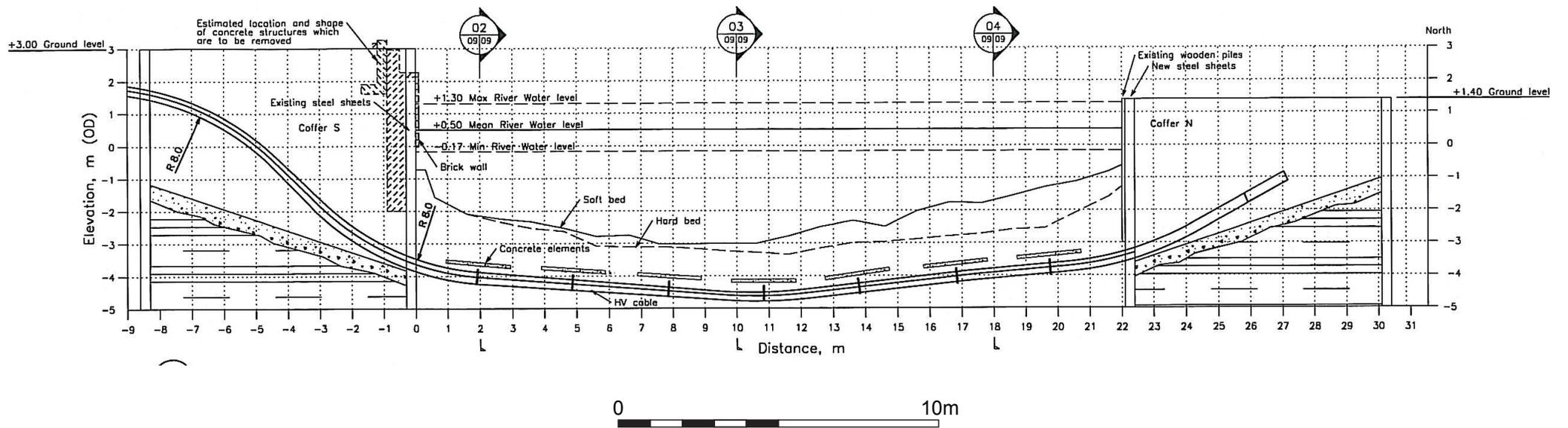


Figure 4. Trench excavation section. Not to scale.

Colour, monochrome and digital photographs were taken of various stages of the work undertaken.

Site conditions were good, with the work taking place in fine weather.

### **Coffered Areas**

The sides of the coffered areas were formed using eight to nine metre lengths of driven steel interlocking piles. Vibratory pile driving was used to drive the piles. The coffered chamber on the south side of the river (**Coffer A**) measured c. 8m by 2.5m in plan. Here the sheet piles were about 9m in length because of the higher ground level than on the north bank. The river side of the structure butted against the existing river bank piling.

The coffered area to the north of the river (**Coffer B**) measured 8m by 5.7m and constructed in similar fashion to Coffer A with 8m and 9m lengths of sheet piles.

Machine excavation of the coffered areas was carried out with a hydraulic 360° excavator using a toothless ditching bucket under constant archaeological supervision. Depths of deposits given in the results section have been arrived at from field observation and borehole data generated by geotechnical work (Drawings of borehole data supplied by Mannvit, copies of which are held in the site archive).

### **Trench in river bed**

The trench in the river bed was excavated by an hydraulic 360° excavator from a floating platform on the river, The trench was excavated to 1.5m below firm/hard bottom of the river, equivalent to a maximum depth of about -4.8m OD, in the deepest part of the river, at approximately 5.3m below mean river water level. Soft material was placed in barges and disposed of at a designated spoil area owned by the Broads Authority.

## **5.0 RESULTS**

### **5.1 Coffer A**

Located south of the River.

Plates 1 and 2

Modern ground level 3m OD

There appeared to be no peat deposits within the area machined for the coffer dam at this location. The lowest deposits encountered consisted of a depth of c.2m of grey brown sand silts, overlaid by a considerable depth (c.3m) of modern fill material and reinforced concrete used to stabilise the bank at this location. A brick retaining wall and revetment had been inserted against the river frontage perhaps of early 20th century date.



Plate 1. South Cofferd Dam, showing revetment wall, looking east



Plate 2. South Cofferd Dam, modern make up and reinforced concrete, looking north-east

## 5.2 Coffers B

Located North of the River.

Modern ground level 1.40m OD

Plate 3

The lowest depth of machining in this coffer coincided with gravels and sands that were present at a depth of approximately  $-3.2\text{m OD}$ . Overlying these gravels were fibrous and amorphous peats, approximately 2m in depth. Overlaying the peats was a dark grey silt up to 1.5m of containing at least one well defined layer of crushed chalk, interpreted as consolidation of the river bank at this location. Overlaying the grey silts was a mid brown layer of modern soils.



Plate 3. North Coffers Dam, mechanical excavation of peat, looking south.

## 5.3 Trench in river bed

Plate 4

The river dredging was required to reach a depth of  $-4.80\text{m OD}$  at its maximum depth, with the top of gravels present at  $-3.2\text{m OD}$  at their deepest point (Fig 4). Observation of the dredging was limited to watching material being mechanically excavated and placed within a barge, but it was possible to note the presence of what appeared to be peat deposits overlying sands and gravels present at the limits of the mechanical excavation.



Plate 4. Excavation of trench across river bed, looking north from south bank of River Wensum

## 6.0 THE FINDS

Only finds of obviously modern date were recovered from the mechanically excavated material and these were discarded on site.

## 7.0 CONCLUSIONS

Despite limitations to the detailed examination of deposits revealed in the coffer dams and river, it has proved possible to make some informative observations of the deposit sequence at this location on the River Wensum.

Most interestingly, the watching brief indicated that a considerable depth (up to 2m) of peat is present along the north bank of the River Wensum, where it overlies gravels and sands. This provides a comparable geological setting to that revealed at the Carrow Road site (NHER 26602) approximately 450m to the west of the Britvic site, where *in situ* scatters of Upper Palaeolithic worked flint lay at the interface of sands and gravels sealed by early Holocene peats (c.10,000 BP). Artefact evidence suggests other periods of prehistoric activity were represented at the Carrow Road site.

The similarity of geological sequence at both sites highlights the potential for remains of prehistoric dates to survive *in situ* along the north bank of the River Wensum in the vicinity of the north coffer dam. In addition, organic remains of prehistoric and historic might also survive within the peat.

Peat deposits appeared to be absent in the area of the south coffer dam (Coffer A). This is a surprising finding as peat was logged in the geotechnical survey (shown as BH1 on Fig. 3, dwg ref DR-200-010-1. 901.003, copy held in site archive). One possible explanation is that peat deposits might have been locally

removed during earlier ground works, perhaps for example during the insertion of a revetment wall and piles along the riverbank.

The current ground level on the south side of the river was somewhat higher at 3.0m OD than that of the north (1.40m OD) and probably reflects the natural topography and considerable making up of the ground level at this location.

While observation was problematic, it also appears that peat deposits overlying sands and gravels were present within the channel of the River Wensum at around -4.80m OD.

While it proved disappointing that more detailed work was not feasible, the presence of an archaeologist during the most invasive elements of the work schedule meant that in the event significant archaeological remains had been present then there was adequate provision in place to have dealt with them.

Recommendations for future work based upon this report will be made by Norfolk Landscape Archaeology.

## **Acknowledgements**

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The project was managed by Nigel Page of NAU Archaeology and monitored on behalf of Norfolk Landscape Archaeology by Ken Hamilton.

The report was illustrated by David Dobson and edited by Jayne Bown.

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