LANGFORD DITCH CHUNKER
CHELMER AND BLACKWATER NAVIGATION
NEAR HEYBRIDGE MILL
HEYBRIDGE
ESSEX

ARCHAEOLOGICAL MONITORING AND RECORDING

Essex County Council
Field Archaeology Unit

August 2010

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As part of our desire to provide a quality service, we would welcome any comments you may have on the content or the presentation of this report.

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LANGFORD DITCH CHUNKER
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HEYBRIDGE
ESSEX

ARCHAEOLOGICAL MONITORING AND RECORDING

Client: Environment Agency
FAU Project No.: 2143
NGR: TL 8530 0812
OASIS No.: 79614
Dates of Fieldwork: February & March 2010

1.0 INTRODUCTION

A programme of archaeological monitoring was undertaken by Essex County Council Field Archaeology Unit (ECC FAU) on the removal and replacement of a late 18th century timber culvert, known locally as a 'chunker', beneath the historic Chelmer and Blackwater Navigation. The work was commissioned by the Environment Agency and carried out in accordance with a brief issued by the Historic Environment Management team of Essex County Council (ECC HEM), who also monitored the work on behalf of Maldon District Council.

The Blackwater Navigation was built between 1793 and 1797 to make the River Chelmer navigable between Chelmsford and Maldon. A new section of canal was cut to bypass Maldon and provide a new route to Heybridge Basin, which in the 19th century led to the growth of Heybridge as a port to rival the existing port at Maldon. Along the new route, timber culverts were laid beneath the canal to carry existing streams, one of which survives in the section between Heybridge Mill and Black Bridge. At this point the canal cuts through the important Late Iron Age/Roman settlement of Elms Farm, the site of the 1993-5 archaeological excavations in advance of the construction of the Temple Way housing estate.

Copies of the report will be supplied to ECC HEM and the Essex Historic Environment Record (EHER) at County Hall, Chelmsford. The archive will be stored with Colchester Museum. An OASIS online record has been created at *http://ads.ahds.ac.uk/oasis/index.cfm*.

2.0 BACKGROUND

2.1 Site location and description

The section of canal subject to the monitoring and recording works lies in the western side of the historic town core, between Heybridge Mill and Black Bridge (TL 8530 0812, fig. 1). To the north and west are the modern housing estates of Crescent Road, Temple Way, etc. To the south is Heybridge Mill House, set within relatively extensive gardens, and beyond this is a modern industrial estate. Despite the proximity of the housing estate and town, the immediate area surrounding the site remains as a public amenity and there are public footpaths along the canal.

The chunker is elm-built and carries water from the Holloway Road Ditch and the Langford Ditch. Langford Ditch is an historic watercourse that winds around modern balancing ponds then passes under the canal into the garden of Heybridge Mill House to the south-east to join the River Blackwater past Anchor Lane (fig. 1). The chunker is buried beneath the canal, approximately 2m below current water level and the artificially-raised canal banks either side.

2.2 Planning background

A project appraisal report was prepared by the Environment Agency (EA) for the replacement of the chunker with a new 1.2m diameter pipe due to a partially-collapse and in January 2009 the EA approached the Essex County Council Historic Environment Branch (ECC HEB) for advice on the impact of their proposals. In view of the historic importance of the Chelmer and Blackwater Navigation and the chunker as a little-known component of it, plus the wider archaeological significance of the area, the HEB informed the Environment Agency that an archaeological monitoring and recording programme should be included as part of the works.

2.3 Historical and archaeological background

Information was obtained from the Essex Historic Environment Record (EHER) and research undertaken at the Essex Record Office, Chelmsford, to assess the archaeological significance of the site and understand the chunker in relationship to the construction and operation of the Navigation. Relevant HER and documentary references are supplied with

the figures and historic maps are included as figures 2-4, generally enlarged in the report for greater clarity.

2.3.1 Archaeological background

The site is located within a highly significant archaeological/historical landscape with a range of findspots and investigations being recorded at Heybridge from the 1880s to the 1980s. Known remains span the prehistoric to Saxon periods and are well-documented by Wickenden (1986).

A large Iron Age, Roman and early Saxon settlement site was excavated at Elms Farm in 1993-5, immediately to the south-west of the chunker replacement works (EHER 17444). A large area of this settlement was exposed over 20ha, including a road network, temple complex, occupation plots, processing and rubbish disposal areas, and communal open spaces. Field systems and funerary areas were also encountered on the settlement peripheries (Atkinson and Preston 1998). Further parts of this settlement were investigated to the north along Crescent Road in the 1970s (Wickenden 1986) and in 2002 (Roy 2003). It is highly likely that the below-ground remains of trackways, enclosures and occupation features extend eastwards of the known site. Indeed, further LIA and Roman settlement remains were found at Holloway Road, just to the northwest of the Chunker site (EHER 14650).

The settlement was abandoned in the early Saxon period and the general area seems to have reverted to farmland, probably mainly pasture in the immediate vicinity.

The Langford ditch is probably of late medieval or early post-medieval origin and is therefore a historic element of the landscape that passes via the chunker through the gardens of Mill House, a grade 2 listed property dating to the 18th century (EHER 38245, LB no. 464215). Heybridge Mill, built in the late 18th century, is no longer standing.

2.3.2 Historical background

The concept of constructing a navigation between Chelmsford and Maldon was first put forward in 1677 (HER 15085). Chapman and Andre's 1777 Map of Essex (fig.2) shows the pre-Navigation landscape. In the immediate vicinity of the chunker stands Heybridge Mill (labelled as a corn mill in figure 2) and marshy flood plains either side of the intended route.

The Navigation was established 1793 under an Act of Parliament in order to make the Blackwater navigable between Chelmsford and Maldon (HER 15085). Shares were sold by the Company of Proprietors of the Chelmer and Blackwater Navigation Ltd in order to buy

parcels of land for the cutting and towpath (EHER 15085). Part of the 1792 land survey is included in figure 3, which shows the existing and proposed routes, and land parcels purchased by the company.

The construction work was carried out between 1793 and 1797. A channel was cut at the confluence of the Chelmer and Blckwater at Beeleigh Abbey to Heybridge Basin by navvies who had worked on the recently-completed Ipswich to Stowmarket navigation.

Where existing streams crossed the route, wooden culverts were put in place to allow their continued flow beneath the canal and prevent flooding (www.chelmercanaltrust.co.uk). These chunkers were built from elm, a material that survives well in waterlogged conditions. Two chunkers were built around Heybridge, the existing one on Langford Ditch and the other downstream between the Bentalls Shopping Centre and Sadd's Dam, which has already been replaced (S. Dunn pers. comm.). A third is believed to be situated to the south at Oak Tree Meadow on the other side of the canal to the Tesco superstore. Some time ago this failed and was sealed with metal sheeting (S. Dunn pers. comm.).

With the completion of the Navigation, small-berthed sea-going vessels could navigate directly to Heybridge, nearly one mile closer to inland settlements (Crane 1972). Heybridge became a new centre of trade as entrepreneurs moved in (Crane 1972), while improvements in transport costs between Maldon and Chelmsford led to an increase in commercial trade and further prosperity for Maldon (HER 15085).

The 1874 first edition Ordnance Survey map shows the existing route of the Blackwater through Heybridge Mill and the new 'loop' of the navigation around the town (fig. 4). Langford Ditch is immediately to the north, which flows through the chunker beneath the canal and again under Anchor Road to join the Blackwater that runs under 'Hey Bridge' and into the Maldon estuary.

3.0 OBJECTIVES

The purpose of the monitoring works, as stipulated in the brief (ECC HEM 2009), was twofold. Firstly to monitor the cutting of the new culvert trench across the navigation and record the section through the canal and any other features or finds, and secondly to make a detailed record of the chunker. The record would address several issues: method of

construction, materials, and to produce a drawn survey and full photographic record, the latter being dependant on the condition of the chunker and health and safety considerations.

The regional Research Framework identifies (Brown & Glazebrook eds. 2000) identifies the study of navigable waterways and canals, and their associated structures, as being of importance for further study.

4.0 DESCRIPTION OF WORKS

In recent years, a small part of the roof of the Langford Ditch chunker collapsed, stopping the water flow and putting the surrounding low-lying land at risk from flooding. Sand bags were added as a temporary seal and a pumping station built to draw water from the channel into the canal. In 2009 it was proposed to remedy the situation by replacing the chunker with a 1.2m diameter pipe (www.chelmercanaltrust.co.uk) and work began in January 2010.

To enable the replacement works to proceed safely and efficiently within a confined space, an exact working methodology was put in place by the contractors. A 4m-wide coffer dam constructed of steel sheet piles was inserted around the area of the new pipe and chunker at the start of works and water from the canal emptied by pumps situated on a pontoon positioned adjacent to the dam. Once emptied, a mechanical excavator was used to dig out the material over and around the chunker and the spoil loaded into skips which were removed from inside the coffer dam by crane (plate 1). Lengths of approximately 4m were exposed at a time, which were then sawn and hoisted by crane onto the pontoon where they were kept wet and examined in further detail. Monitoring visits were organised by prior appointment and timed to coincide with digging works to expose the chunker.

The area within the coffer dam remained waterlogged during the excavation and at times, particularly after heavy rain, large amounts of water had to be pumped out of the coffer dam. On a potentially dangerous site such as this, the contractors supplied full safety gear and a health and safety induction. Access into the excavation area below was possible under the supervision of the main contractor. It was quickly established that the deposits overlying the chunker were of little archaeological importance, so understanding and recording the chunker became the main priority.

A series of photographs (digital and 35mm black & white print were taken to provide a record of the monitoring works. General and specific shots were taken of the chunker showing

constructional detail and historic fixtures. A representative selection of photographs is reproduced at the back of the report as plates 1-12. The remainder can be found in the archive.

A location/block plan was produced to show the approximate route of the chunker and area of excavation (fig.1) and documentary and cartographic research undertaken to investigate its origins and significance of it to the Navigation (section 2.3).

5.0 ARCHAEOLOGICAL MONITORING

Monitoring began at the south-east end of the coffer dam where the canal bank was excavated to the level of the chunker under archaeological supervision. Once its presence was confirmed, material was removed either side to fully expose and lift sections of it by crane. Initially a c.4m-long length was exposed that included the exit point into the stream on the mill side, which was drawn and recorded (fig. 6). Further visits established that the chunker's construction was largely uniform, but also that there was little chance of identifying and recording associated archaeological features and deposits (e.g. construction cuts and fills) because of the waterlogged unstable soils and unavoidable disturbance caused by the excavation works.

5.1 The excavation

The chunker was located 2m below the canal waterline, at 1.22m OD (fig. 5). The material removed above and around it was poorly-structured from continuous wetness, heavy rain and the movements of the mechanical excavator/personnel/skips in a confined area (plate 1). However some evidence of the survival of stratified deposits was observed beneath the canal bank towards the south-east end, consisting of natural deposits of a mid brown clay over a thin deposit of naturally-derived gravely clay and natural 'blue' clay (plate 2). Their presence indicates the chunker was inserted into a trench cut into the deposits from former ground level, i.e. before the banks either side were added, although any such construction cut was unrecognisable. It was however found that the chunker was built on a gravel bed, which would have been important in levelling the structure and ensuring the correct fall. No specific evidence for a canal lining was identified during the excavations.

Some late Victorian glass and stoneware bottles were recovered when the bank was under excavation. Two unstratified Late Iron Age and Roman pottery sherds were found by

contractors after the chunker was removed (see section 6.0), presumably deriving from features/deposits of this date disturbed by the construction of the chunker and canal.

5.2 The chunker

The chunker (plates 3-6) is a wooden structure that spans the width of the canal on a north-west to south-east alignment and finishes beneath artificial embankments either side. It is approximately 33m in length, 1m-wide and 0.6m deep and built from 3 inch (70mm) thick elm planks. Elm is often used in waterlogged conditions for its preservative qualities. Indeed, despite the partial collapse in the top (cause unknown) the timber has survived remarkably well over the past two hundred years.

Viewed from above, the top of the chunker is constructed mainly from adze-worked c.9-10 inch (230-260mm) and 16 inch-wide (40mm) planks nailed onto heavy 0.42m-wide side walls (fig. 6a) in lengths of between 3.8 and 5m per section, as observed. For the roof, plank length varies from 0.9m (the minimum) to 1.2m, roughly-cut, forming irregular edges (fig. 6a) and thickness is uniform at 0.08m (3 inches). The nails form two rows, two either side of the smaller planks and four for the larger ones. At the base, the planks are more regular in size.

The south-east end, which drains back into the stream within the grounds of Heybridge Mill House, had been kept in position by large 1.6m stakes either side (fig. 6a), made from a single split piece of timber, but removed by machine before the top of the chunker was reached. These were photographed together after the structure was lifted (plate 7). Other stakes were apparently present on each section (B. Parmenter pers. comm.). The south-east end was braced diagonally, the top part of which was broken off during machining (fig. 6b and plate 5). Three discarded/disturbed broken stake-ends were found in the vicinity, one of which had a curious square cut-out end (plate 8).

Closer inspection, once parts of the chunker had been lifted and placed on the pontoon (plate 9), revealed that the structure was built in varying lengths of approximately 3.8m (the first section removed) to over 5m. This was presumably dictated by the availability of long lengths of planking for the side walls. Each section was joined at the sides by slightly tapered halved joints bolted top and bottom (fig. 6a and plate 10). Although varying in length, each section has the same joints each end - one ‘outer’ and one ‘inner’ joint (fig. 6a and plate 10). The iron bolts are badly-corroded, as might be expected (plate 11). The middle section has additional wooden planks nailed to the top either side, which is not typical (plate 12) but most likely added for extra strength and is not related to the damaged section, which is a modern

collapse. The north-west end extended beyond the coffer dam and was therefore not exposed in the works.

6.0 **FINDS** by Joyce Compton

A small amount of material was collected from the canal bank by the contractors and comprised the following:

- Two square-sided glass patent-medicine bottles, one complete and unmarked, but base embossed with 'B & FB Co' (195mm tall), the other has hole in shoulder, embossed on the front with 'F.A. COLE COLCHESTER' (120mm tall)
- Complete stoneware blacking-type bottle, unmarked (80mm dia base, 185mm tall)
- Copper-alloy sheeting decorative roundel (77mm dia) with remains of iron attachment; annular groove 8mm in from edge; prominent central motif in the form of an eight-petalled daisy-type flower

All of these finds are late Victorian, dating to the late 19th or early 20th century.

Two iron bolts or heavy-duty nails (intrinsically undatable) were also collected from excavated deposits close to the canal bank. The first has a square-sectioned shank and 23mm dia circular head; length 65mm, the tip is missing. The second is in poor condition with mineralised wood attached, length 120mm, and has a square-sectioned shank, which tapers to a point, and a 35mm x 35mm square head, at least 10mm deep. These were photographed for the archive. All of these finds have been discarded.

In addition, two unabraded pottery sherds were collected from around the chunker and photographs supplied by the contractors. One sherd is from a Nene Valley colour-coated ware beaker, possibly a large Going H33 type, with white-painted decoration and dating to the 4th century. There are no indentations. The second appears to be a grog-tempered jar, probably a Cam 218, dating to the first half of the 1st century AD. Both are in good condition and likely to have come from previously undisturbed features or deposits. The sherds have been left with the contractors, but photographs are included in the archive.

7.0 DISCUSSION AND CONCLUSION

Archaeological monitoring during the removal of the Langford ditch chunker involved the observation of general ground excavation and the creation of a structural record of the structure itself. Although stratified natural soil deposits were observed underneath the south-eastern canal bank, and possibly remain at the opposite end, their nature and survival was ambiguous beneath the canal, mainly due to the waterlogged nature of the site and the disturbance caused by excavation works within the confined area of the coffer dam. However, the chunker was established to be well-preserved, and in its waterlogged condition its form and construction was viewed for up to half of its c.33m length during the archaeological monitoring works. It is assumed to be of a design already used on other sites by the canal builders who had worked elsewhere in the region and of similar construction to the other two said to have been built along the canal route at Heybridge.

In order to construct the chunker, the existing stream would have been temporarily dammed or diverted and the dry ditch then expanded to form a trench to receive the chunker. It is logical to suppose that the bottom and sides of each long 4-5m section would have been built alongside and then laid in the gravel-lain trench to be bolted to the next section. Once each section was connected, shorter planks could then be nailed to form the roof. The exit and entry points were reinforced with diagonal braces, and stakes were positioned either side of the bolted joins to maintain rigidity. Once completed, the banks were formed either end and the canal constructed above.

The chunker is one of three reportedly constructed around Heybridge for the Navigation, but is the only one known to survive virtually intact and to receive a record. Although a little-known feature in the history of the Navigation, it is a well-constructed example of late 18th-century engineering, which was recorded under interesting and unusual circumstances. As an industrial-era feature associated with the Chelmer and Blackwater Navigation it has great local and regional significance. Whilst similar structures may exist elsewhere in the country, they have generally been either forgotten or ignored and their locations gone unrecorded. Through this survey it may be possible to compare the Langford Ditch chunker with others.

No discernable information was found regarding the wider canal construction and subsequent depositional history and the only surviving stratified soil deposits observed during the monitoring works appeared at the south-eastern end. Although finds collected from the canal bank were relatively late, dating to the 19th century, two unstratified pottery

sherds found around the chunker confirm the presence of LIA and Roman activity in the area and are typical of such material recovered from the Elms farm excavations to the west.

ACKNOWLEDGEMENTS

Thanks are due to David White of the Environment Agency for funding and commissioning this survey and for providing the drawings. The assistance and cooperation of Ben Parmenter of Jackson Engineering and foreman Steve Dunn and other site personnel is also gratefully acknowledged. Thanks too to the staff at the Essex Records Office. Fieldwork, recording and photography were undertaken by the author. Illustrations were prepared by the author and produced by Andrew Lewsey of ECC FAU. The project was managed by Mark Atkinson and monitored by Maria Medlycott of ECC HEM on behalf of the Local Planning Authority.

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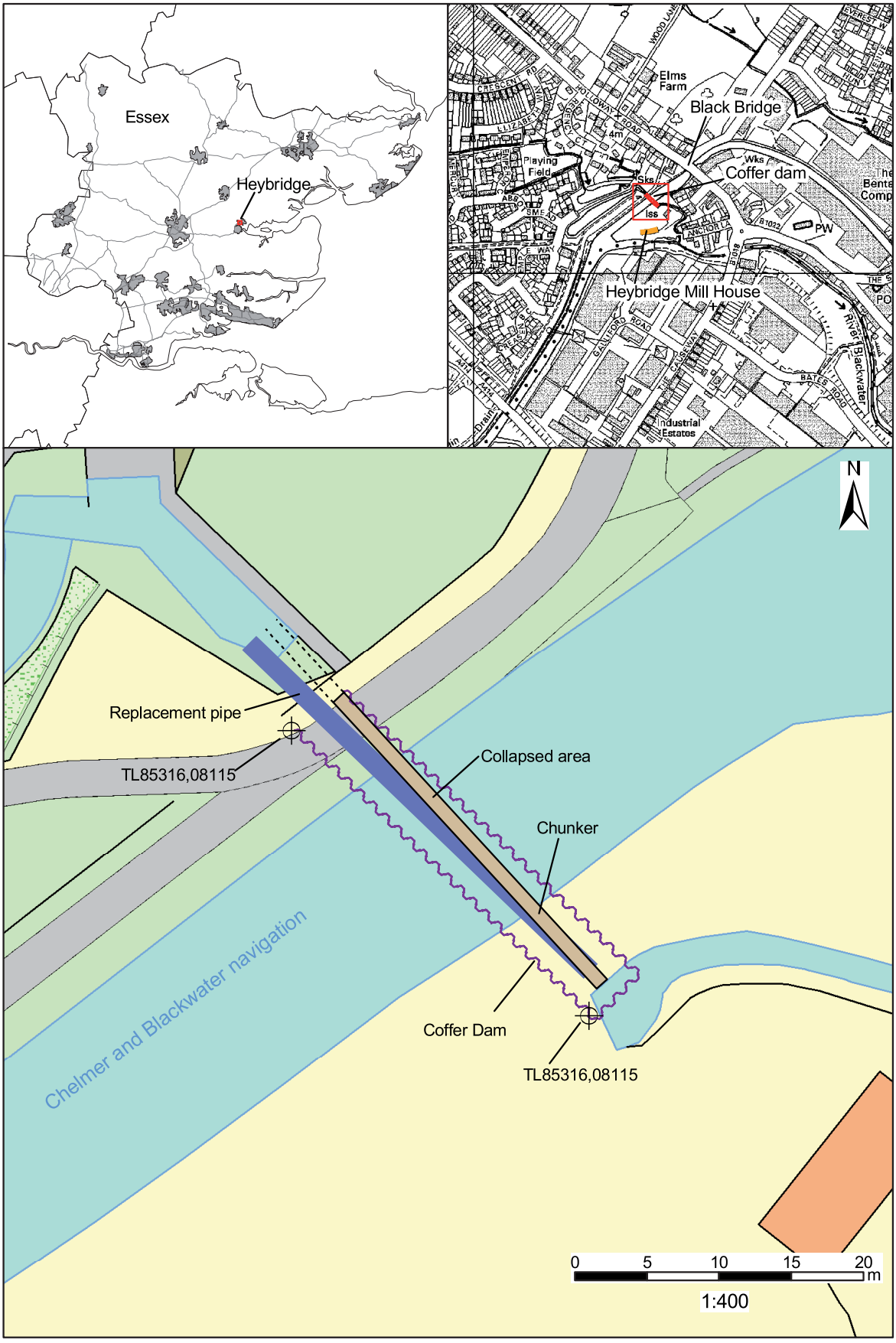

Fig.1. Site location plan

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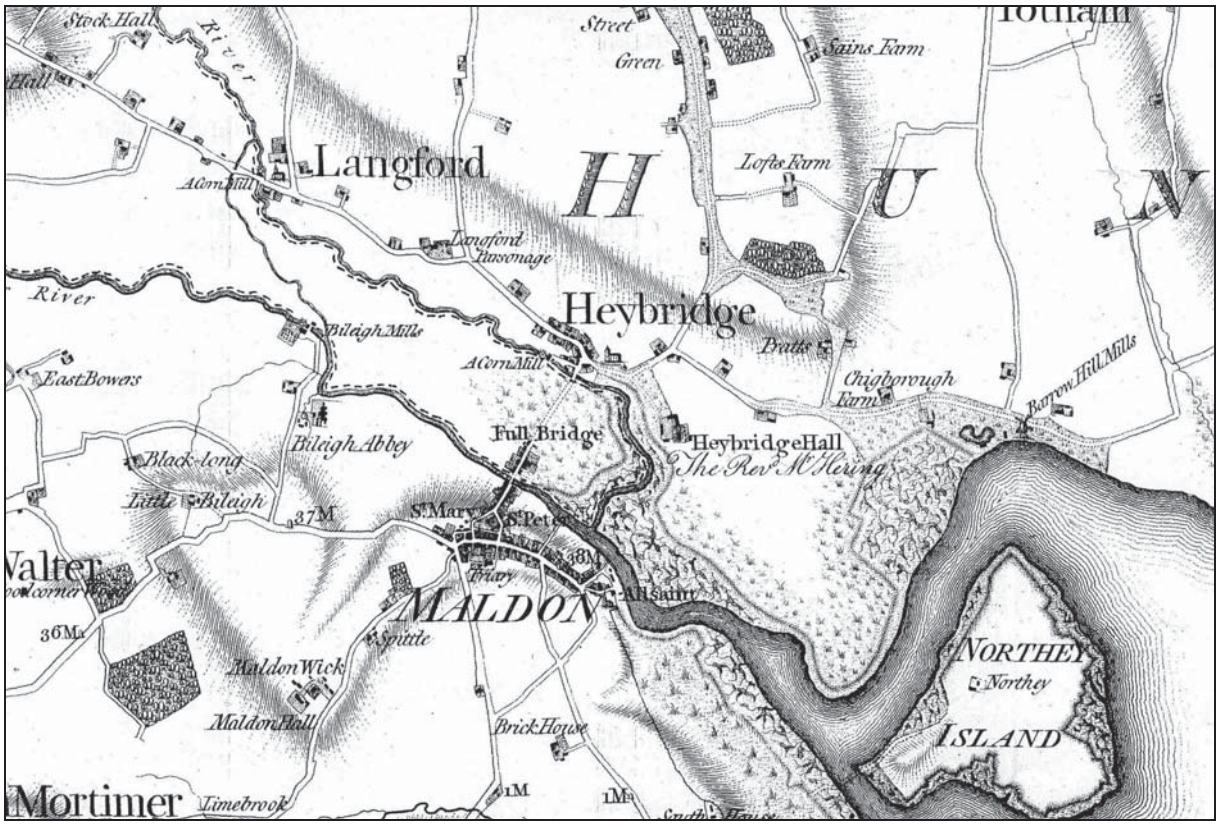

Fig. 2 Existing river routes in 1777 (Chapman and Andre's map of Essex, plate 13)

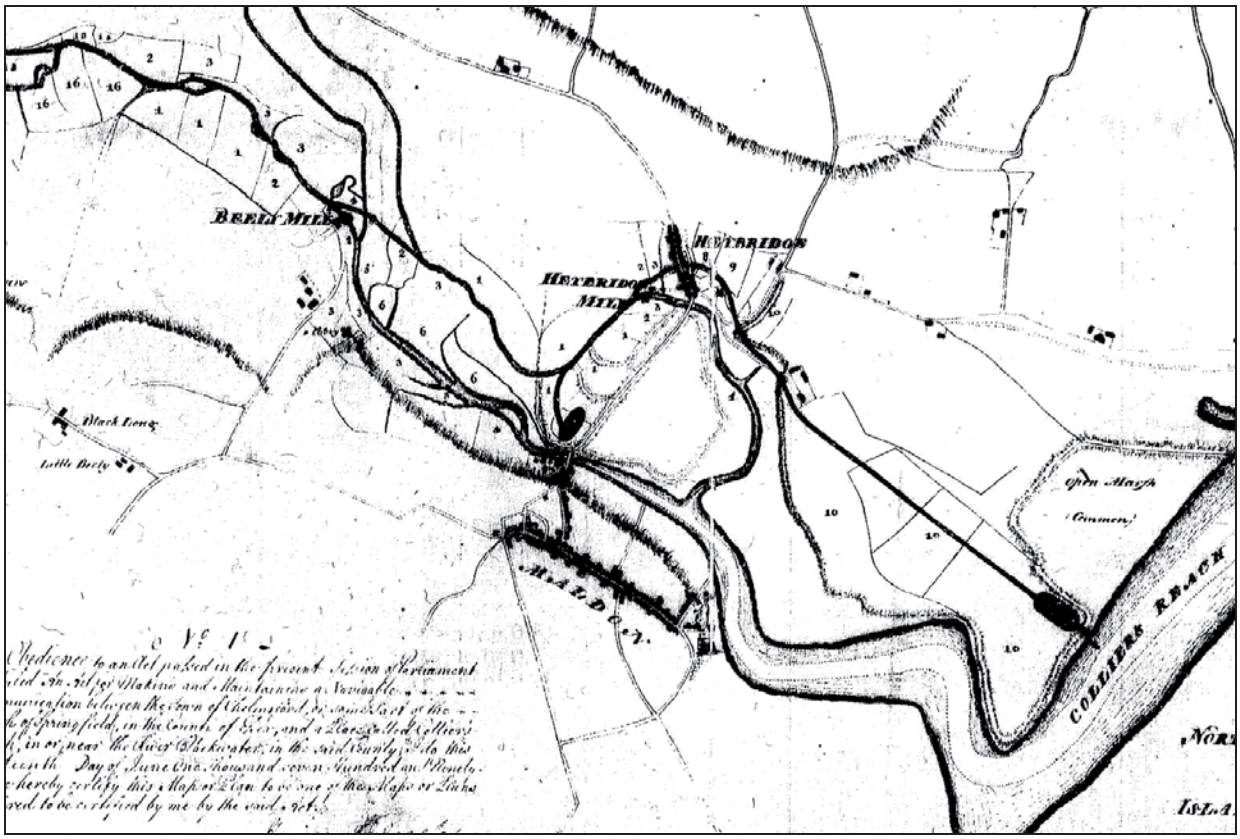

Fig. 3 Reduced map of proposed Navigation route drawn in 1792 (T/Z 561/9/2)

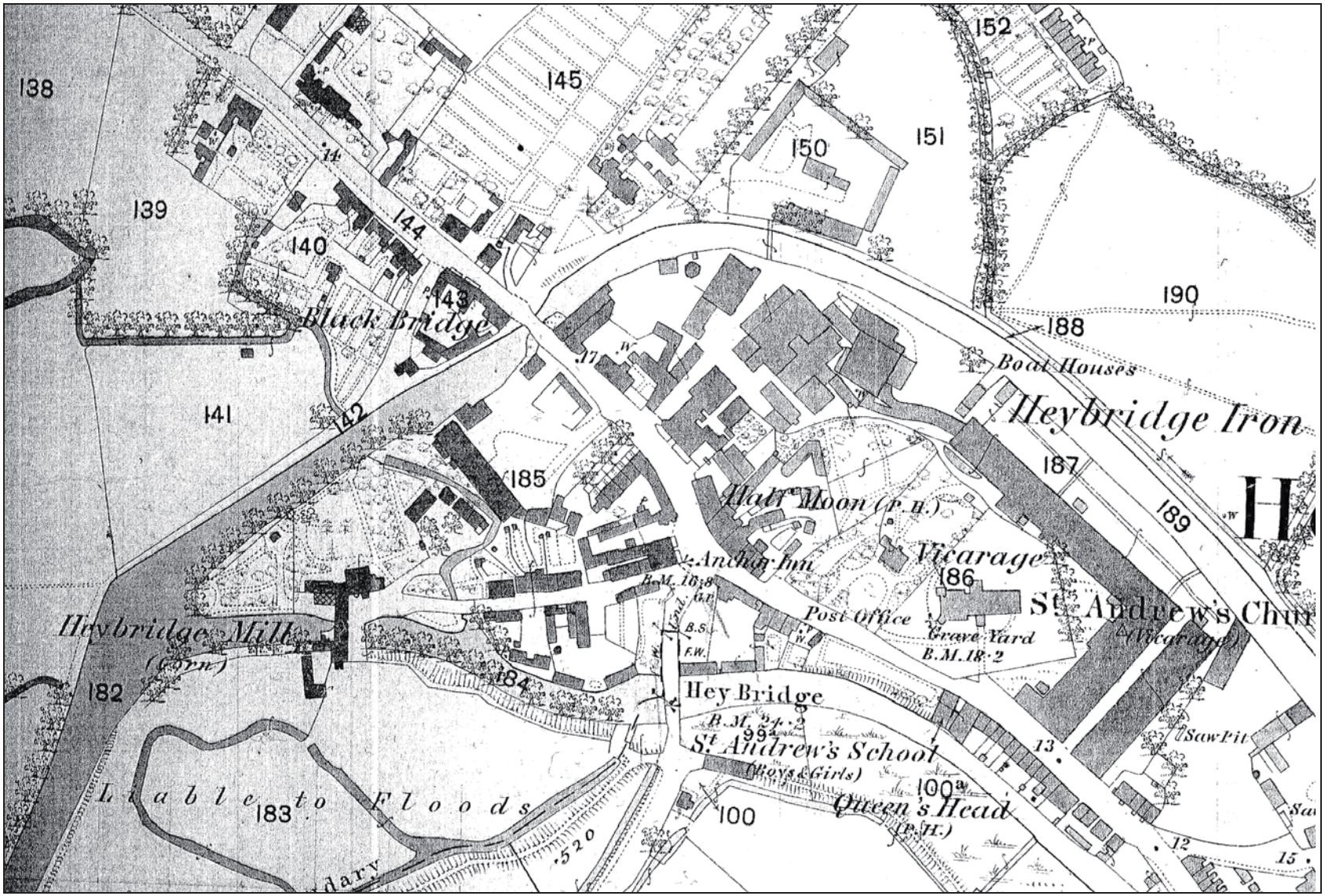

Fig. 4 First Edition 25” OS map, 1874 (sheet 54/2)

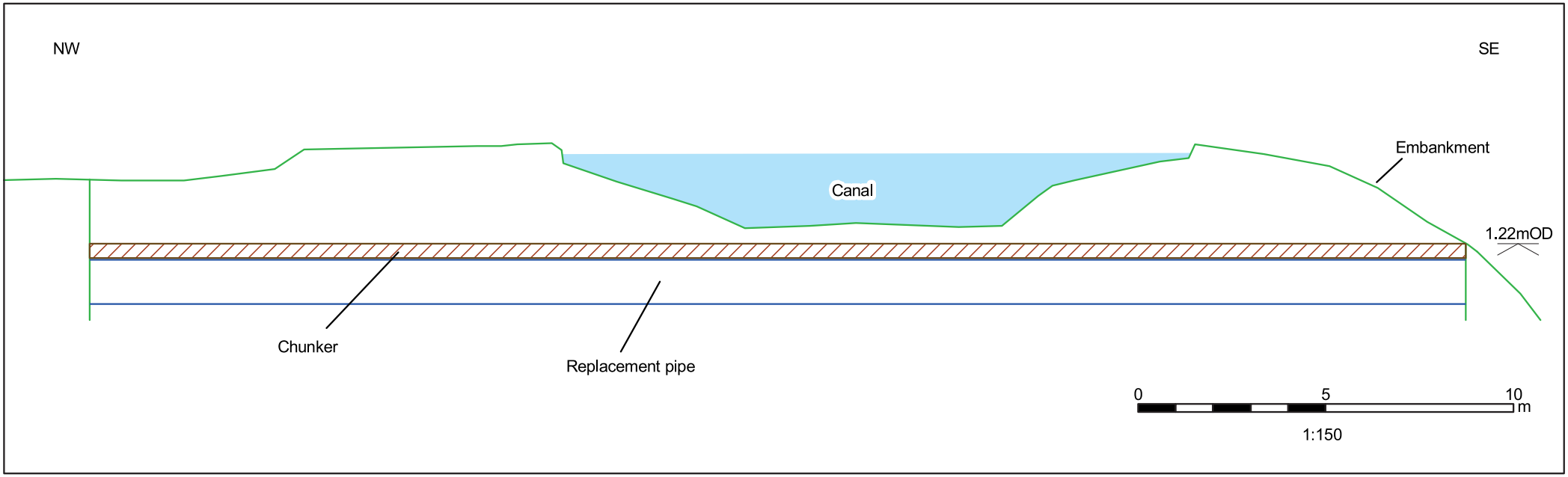

Fig.5. Schematic section across canel

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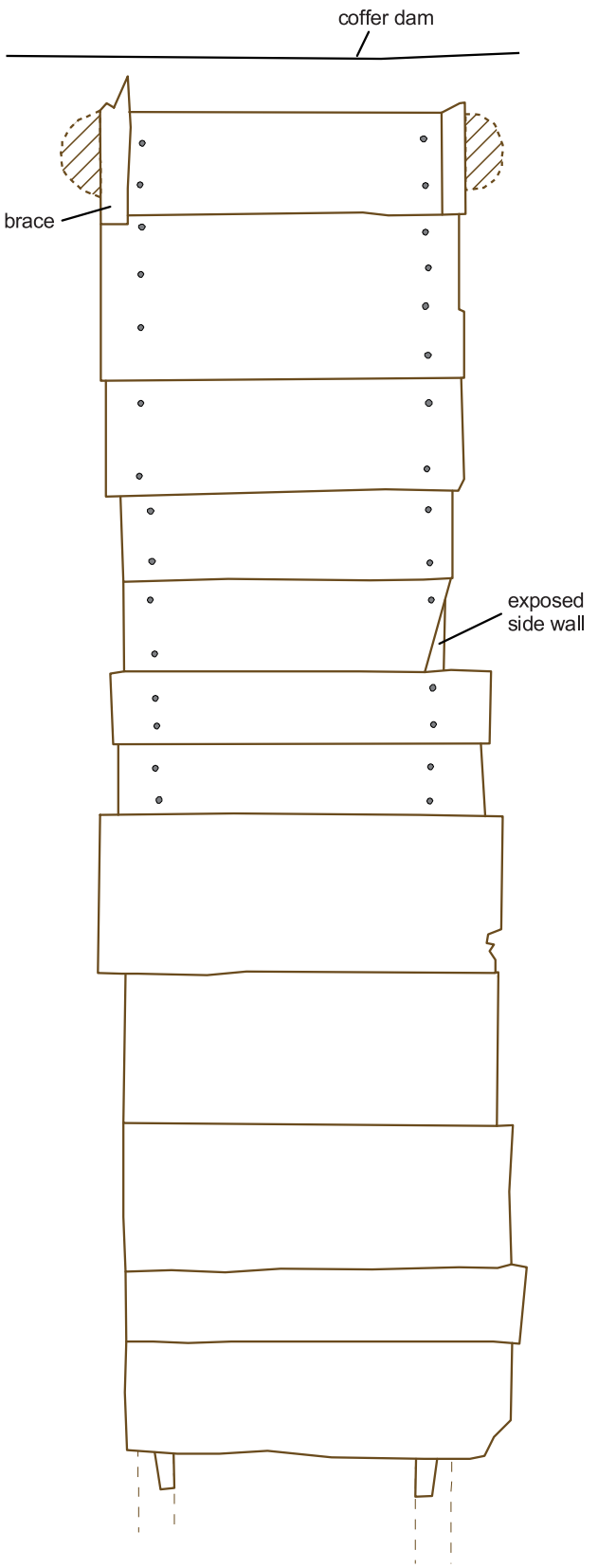

Fig.6a. Plan of south-east section

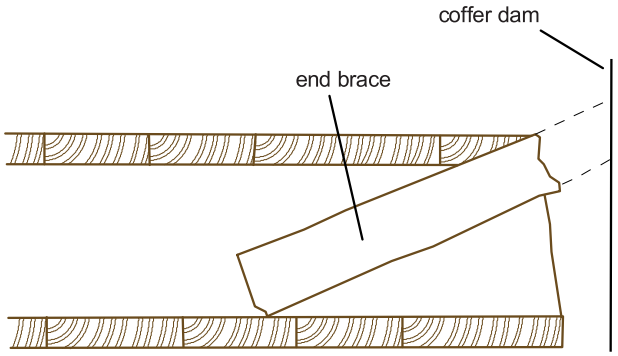

Fig.6b. South-west elevation

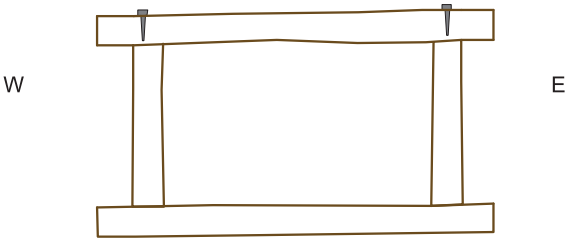

Fig.6c. Cross-section

0 0.5 1 m

1:20

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Fig.6. Survey of chunker structure

Plate 1 Excavation area viewed to north-west

Plate 2 Undisturbed soil deposits underneath bank at south-east end

Plate 3 Chunker viewed to south-east from top of coffer dam

Plate 4 Plan view of chunker to north-east (2m scale)

Plate 5 South-west elevation of chunker (2m scale)

Plate 6 Plan view of chunker viewed to south-east (2m scale)

Plate 7 Wooden stakes retrieved from south-east end of chunker (1m scale)

Plate 8 Short stakes/offcuts found in deposits close to south-east end

Plate 9 Chunker section being lifted onto pontoon

Plate 10 Chunker sections on pontoon

Plate 11 Construction detail of second section

Plate 12 Middle section showing planks either side (2m scale)

Appendix 1: Contents of Archive

Site name: Langford Ditch Chunker, Chelmer and Blackwater Navigation, Heybridge, Essex

Project no.: 2143

Index to the Archive:

Document wallet containing:

1. Introduction

1.1 HEM design brief

1.2 FAU written scheme of investigation

1.3 Client/archive report

1.4 Unbound version of report

1.5 CD containing digital photographs & copy of report, pdf-formatted

1.6 CD supplied by Environment Agency containing survey drawings (pdf)

2. Site Archive

2.1 Photographic record (digital prints & monochrome 35mm prints & negatives)

2.2 Photographic registers

2.3 Site notes and annotated survey drawings

2.4 Photographs of nails and pottery sherds found in excavation

Appendix 2: EHER Summary Sheet

Site Name/Address: Langford ditch chunker, Chelmer & Blackwater Navigation, near Heybridge Mill, Heybridge	
Parish: Heybridge	***District:*** Maldon
NGR: TL 8530 0812	***OASIS Record No.:*** 79614
Type of Work: Archaeological monitoring & recording (EH level 3)	***Site Director/Team:*** Andrew Letch ECC FAU
Dates of Fieldwork: February & March 2010	***Size of Area Investigated:*** c.28m²
Curating Museum: Colchester	***Funding Source:*** Environment Agency
Further Work Anticipated? No	***Related EHER Nos.*** 17444, 14650 & 38245
Final Report: Summary in EAH	
Periods Represented: Late 18th-century (1793-97)	

SUMMARY OF FIELDWORK RESULTS:

A timber culvert, known locally as a 'chunker', was built to carry the pre-existing stream known as the Langford Ditch underneath the new canal section of the Chelmer and Blackwater Navigation between Heybridge Mill and Black Bridge constructed 1793-1797. Archaeological monitoring was undertaken during its replacement works that were necessitated by the partial collapse and potential failure of this historic structure.

The replacement works required a 4m-wide coffer dam to be constructed across the width of the canal to facilitate the removal of the chunker remains and insert a new 1.2m diameter concrete pipe in its place. As the chunker is an important and previously unrecorded historic element of the canal, and the site is located in an area of known LIA and Roman occupation, monitoring of all groundworks was required.

The mechanical removal of the canal banks and of sediments within its course exposed the well-preserved chunker remains 2m below the water line. Despite localised damage, the structure survived in good condition. The south-eastern end was recorded *in-situ* and other parts recorded after lifting by crane onto a pontoon beside the excavation.

The structure was c.33m long and its simple box section built of nailed elm planks in sections between 4m and over 5m long. These sections were attached to one another by tapered halved joints and bolts. It is deduced that these were constructed on site and placed in a construction cut (not discerned during monitoring) before being bolted together, as a preliminary stage of canal construction.

The chunker is one of three believed to have been constructed along this stretch of canal, but is the only one known to survive and been recorded.

Finds collected from the canal bank deposits date to the late 19th century, but two unstratified pottery sherds found around the chunker confirm the presence of LIA and Roman activity in the area, presumably associated with the Elms Farm settlement site to the west.

Previous Summaries/Reports: none	
Author of Summary: Andrew Letch	***Date of Summary:*** 17th August 2010