



Boston Tidal Barrier Scheme

Archaeological Watching Brief Report

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Summary

Wessex Archaeology was commissioned by Mott MacDonald, as part of the BAM Mott MacDonald Joint Venture (BMMJV), on behalf of Environment Agency, as an archaeological contractor for the Boston Tidal Barrier Scheme project in Boston, Lincolnshire. The Boston Barrier project is centred on NGR 532923 342680.

The scope of this work consisted of two phases of a programmed archaeological watching brief on-site to fulfil the requirements of a written scheme of investigation (WSI).

The first phase monitored construction dredging and cofferdam installation between 12 November 2018 and 18 April 2019 located on the mud bank against the south bank of the tidal River Witham downstream of the Grand Sluice (hereafter referred to as The Haven).

The second phase was a programme of archaeological and geoarchaeological monitoring of the excavation works between the pile walls for tie rod installation along the south bank of The Haven centred on NGR 533443 342925. This was undertaken between 20 April 2020 and 04 May 2020.

Further dredging operations were undertaken between March 2021 and April 2021 along the south bank of The Haven within the swinging hole area opposite the dock entrance to the Port of Boston.

The first phase of works resulted in the recording of 113 objects, most of which were timbers and deemed modern. Two finds were retained due to their potential local archaeological significance; a leather boot and a glass decanter.

Much of the excavation for the second phase was within modern made ground (up to 2m in thickness) comprised of redeposited material dredged from the river in the 20th century, overlaying dark grey in-situ river silts. More than 67 objects were recorded. With the exception of the leather boot and glass decanter, all artefacts found during excavations were modern and discarded on site, and no deposits with geoarchaeological potential were observed.

During the consecutive 2021 dredging operations, a total of 127 objects were recorded. These were reported through the Protocol for Archaeological Discoveries by BAM Nuttall staff. The objects consisted of an anchor, jetty timbers and timbers pertaining to two hulks. The finds were considered modern and discarded on site.

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This report was written by Lowri Roberts with contributions from Michael Sharpe, Robert MacKintosh, Ben Saunders and Stephanie Said. The project was managed by Danielle Wilkinson and Euan McNeill on behalf of Wessex Archaeology.



BOSTON TIDAL BARRIER SCHEME

Archaeological Watching Brief Report

1 INTRODUCTION

1.1 Project background

- 1.1.1 Wessex Archaeology was commissioned by Mott MacDonald, as part of the BAM Mott MacDonald Joint Venture (BMMJV), on behalf of Environment Agency, as an archaeological contractor for the Boston Tidal Barrier Scheme project in Boston, Lincolnshire. The Boston Barrier project is centred on NGR 532923 342680, at Boston Barrier Site office, Riverside Industrial Estate, Marsh Lane, Boston, Lincolnshire PE21 7PJ (Figure 1).
- 1.1.2 The scope of this work included a programmed archaeological watching brief on-site to fulfil the requirements of a written scheme of investigation (WSI) during construction dredging and cofferdam installation (BMMJV 2018). The watching brief works included the mud bank against the south (right) bank of The Haven, and excavation for the installation of the coffer dam between 12 November 2018 and 18 April 2019.
- 1.1.3 The watching brief was carried out as a requirement of planning permission, granted by Boston Borough Council on 26 April 2018 (reference B/18/0055), as well as the marine license, issued by the Marine Management Organisation (MMO) on 21 December 2017 (application number B/17/0386/MMOC).
- 1.1.4 Specifically, archaeological support for the construction dredging and coffer dam installation provided by the archaeological contractor, as stated in the WSI (BMMJV 2018), included:
- *The Archaeological Contractor's nominated archaeologist providing on call support to Principal Contractor for the duration of the construction works. Including same day site attendance if required.*
 - *The Archaeological Contractor providing the Principal Contractor appropriate toolbox talks for;*
 - *The identification and retention of any archaeological artefacts;*
 - *The installation/excavation of the coffer dam; and*
 - *Toolbox talk for dredging of the mud bank.*
 - *The Archaeological Contractor's nominated archaeologist being present on site during the dredging works to advise the Principal Contractor immediately on any unexpected material or features and to prevent accidental damage to heritage assets (except in areas where it has been agreed with the stakeholders that this presence is not required).*
 - *If during the construction, significant archaeological remains, deposits or artefacts, as defined in the toolbox talk, were encountered, the Principal Contractor where practicable (and safe to do so) was to avoid impacting or damaging the remains.*

Whereafter, the Archaeological Contractor's nominated archaeologist was to contact the BMMJV Heritage Specialist.

- 1.1.5 The works also included a separate programme of archaeological and geoarchaeological monitoring of the excavation works between the pile walls for tie rod installation that was set out in the second WSI (BMMJV 2020), undertaken between 20 April 2020 and 4 May 2020 along the south bank of The Haven centred on NGR 533443 342925. The excavations being monitored completely removed the material between the two sheet pile walls to +2.93m AOD, before the tie rods were installed.
- 1.1.6 Additional works were completed during capital dredging of inter-tidal silts around the swinging hole on the south back of The Haven opposite the wet dock of the Port of Boston (Figure 3). These works were completed to enable vessels to be able to swing to use the alongside river berths while the wet dock gates were being replaced. Site visits and recording were completed on 15–17 March 2021 and 9 June 2021.

1.2 Scope of the report

- 1.2.1 The purpose of this report is to provide the results of the different phases of the works, to interpret the results within their local or regional context (or otherwise), and to assess their potential to address the aims outlined in the WSI, thereby making available information about the archaeological resource (a preservation by record).

1.3 Location, topography and geology

- 1.3.1 The Boston Barrier project is centred on NGR 532923 342680, at Boston Barrier Site office, Riverside Industrial Estate, Marsh Lane, Boston, Lincolnshire PE21 7PJ (Figure 1). The first phase of works included the mud bank against the south (right) bank of The Haven while the second phase was located further downstream along the south bank of The Haven (Figure 2).
- 1.3.2 The underlying geology of the Site is mapped by the British Geological survey (BGS) as mudstones of the Amptill Clay Formation, formed 157-164 million years ago during the Jurassic period. The overlying superficial geology is mapped by the BGS as Tidal Flat Deposits (clays and silts), forming a blanket deposit extending to Skegness in the north, and to the south within the Fens and Wash of Lincolnshire and Cambridgeshire BGS (Geology of Britain online viewer). Tidal Flat Deposits are Holocene in age, accumulating under rising post-glacial sea-levels, but locally include peat deposits, formed during periods of stable and/or falling sea-levels (Mott McDonald, 2015). The Holocene sequence in turn rests on Pleistocene deposits of glacial till laid down during the Anglian glaciation approximately 478,000-424,000 years ago.

2 ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

2.1 Introduction

- 2.1.1 Various archaeological investigations have previously been undertaken, including over 1000 hours of monitoring on the south bank. A large portion of the work was carried out by Wessex Archaeology with the addition of a few studies from external sources focusing on the hulks along The Haven.

2.2 Previous investigations related to the development

Boston Haven Tidal Barrier: Assessment of Cultural Heritage Impacts [2011]

- 2.2.1 A visual survey of The Haven from the Grand Sluice, downstream past Town Bridge, Haven Bridge to the entrance from Boston Docks into the River Witham was undertaken during two low spring tides in August 2011. This study was requested by the Environment Agency to assist in the assessment of the potential impacts of a proposed tidal barrier on such assets. The preliminary recording of six hulks (boats and ships abandoned in the Haven) and structures which might be impacted by the proposed development were carried out (Nayling 2011).

Archaeological examination of bore columns from investigations at The Boston Barrier, alongside the River Witham, Boston [2012]

- 2.2.2 A programme of archaeological and paleoenvironmental investigation was undertaken on samples taken from boreholes drilled during ground investigation works at the site of the proposed Boston Barrier flood defence works (Taylor 2012).

- 2.2.3 Examination of the samples revealed sequences of natural deposition in a variety of differing environments. These sequences appeared to fluctuate between river and intertidal/saltmarsh depositional environments, though there were also phases of marine deposition and freshwater fen development. Periods of stabilisation or hiatuses, represented by deposits of peat, were recognised. These were thought to be prehistoric and possibly forming part of a nearby horizon that was dated to c. 3000BC previously. Saltmarshes or mudflats were also identified and would have formed ground surfaces in the past. No archaeological horizons were recorded, and the only artefact recovered was a fragment of modern concrete as contamination from overlying deposits.

Geoarchaeological Auger Survey, Hulk Recording and UAV survey [2017]

- 2.2.4 In 2017, Wessex Archaeology was commissioned by the Environment Agency to undertake a programme of archaeological works including UAV survey, hulk recording and geoarchaeological auger survey, to be carried out in advance of dredging activities required for the construction of a new flood barrier in Boston, Lincolnshire. During these works, the areas were split up in to four foreshore sites; Site 1, Site 2, Site 3a and Site 3b and two hulks (5 and 6). The sites were determined by the National Environmental Assessment & Sustainability (NEAS) team according to the dredging plan. Searches were conducted around Site 1 and 2 up to a 500 meter buffer (Wessex Archaeology 2017).

- 2.2.5 A total of 54 hand auger points was sampled to a maximum depth of <2.32m across the three geoarchaeological sampling areas (Sites 1-3). At each location, the auger points were pushed down until they reached a “point of refusal” and could not penetrate further; whether due to the rocky nature of the foreshore or density of the sediments encountered. The numbering of the auger points on Sites 1 and 2 do not run sequentially as a result of the need to traverse obstacles to ensure safe movement on the foreshore. The lithological data from each auger location - across all three geoarchaeological sampling areas encompasses a range of silt, clay and sand deposits and has been allocated to one stratigraphical unit: Tidal Flat Deposits (Wessex Archaeology 2017).

- 2.2.6 The hulk recording assessment (Level 2 recording) was based upon the results of a brief survey carried out in 2011 of heritage assets in the bed of The Haven, where it passes through the historic town of Boston, and is an appraisal of two hulk (boats and ships abandoned in the Haven) sites which might be directly impacted by the proposed development. It was suggested that these two vessels may be old fishing vessels which lay there for at least some 50 years. None of the upper works have been preserved and the

original overall length of these vessels cannot be determined due to the rock and mud that fills the interiors. Currently, only one of these vessels is still partially visible in the muddy foreshore; the other is likely to have been covered over by the accumulation of silt from the river (Wessex Archaeology 2017).

- 2.2.7 The UAV survey assessment resulted in the transcribing of 64 features. The exact form and function of many of these features remains unknown, and a number may prove to offer no archaeological or historical interest. These include features that may represent the remains of recent debris. Despite this, the survey managed to record the locations of Hulks 5 and 6, alongside a possible additional hulk almost entirely covered by mud and rock deposits (Wessex Archaeology 2017). Hulk 5 and 6 are thought to be fishing vessels and were included in the sites identified by the NEAS team according to the dredging plan. Since the production of the WSI, the condition of hulk 5 has changed dramatically. Originally the hulk was an *in situ* site, but factors have since caused the wreck to dislocate. Unexpected work combined with tidal movement had caused the wreck to dislocate and, as a result, there are no longer any visible hulk remains *in situ*. One timber was retained and stored on site at the Boston Barrier Community Hub, Riverside Industrial Estate, Marsh Lane, Boston, PE21 7PJ.

Historic Mapping [2019]

- 2.2.8 Following a historic map regression exercise, it was identified that the square bank located within the south (right) bank of the swinging hole area is a modern feature, dating to the late 20th century and is present on 1999 online aerial imagery of the area. The construction of this embankment may have resulted in ground disturbance in this location, such as removing, truncating or compressing archaeological remains.

Geoarchaeological monitoring [2020]

- 2.2.9 Wessex Archaeology was commissioned to undertake a programme of geoarchaeological monitoring work in support of geotechnical ground investigations in an area of land on the south side of The Haven to the south of Port of Boston. As part of the Boston Barrier Project, the area known as the Swinging Hole (or turning circle) requires dredging and a piled wall installed on the south (right) bank of The Haven in the area opposite the entrance to the Port of Boston wet dock (Wessex Archaeology 2020).
- 2.2.10 A programme of archaeological and geoarchaeological monitoring was undertaken on seven test pits and three boreholes. The deposits encountered were typical for the area, with the upper few metres consisting of estuarine silts, sands and clays overlying glacial deposits of stiff clay containing chalk gravels which in turn overlay bedrock consisting of Ampthill Clay (Wessex Archaeology 2020).
- 2.2.11 There was little variation across the area monitored. Most of the test pits comprised of redeposited alluvium which appeared to have been dredged from the river and deposited on the riverbank to raise the ground level above the high tide line. There were no significant archaeological finds or features encountered throughout the course of the GI monitoring (Wessex Archaeology 2020).

2.3 Archaeological and historical context

Prehistoric

- 2.3.1 Surveys were commissioned to inform the options appraisal process for the site of the barrier structure (Environment Agency 2016) including the collection of borehole and geotechnical data within the site to determine the nature of deposits and to recover datable material from them (Taylor, 2010, 2011) and a watching brief on geotechnical trial pits

alongside the Haven to record features exposed during ground work and determine their date, function and origin (Taylor, 2011). The various depositional environments were not easily recognised from the log descriptions, however, boreholes relating to the Boston Barrier identified all marine deposits (Taylor 2012). These works were complicated by the Witham and correlation between boreholes was not always possible.

- 2.3.2 During these previous investigations within the area of the Boston Barrier flood defence scheme, a peat layer recorded at -2.65m OD was radiocarbon dated to the middle Neolithic (Taylor 2011). During a later investigation (Taylor 2012) two peat layers were recorded at -2.79m OD and -3.28m OD within the same borehole (BWS02) and its possible these latter two peats may be part of the same period of stabilisation that resulted in the peat formation.

Romano British

- 2.3.3 There is limited evidence for Romano-British activity with settlement locales focussed on areas of higher ground including the roddons (Environment Agency 2016). A possible farmstead was recorded (on a roddon) in the Skirbeck Quarter during trial trenching in 2006 at St Thomas Drive (Peachey 2006). At St Nicholas Church of England School evidence has been found of Roman settlement. During construction of the school a scatter of Romano-British pottery was found dating from the 2nd to 3rd century AD. A watching brief in 1992 identified two infilled ditches containing Roman pottery (Heritage Lincolnshire 1992), and ditches containing Roman pottery were also recorded in 2010 (Holderness 2011).

Saxon

- 2.3.4 As with Roman occupation the evidence of Saxon settlement is also sparse (Environment Agency 2016). During 1995 an archaeological watching brief was conducted at the St Nicholas School site and two Grubenhauser or pit houses dated to the eighth century AD were discovered (Palmer-Brown 1995). Also, in 1995 an archaeological evaluation was undertaken at White House Lane which revealed a Saxon settlement dating from the late ninth to early tenth century. Faunal and environmental evidence suggests this was a permanent, if short lived, settlement (Palmer-Brown 1995). There is evidence of water management in the river corridor during the middle to later Saxon period, although local tradition has it dating from the Roman period, with the presence of the Old Fen Bank. The location of Saxon settlements appears to have been focused on roddens and islands within the flooded fenland suggesting that the potential for evidence of occupation is limited to areas of historically higher ground (Environment Agency 2016).

Medieval

- 2.3.5 There is little evidence of Boston's status as a port until the early part of the medieval period. Its market was first recorded between 1125 and 1135 while the construction of a sluice and bridge in 1142 impeded access to Lincoln, making Boston the intervening port between the Wash and Lincoln. This increased trade and duties from Lincoln confirmed Boston's status as one of the most important ports in the country. Boston was the major port of Lincolnshire during much of the medieval period, though suffered decline in the 14th century (Cope-Faulkner 2014).

Nineteenth Century

- 2.3.6 Until the late 19th century, the port of Boston was centred on the town. The constant deposits of alluvium created the characteristic tidal mudflats which, in conjunction with poor management, resulted in The Haven becoming silted up preventing access by larger ships to the town's port (Cope-Faulkner 2010). This had a direct impact on the town's fortunes with economic peaks in the 15th, late 18th and 19th centuries directly linked to major

physical improvements to the navigation. The decline was such that international trade through the port became almost non-existent, although there was a coastal trade with London and Newcastle (Cope-Faulkner 2010).

- 2.3.7 During the late 18th and 19th centuries a large programme of civil engineering works to reclaim the East, West and Wildmore Fens including the improvement of the Maud Foster Drain, the straightening of the Witham between Boston and Lincoln, and the construction of the Grand Sluice helped to revive Boston's fortunes. It was, however, still difficult for large ships to navigate The Haven.
- 2.3.8 With the arrival of the Great Northern Railway in the mid-19th century proposals were put forward to construct a modern wet dock in the town which would allow vessels to float whatever the state of the tide. The dock was built between 1882 and 1884 with a rail link taken across the navigation on a swing bridge to connect the port to the wider rail network.
- 2.3.9 A number of buildings and cranes were constructed within the dock area to serve the incoming ships. The dock became home to a new deep-sea fishing fleet which required the surrounding buildings to be converted. Following the relocation of the fishing fleet, the port became known for timber imports from the Baltic, predominantly for railway sleepers.

3 AIMS AND OBJECTIVES

3.1 Aims

3.1.1 The overarching aim as laid out in the WSI (BMMJV 2018), was:

- To mitigate the impact of the Project on the historic environment. This will be done through preservation in-situ or recording where this is not possible.

3.1.2 As an addition to this aim, the second WSI (BMMJV 2020) also stated:

- All work should be proportionate to the archaeological potential and significance of the archaeology likely to be encountered during construction works. Where possible, archaeological intervention should contribute to the strategic research objectives outlined in the East Midlands Historic Environment Research Framework 13 and should be based on the strategies and information contained within this framework.

3.1.3 The aims of the watching brief, as stated in the ClfA's *Standard and guidance for an archaeological watching brief* (ClfA 2014a, updated 2020), were:

- To allow, within the resources available, the preservation by record of archaeological deposits, the presence and nature of which could not be established (or established with sufficient accuracy) in advance of the development or other works;
- To provide an opportunity, if needed, for the watching archaeologist to signal to all interested parties, before the destruction of the material in question, that an archaeological find has been made for which the resources allocated to the watching brief itself are not sufficient to support treatment to a satisfactory and proper standard; and
- To guide, not replace, any requirement for contingent excavation or preservation of possible deposits.

3.2 Objectives

3.2.1 The archaeological objectives of the first watching brief, as defined in the WSI (BMMJV 2018), were to:

- Manage the risk of impact to the right bank.

3.2.2 As the second round of works associated with the tie rod excavation had the benefit of following the first archaeological watching brief as well as the separate geoarchaeological watching brief in 2020 (Wessex Archaeology 2020), the WSI was much more specific. The WSI (BMMJV 2020) also recognised that the tie rod excavation would be to +2.93m AOD within a bank created during the late 20th century, consisting of redeposited material to at least +3m AOD formed from alluvial deposits dredged within the river. The highest archaeological potential of this redeposited material related to unstratified finds and palaeoenvironmental deposits. The objectives were to:

- Manage the risk of impact to archaeology within the tie rod excavation area.
- Understand and record any present archaeology within the tie rod excavation area.
- Understand and record any relevant palaeoenvironmental evidence within the tie rod excavation area.

3.2.3 Consecutive dredging operations along the south bank of The Haven did not require archaeological watching briefs. However, a Protocol for Archaeological Discoveries was implemented to mitigate the effects of dredging on the historic environment, allowing for the reporting of finds made during the course of dredging operations in a convenient and effective manner.

4 METHODS

4.1 Introduction

4.1.1 All works were undertaken in accordance with the methodology set out within the WSIs (BMMJV 2018) and (BMMJV 2020) and in general compliance with the standards outlined in ClfA guidance (ClfA 2014a, updated 2020). The methods employed are summarised below.

4.2 Fieldwork methods for the 2018-2019 phase of works

4.2.1 The mud bank against the south (right) bank had been identified as potentially containing Neolithic peat deposits and other archaeological remains. Archaeological monitoring and recording was recommended in this area as dredging records and borehole results suggested that the area had not been subject to the rigorous dredging of other locations within the barrier scheme.

4.2.2 Therefore, in accordance with the 2018 WSI (BMMJV 2018, 11) an archaeologist was present on site during the construction dredging and coffer dam installation to advise the Principal Contractor immediately regarding any unexpected material or features and to prevent accidental damage to heritage assets.

4.2.3 The watching archaeologist monitored all dredging activities that took place on the mudbank against the south (right) bank and cofferdam. Dredging works were undertaken by excavators located on both the riverbank and a pontoon. The archaeologist, situated on the riverbank, monitored the excavation of material and the transfer of the material to a hopper

barge or dumper truck (Plates 1-8). The material was visually scanned for the purposes of finds retrieval. Numerous dislodged timbers were also recovered from the river (Plate 10-17).

- 4.2.4 Where found, artefacts were collected and given a unique Wessex Archaeology ID number. A number of artefacts were retained, however, the numerous large timbers that were dislodged, which had previously been used to reinforce the riverbank, were recorded on site and not retained.

Recording for the 2018-2019 phase of works

- 4.2.5 All exposed archaeological features were recorded using Wessex Archaeology's *pro forma* recording system. Features were catalogued on an object register, and certain features were selected for more detailed recording on timber or object forms as appropriate.
- 4.2.6 A photographic record of each feature was made using digital cameras equipped with an image sensor of not less than 10 megapixels.

4.3 Artefactual and environmental strategies for the 2018-2019 phase of works

- 4.3.1 Appropriate strategies for the recovery, processing and assessment of artefacts and environmental samples were in line with those detailed in the WSI (BMMJV 2018), and with relevant current Historic England and other guidance (Historic England 2010, 2012, 2013; Watkinson and Neal 1998). The treatment of artefacts and environmental remains was in general accordance with: *Guidance for the collection, documentation, conservation and research of archaeological materials* (ClfA 2014b, updated 2020) and *Environmental Archaeology: A Guide to the Theory and Practice of Methods, from Sampling and Recovery to Post-excavation* (English Heritage 2011).

4.4 Fieldwork methods for the 2020 phase of works

- 4.4.1 Monitoring the excavations for tie rods allowed for potential finds and features to be recorded and retrieved by the archaeologist on site. This excavation was a complete removal of material in phases between the two sheet pile walls to a depth of 2.93m, before the tie rods were installed and the area backfilled. The watching archaeologist monitored all mechanical excavations within the specified area from a safe distance on top of the bank looking down on to the works (Plate 18-25).
- 4.4.2 The excavation was carried out by a 360 excavator with a large toothed bucket. It was stated in the methodology set out by the WSI (BMMJV 2020) that spoil heaps would be examined for archaeological material, however this was not possible due to the spoil being directly loaded from the ground to the back of the dumper before being carried away to a spoil heap off site. During the excavation, the archaeologist could only see the area being excavated as well as the spoil from a distance as it was dropped from a height to the back of the dumper. If any archaeological features were encountered, excavation by the contractor if practicable/safe to do so would have been temporarily stopped for the archaeologist to fully investigate.
- 4.4.3 As stated in the WSI (BMMJV 2020), due to the location of the excavation works being within a raised bank created during the late 20th century with redeposited material dredged from the river, the highest archaeological potential related to redeposited unstratified archaeological finds within the made ground and the possibility of archaeological features and deposits with palaeoenvironmental potential underlying the made ground in undisturbed alluvial deposits.

Recording for the 2020 phase of works

- 4.4.4 A detailed methodology was put in place to record any encountered archaeological deposits and features including scaled drawn plans and sections, surveyed points and a full photographic record. As no archaeological deposits were encountered, this recording system was not used, however, daily logs were used to record all activity on site and numerous working shots were taken with a digital camera throughout the day and logged on a photographic register.

4.5 Artefactual and environmental strategies for the 2020 phase of works

- 4.5.1 Appropriate strategies for the recovery, processing and assessment of artefacts were put in place and were in general accordance with: *Guidance for the collection, documentation, conservation and research of archaeological materials* (ClfA 2014b, updated 2020) and *Environmental Archaeology: A Guide to the Theory and Practice of Methods, from Sampling and Recovery to Post-excavation* (English Heritage 2011).
- 4.5.2 As no artefacts deemed to be of archaeological importance were recovered during these works, this methodology was not utilised. One artefact was recovered, comprising of a timber and attached chain, was believed to be of a modern nature. The item was photographed and discarded on site.
- 4.5.3 If deposits with palaeoenvironmental potential were encountered on site and if deemed appropriate and safe to do so by the attending Geoarchaeologist, palaeoenvironmental samples would have been taken during the excavation and appropriately processed. Due to the nature of the works, any environmental samples taken would have most likely been contaminated as there would have been difficulty in isolating them.

4.6 Consecutive (2020-2021) dredging operations

- 4.6.1 Dredging works were required on the south bank of The Haven opposite the entrance to the Port of Boston wet dock, to enable vessels to turn within The Haven during the period when the wet dock gates were being upgraded (Plate 26). As this area fell under a site where material was known to have been redeposited, no on-site archaeologist was required. However, during the dredging works a Protocol for Archaeological Discoveries (PAD) was in place to record any finds discovered while an archaeologist was not present on site, as described in the WSI (BMMJV 2018).
- 4.6.2 The works were undertaken by excavators located on both the riverbank and a pontoon. Excavated material was deposited onto a hopper barge and then transferred ashore to be disposed of. Several worked timbers embedded within the mud-silt were reported through the PAD at the beginning of November 2020. These were initially thought to belong to a wharf or jetty structure. However, on closer inspection the bulk of timbers were identified as belonging to a hulk. Therefore, Wessex Archaeology was consulted to advise on a plan for the recording and recovery of the in-situ timbers and storage of the recovered timbers.
- 4.6.3 An initial Unmanned Aerial Vehicle (UAV) survey of the discovery area, supported by a walkover photo survey (where access allowed) of the in-situ timbers were undertaken to establish the extent of the hulk remains. Following this, bank and barge dredging recovered the timbers to a safe place on the riverbank where recording by Wessex Archaeology staff was undertaken. Recording was undertaken in March and June 2021. Once dredging operations were complete, a post-excavation UAV survey was undertaken to inspect whether any further archaeological material was still in-situ. Recovered objects were given a unique Wessex Archaeology ID number; due to the large number of recovered timbers, these were recorded by component type (e.g. keel structure, stern/bow structure, frames,



planking etc.). A photographic record of the recovered objects was made using a digital camera.

5 ARCHAEOLOGICAL RESULTS

5.1 Introduction

- 5.1.1 All finds recovered during the works were deemed to be of a 19th century or modern nature (1900-present).
- 5.1.2 A peat deposit was observed during the first phase of works within the coffer dam and samples were taken (7549 - Plate 9); however, these could not be successfully analysed given the lack of stratification as well as contamination from the process of the excavation, making it an undatable deposit and hence unusable. These were subsequently discarded. No archaeological features were discovered during any phase of works.
- 5.1.3 The lack of archaeological features within the area excavated for the tie rods during the second phase of works, is a result of the site being comprised of up to 2 metres of made ground, formed in the late 20th century from redeposited alluvial deposits dredged from the river.

5.2 2018-2019 phase of works

- 5.2.1 During the first phase of works, 113 objects were recorded by the on-site archaeologist while monitoring the works, all of which were thought to be of 19th century or modern origin. The majority of the recorded objects were timbers that were recorded with details such as size, wood type, tool marks, any defining features such as nails or holes. Most of the timbers were thought to belong to a wooden structure such as a jetty that may have eroded away (Plates 10-17). The presence of hulks along the river highlights the potential that some of the timbers may have originated from a vessel; however, as most were discovered as isolated finds, it is not possible to relate them. Other non-timber finds included two pieces of bone, two glass bottles, three ceramic sherds and two small metal items.
- 5.2.2 Of the 113 objects recorded, only two were deemed to have archaeological potential and retained. The first was object ID **7545**, sections of a leather boot that was mostly complete with a thick sole, front, sides and heel. The boot had metal eyelets with a partial lace that enabled the find to be dated to between 1900-1950. More details can be found on this item in the object report in Appendix 2.
- 5.2.3 The second artefact to be retained was object ID **7582**, a glass decanter measuring 220 mm in height and 90 mm in diameter that was found in with black sediment in the western dredge area. The pattern on the body of the decanter consists of pillars divided into three blocks, each bearing a circular depression. It is likely that this decanter was intended for the storage of spirits such as whiskey or brandy and it is thought to be a mass-produced replica dating to the late 19th to early 20th century (Appendix 3).
- 5.2.4 A full list of the objects recorded can be found in Appendix 1.
- 5.2.5 Limitations were encountered during the monitoring works. The archaeologist did not always have a clear view of the shore-based dredging over the sheet piling, making it difficult to identify whether any archaeological finds were present, and the viewpoint for the archaeologist was often tens of metres away from the excavation which limited visual inspection (Plate 1). It was also not possible to access the spoil to examine it, nor to access the sites for closer inspection (other than inside the cofferdam on rare occasions). At one

stage, dredging works were also being undertaken simultaneously by two excavators making it difficult to observe the spoil being dumped by either (Plate 8). With these limitations combined, it is likely that some smaller archaeological finds and features were missed. During some of the shore-based dredging works, exposed areas were almost immediately submerged with water, covering any potential finds and making them difficult to identify. The lack of adequate lighting during darker parts of the day along with the dark spoil also made it difficult to identify archaeological finds within it. Again, given these conditions, it is likely that archaeological finds and features were not visible for distant archaeological recording.

- 5.2.6 Outside the monitoring works, a Protocol for Archaeological Discoveries (PAD) was in place to record any finds discovered while an archaeologist was not present on site. One unidentified hulk was recovered during the dredging works and reported through the PAD. It was recorded by an archaeologist on site at a later date and can be read about in Appendix 5. Another find recorded through the PAD were three glass bottles (Appendix 4).

5.3 Second (2020) phase of works

- 5.3.1 The deposits observed during the course of the excavations for the tie rods were comprised of up to approximately 1.5m of made ground consisting of redeposited red brown silty sandy clay dredged from the river channel. The made ground in turn overlay dark grey estuarine alluvial silty clays.
- 5.3.2 No artefacts of archaeological significance were discovered. This was to be expected due to the location of the excavation works being within a raised area created during the late 20th century with redeposited material. In accordance with this, modern timber, metal and plastic debris were observed during the monitoring. Only one artefact was recovered due to its size. The object comprised of a timber with an attached chain and was believed to be of a modern nature. The item was photographed and discarded on site.
- 5.3.3 No deposits with any geoarchaeological potential were recorded within the silty clay estuarine alluvial deposits at the base of the excavations underlying the made ground, during this second phase of works, consequently no geoarchaeological sampling was required.

5.4 Consecutive (2020-2021) dredging operations

- 5.4.1 As part of the dredging works completed on the south bank of The Haven opposite the entrance to the Port of Boston wet dock, a PAD was in place to record any finds discovered while an archaeologist was not present on site.
- 5.4.2 The dredged sediment was entirely made up of fine inter-tidal silt. A group of timbers located within the western edge of the dredging area were reported through the PAD. The timbers were identified as pertaining to a hulk (see Appendix 6). An iron anchor was also recovered from the sediment within proximity to the hulk (Appendix 9), along with additional timbers from a jetty structure (Appendix 8), and a small number of disarticulated timbers from a second hulk (Appendix 7).
- 5.4.3 The jetty timbers **7614–16, 7618, 7619** and **7643** were all fashioned from boxed heart oak timbers, some of which had iron fixtures or the imprint of fixtures on them. They were all recovered loose within the silt and so may have been part of a partially demolished jetty in the area or may have been loose pieces which floated into the area from elsewhere. Individual mooring posts are present within the inter-tidal sediments on the north bank of The Haven and further downstream on the south bank (Plate 26).

- 5.4.4 The timbers recovered from Hulk 1 on the south bank included the keel (**7635**) which had split in two at the central scarf (Plate 27), the sternpost, keelson and deadwood knee (**7617** - Plate 28) which had a hole driven through it for a propellor shaft, and examples of the framing elements (**7638** and **7639** - Plate 29), along with hull planking (**7637**, **7645** - Plate 30). The recovered timbers demonstrated that the hull had been lying roughly in a north-south orientation with the bow towards the shore, on its starboard side. From the remains, the vessel seems to have been partially exposed for a substantial period of time as the port side floor frames had become heavily decayed and none of the port side upper framing elements or planking were found. While some of the timbers had clearly broken off during extraction, most of the timbers had already broken apart or decayed while in-situ, therefore most of the structural integrity was already lost prior to removal. A heavily corroded iron anchor **7636** of an admiralty/fisherman's type was recovered from around the bow area of the hulk (Plate 31). Poorly shaped concrete blocks which may have been original ballast or may have been dumped within the hull after it was hulked were also identified. More details can be found in the object report in Appendix 6.
- 5.4.5 Evidence for a second hulk closer to the sheet pile wall of the dredge edge is indicated by the recovery of disarticulated joggled frames (**7620**, **7626**, **7634** and **7644** - Plate 32) and sections of clinker planking (**7621**, **7625**, **7628**, **7629** and **7631-7633** - Plate 33) which identified the hulk as being a different one to the carvel built Hulk 1. The joggled frames still retained treenails, as means of fastening the planking onto the frames; the planking would have fitted onto the joggled outer face of the frames. Evidence for waterproofing by means of luting, which appears to be a mixture of some form of animal hair and tar, was present on some of the recovered planks. More details can be found in the object report in Appendix 7.
- 5.4.6 Aerial photographs of the area from 1930 do not show any beached vessels on the southern bank (Plate 34). However, a second aerial photograph from 1952 (Plate 35) shows at least six beached hulks, two of which (identified on the image as Hulk 1 and Hulk 2) could be the hulks in question, as these are in approximately the same position and orientation to the hulks found during these works. The shape of the hulks in the photograph would suggest that they were barges or fishing boats and had been abandoned in that location for a substantial period of time.

6 CONCLUSIONS

6.1 Summary

- 6.1.1 The 2018-2019 phase of works monitoring the dredging activity resulted in the recording of 113 objects by the on-site archaeologist, most of which were timbers and deemed modern. This was to be expected due to Boston being an important port and due to the work done recording known hulks in the area (Nayling 2011). Some of these timber objects were presented to the Boston and South Holland Wood Carvers, a local wood carving group, as raw materials for their designs.
- 6.1.2 Two finds were retained due to their potential local archaeological significance; a leather boot thought to be from the first half of the 20th century, and a glass decanter thought to be of late 19th to early 20th century in date. The aims of the WSI (BMMJV 2018) were met as the recording of all the objects was done to mitigate the impact of the Project on the historic environment.
- 6.1.3 A peat deposit was observed during the first phase of works within the cofferdam and samples were taken (**7549**) (Plate 9); however, these could not be successfully analysed given the lack of stratification as well as contamination from the process of the excavation,

making it an undatable deposit and hence unusable. Without observing the peat deposits recorded in-situ and undisturbed it is impossible to ascertain whether the peat formed in-situ or was “rafted” (eroded from elsewhere and redeposited as a result of fluvial processes).

- 6.1.4 As was expected, during the 2020 phase of works within an area of made ground comprised of re-deposited alluvial material dredged from the river channel in the 20th century, few artefacts were recovered, and all were of modern date and discarded.
- 6.1.5 Undisturbed in-situ dark grey alluvial silts were recorded underlying the made ground in the base of the area excavated for the tie rods. These alluvial deposits were entirely minerogenic and none with any geoarchaeological potential were recorded.
- 6.1.6 During the consecutive 2020-2021 dredging works along the south bank of The Haven, opposite the entrance to the Port of Boston wet dock, the extracted sediment was entirely made up of fine inter-tidal silt. Discoveries were reported through the PAD, consisting of timbers pertaining to two different hulks, an anchor and jetty timbers, and all were of modern date and discarded.

6.2 Discussion

- 6.2.1 As with previous investigations in the vicinity of the Boston Barrier flood defence scheme (APS 2012) there was no evidence of any archaeological horizons within the depositional sequence that was available for examination. The in-situ deposits observed underlying the made ground represented a natural sequence of river silts, coastal marsh, tidal and marine deposits. The “peat” observed during the monitoring of the dredging works if it had developed in-situ would have represented a phase of freshwater fen and may be related to the peat layer dated with caution to the middle Neolithic by Taylor (2011). The depositional sequence is representative of a marine and coastal saltmarsh intercut by the River Witham. Due to the tidal nature of the river the depositional sequence will have been influenced by both fluvial and marine processes. Channels will have been cut and recut with deposits both laid down and reworked. The mainly minerogenic deposits within this estuarine environment will have the potential to contain paleoenvironmental evidence such as foraminifera, diatoms, ostracods and organic material however the possibility of deposits having been reworked should be taken into consideration.
- 6.2.2 Although limitations were encountered during the monitoring of the dredging works, most notably the distance of the archaeologist from the sites and the spoil, the methodology was undertaken successfully. This is demonstrated by the recovery and recording of 113 objects, 111 of which were deemed modern and discarded on site.
- 6.2.3 The material excavated for the tie rod installation was within a raised area on the south bank of The Haven created during the late 20th century with redeposited material. Although the methodology of examining the spoil in detail was not achieved, the methodology undertaken on site is thought to have been proportionate to the significance of the archaeology being encountered as only modern debris was observed by the archaeologist throughout the works.

6.3 Recommendations for further work

- 6.3.1 It is not recommended to have an archaeologist on site during any future phase of dredging works in this immediate area and within known redeposited material due to the results of both phases of works discussed in this project and the lack of significant archaeological or geoarchaeological finds. Of the items recorded, all were deemed to be of a modern origin and only two were retained. It is instead proposed that the Protocol for Archaeological

Discoveries (PAD) as described in the WSI (BMMJV 2018), be replicated across all dredging work within known redeposited material.

- 6.3.2 With historic borehole data from the BGS online borehole database, data from the work undertaken on the project works and the previous APS investigations including any additional data gathered from further ground investigations, modelling the deposits within the Haven/Project area may be feasible for work outside the scope of the project. Erosion by fluvial action and later periodic dredging of the river channel would render the model redundant for the main river channels, but could prove useful in mapping the extent and occurrences of deposits with palaeoenvironmental potential such as peat of which there are a number of historic borehole records to the south of the river. No further work on the deposit model to be undertaken as a result of this phase of investigations.

7 ARCHIVE STORAGE AND CURATION

7.1 Museum

- 7.1.1 The archive resulting from the watching brief is currently held at the offices of Wessex Archaeology in Salisbury. The Collection Museum, Lincoln has agreed in principle to accept the archive on completion of the project, under the accession code **LCNCC: 2020.47**. Deposition of any finds with the museum will only be carried out with the full written agreement of the landowner to transfer title of all finds to the museum.

7.2 Preparation of the archive

- 7.2.1 The archive, which includes paper records, artefacts and digital data, will be prepared following the standard conditions for the acceptance of excavated archaeological material by The Collection Museum, Lincoln, and in general following nationally recommended guidelines (SMA 1995; ClfA 2014c, updated 2020; Brown 2011; ADS 2013).
- 7.2.2 All archive elements will be marked with the **accession code**, and a full index will be prepared. The physical archive currently comprises the following:

- 2 cardboard boxes of artefacts ordered by material type;
- Up to four files/document boxes of paper records;

7.3 Selection policy

- 7.3.1 Wessex Archaeology follows national guidelines on selection and retention (SMA 1993; Brown 2011, section 4). In accordance with these, and any specific guidance prepared by the museum, a process of selection and retention will be followed so that only those artefacts or ecofacts that are considered to have potential for future study will be retained. The selection policy will be agreed with the museum and is fully documented in the project archive.

7.4 Security copy

- 7.4.1 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.



7.5 OASIS

- 7.5.1 An OASIS online record (<http://oasis.ac.uk/pages/wiki/Main>) has been initiated, with key fields and a .pdf version of the final report submitted. Subject to any contractual requirements on confidentiality, copies of the OASIS record will be integrated into the relevant local and national records and published through the Archaeology Data Service ArchSearch catalogue. The OASIS ID for this project is **wessexar1-388685**.

8 COPYRIGHT

8.1 Archive and report copyright

- 8.1.1 The full copyright of the written/illustrative/digital archive relating to the project will be retained by Wessex Archaeology under the *Copyright, Designs and Patents Act 1988* with all rights reserved. The client will be licenced to use each report for the purposes that it was produced in relation to the project as described in the specification. The museum, however, will be granted an exclusive licence for the use of the archive for educational purposes, including academic research, providing that such use conforms to the *Copyright and Related Rights Regulations 2003*. In some instances, certain regional museums may require absolute transfer of copyright, rather than a licence; this should be dealt with on a case-by-case basis.
- 8.1.2 Information relating to the project will be deposited with the Historic Environment Record (HER) where it can be freely copied without reference to Wessex Archaeology for the purposes of archaeological research or development control within the planning process.

8.2 Third party data copyright

- 8.2.1 This document and the project archive may contain material that is non-Wessex Archaeology copyright (e.g., Ordnance Survey, British Geological Survey, Crown Copyright), or the intellectual property of third parties, which Wessex Archaeology are able to provide for limited reproduction under the terms of our own copyright licences, but for which copyright itself is non-transferable by Wessex Archaeology. Users remain bound by the conditions of the *Copyright, Designs and Patents Act 1988* with regard to multiple copying and electronic dissemination of such material.

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APPENDICES

Appendix 1: Finds recovered during all phases of works

ID	Material	Description	Modern or Historic	Retained or Discarded
7501	Timber	1.34 x 0.13 x 0.10 m. Tapered at one end, broken at the other. Bent in middle due to crack. Probably a pile/post. From riverbank east of development (Plate 10).	Modern	Discarded on site
7502	Timber	Horizontal timber from river wall/embankment. 3.20 x 0.25 x 0.17 m. Large squared timber. Broken one end. Evidence of iron bolt (for tie-back?). From riverbank east of development (Plate 10).	Modern	Discarded on site
7503	Timber	1.50 x 0.24 x 0.08 m. Rectangular section, tapered at one end, broken at other. Probably a pile. From cell 5.	Modern	Discarded on site
7504	Timber	1.75 x 0.14 x 0.19 m. Irregular section, quarter circle at one end, rectilinear at other. Hole in the centre, 50 mm diameter, with rubber(?) ring/washer in. On other face another hole 80 x 60 mm in diameter and an iron(?) fastening over a washer or plate. From cell 5.	Modern	Discarded on site
7505	Timber	2.75 x 0.25 x 0.25 m. Tapered at one end, damaged at the other end. Iron capped at port with bolts. Probably pile. From river wall structure.	Modern	Discarded on site
7506	Timber	2.75 x 0.25 x 0.25 m. Tapered at one end. Iron capped at port with attached bolts. Straight grained. Complete pile. From river wall structure.	Modern	Discarded on site
7507	Timber	1.74 x 0.18 x 0.08 m. Rectangular post. Straight grained. Pine seasoned and treated. Part of river wall structure.	Modern	Discarded on site
7508	Timber	1.93 x 0.18 x 0.08 m. Rectangular post. Damage at port end. Pine seasoned and treated. Tangential conversion. From river wall structure.	Modern	Discarded on site
7509	Timber	1.75 x 0.14 x 0.08 m. Likely to be pine. Found with 7508, likely part of river wall structure. Timber is very short, and function is unclear.	Modern	Discarded on site
7510	Timber	1.35 x 0.08 x 0.08 m. Possible modern pine post. Related to 7505 & 7511? Whole conversation. Bent in middle of timber and tapered at one end.	Modern	Discarded on site
7511	Timber	1.43 m length. Possible post, crudely converted. Likely part of river wall structure. Cap on end. Function unknown (Plate 11).	Modern	Discarded on site



ID	Material	Description	Modern or Historic	Retained or Discarded
7512	Timber	0.43 m Isolated small stake. Unknown wood. Tapered at one end. Damage in middle. Isolated with no associated structure (Plate 11).	Modern	Discarded on site
7513	Timber	1.83 x 0.16 x 0.08 m. Heavily damaged. Most likely to have been a plank. Possibly related to river wall structure (Plate 12).	Modern	Discarded on site
7514	Timber	0.49 x 0.16 x 0.16 m. Isolated timber. Heavily damaged timber post.	Modern	Discarded on site
7515	Timber	1.14 x 0.13 x 0.07 m. Heavily damaged rectangular post. Snapped and bent at centre. Broken at end from point at the top.	Modern	Discarded on site
7516	Timber	0.73 x 0.06 m. Possible top part of post. Badly damaged. Timber tapers to port side due to damage.	Modern	Discarded on site
7517	Timber	1.50 x 2.0 x 0.30 m. Massive timber. Timber appears to be mostly unworked and could be natural. Isolated find.	Modern	Discarded on site
7518	Timber	1.16 x 0.10 x 0.03 m. Heavily damaged plank. Straight, tight grained. Isolated find, no structure.	Modern	Discarded on site
7519	Timber	1.48 x 0.08 m. Large crack down the centre. Knotty with a large amount of sapwood. Post is incomplete as it has been snapped off at one end.	Modern	Discarded on site
7520	Timber	0.90 x 0.80 m Possible post. Broken at one end and tapered at the other end.	Modern	Discarded on site
7521	Timber	1.04 x 0.16 m. Incomplete post. Lots of sapwood. Tapered at one end.	Modern	Discarded on site
7522	Timber	0.76 x 0.14 x 0.08 m. Modern post.	Modern	Discarded on site
7523	Metal	0.61 x 0.24 x 0.10 m Iron brace/collar - pile/collar	Modern	Discarded on site
7524	Timber	0.89 x 0.10 x 0.10 m. Isolated find. Post. Tapered at one end and badly damaged in the middle.	Modern	Discarded on site
7525	Timber	1.38 x 0.10 x 0.06 m. Large post. In complete sapwood still present. Point carved regularly with axe.	Modern	Discarded on site
7526	Timber	0.80 x 0.08 x 0.08 m. Incomplete post. Lots of sapwood present. Isolated find. Carved with axe (?)	Modern	Discarded on site
7527	Timber	1.60 x 0.11 m. Large post. Possible relation to 7526. Isolated find. Lots of sapwood. Knotty. Point carved with axe.	Modern	Discarded on site
7528	Animal Bone	Found in cell 6	Modern	Discarded on site



ID	Material	Description	Modern or Historic	Retained or Discarded
7529	Animal Bone	Found in cell 6	Modern	Discarded on site
7530	Timber	3.04 x 0.24 x 0.24 m. Large pile, possible relation to timbers from river wall structure. Rectangular treated wood. Large belts driven through.	Modern	Discarded on site
7531	Timber	1.40 x 0.18 m. Oak Post from Western. Halved areas of bark edge.	Modern	Discarded on site
7532	Timber	0.81 x 0.32 x 0.50 m. Small boats timber. Possible lily stern or stern. Machine sawn. Tight grained. Evidence of modern saw marks.	Modern	Discarded on site
7533	Timber	3.50 x 0.08 m. Badly damaged fragment of timber. Possibly originally part a square pile. Found in same area as 7532	Modern	Discarded on site
7534	Timber	3.42 x 0.31 m. Possible 20th Century pile. Badly damaged. Iron capped on tapered end. Straight grained	Modern	Discarded on site
7535	Timber	1.78 x 0.10 m. Possible part of a post, both ends have been broken. Likely to be related to 7536	Modern	Discarded on site
7536	Timber	0.74 x 0.10 m. Post likely to be a part of 7535.	Modern	Discarded on site
7537	Timber	0.70 x 0.15 x 0.05 m. Badly damaged. Top part of post. Knotty grained. Related to structure (?)	Modern	Discarded on site
7538	Timber	0.60 m x 0.07 m. Incomplete stake. Broken at one end. Stake recovered with 7539.	Modern	Discarded on site
7539	Timber	0.70 m x 0.07 m. Stake recovered with 5738.	Modern	Discarded on site
7540	Timber	2.15 m x 0.19 m. Incomplete large Post. Sapwood present and bark edge present. Straight grained. Heavily damaged. Lifted with 7541. Possibly related to one structure.	Modern	Discarded on site
7541	Timber	1.70 m x 0.14 m. Post recovered with 7540. Similar construction to 7540. Slight curve to square off.	Modern	Discarded on site
7542	Timber	1.30 m x 0.15 m. Post. Iron capped on tapered end. Saw marks visible at tapered end. Knotty grained. Possible part of former 20th Century river wall.	Modern	Discarded on site
7543	Timber	Post broken into two parts. Tapered end part is 1.12 m x 0.17 m. Second part is 0.86 m x 0.12 m. Tapered end has sapwood present.	Modern	Discarded on site
7544	Timber	2.30 m x 0.12 m. Post related to potential structure. Very damaged.	Modern	Discarded on site
7545	Leather	Leather boot. Mostly complete. Currently in six pieces. Thick sole, front, sides and heel are intact. Details around insole opening. Metal eyelets with partial lace. Metal bracket. Curve	Modern	Retained



ID	Material	Description	Modern or Historic	Retained or Discarded
		with lip and fastening. See Appendix 2 for more information.		
7546	Timber	1.40 m x 0.80 m. Post relating to structure. Oak. No obvious tool marks. Tight straight grained. Pentagonal shaped.	Modern	Discarded on site
7547	Timber	1.70 x 0.15 x 0.15 m. Three round timbers in a marine clay and silt. Possible tool mark, cut on one at thin end.	Modern	Discarded on site
7548	Timber	0.50 x 0.10 m. Possible post from a jetty. Broken on either side. Lifted from east of coffer dam/south bank (Plate 13).	Modern	Discarded on site
7549	Peat	Sample of 3 bags from 1 lump. South east corner of coffer dam.	Modern	Discarded on site
7550	Peat	Sample of 2 bags from south west of coffer dam.	Modern	Discarded on site
7551	Timber	Timber pile, 'obstruction' removed from west river. 3.50 x 0.35 x 0.35 m. One end pointed.	Modern	Discarded on site
7552	Timber	Timber pile, 'obstruction' removed from west side of river. 3.40 x 0.18 x 0.18 m. One end pointed.	Modern	Discarded on site
7553	Timber	Timber with circular section. Pointed end has a metal bracket attached. Found in west of river. 2.15 x 0.14 x 0.14 m	Modern	Discarded on site
7554	Timber	Loose timbers recovered west (?) river by boat. Square cross section. 2.13 x 0.25 x 0.20 m.	Modern	Discarded on site
7555	Timber	Timber with cap joint at end. Found from demolition of wharf to east. 2.20 x 0.18 x 0.18 m.	Modern	Discarded on site
7556	Timber	2.40 m x 0.18 m Point converted on 4 sides. Bark stripped off. Possible pile from lost jetty. Somewhat damaged.	Modern	Discarded on site
7557	Timber	1.50 m x 0.22 m. Possible pile. Similar to 7558. Partially boxed timber. Straight grain with parts boxed. Possible tieback from wharf. Similar to 7577 and 7579. Broken at both ends.	Modern	Discarded on site
7558	Timber	Upper section of possible pile. Similar to 7557	Modern	Discarded on site
7559	Timber	De-barked tree trunk. Would be pile. Similar to 7557	Modern	Discarded on site
7560	Timber	Half piled section. Similar to 7557	Modern	Discarded on site
7561	Timber	0.82 x 0.17 x 0.08 m. Joint on one side. Possible isolated timber (Plate 14).	Modern	Discarded on site
7562	Glass	Brown bottle. Possible beer bottle. "THOS Kitwood & Sons" printed on bottle. Barnacles on base.	Modern	Discarded on site
7563	Glass	Clear bottle. "Milk suipworth dairy milk Wyberton Boston" printed on bottle.	Modern	Discarded on site



ID	Material	Description	Modern or Historic	Retained or Discarded
7564	Ceramic	3 x ceramic sherds. 1 x part of large stoneware storage vessel base. 1 x white porcelain sherd. 1 x red earthenware rim.	Modern	Discarded on site
7565	Metal	Brass fitting found on west dredge.	Modern	Discarded on site
7566	Timber	2.26 x 0.22 x 0.24 m. Pile with quartered trunk with boxed point. Possible part of wharf or jetty structure.	Modern	Discarded on site
7567	Timber	2x partially squared timbers.	Modern	Discarded on site
7568	Timber	1.97 x 0.24 x 0.22 m. Possible tieback apart of former wharf or jetty. Similar to 7577 & 7579. Found in west dredge.	Modern	Discarded on site
7569	Timber	1.68 x 0.19 x 0.23 m. Post mooring post. Possible part of wharf from west dredge (Plate 15).	Modern	Discarded on site
7570	Timber	1.79 x 0.28 x 0.28 m. Driven pile similar iron shoe on point to 7553. Possible part of 20th Century wharf. Found on west dredge.	Modern	Discarded on site
7571	Timber	0.62 x 0.20 x 0.05 m. Plank with pointed end. Pile driven into river bed. Possible part of wharf.	Modern	Discarded on site
7572	Timber	1.72 x 0.30 x 0.28 m. Possible structural beam. Lap joint on one end. Horizontal part of wharf or tieback. Found in west dredge.	Modern	Discarded on site
7573	Timber	2x Planks	Modern	Discarded on site
7574	Timber	3m+ x 0.33 m x 0.33 m. 8 piles, all similar dimensions. Located to east of cofferdam approx. 12 m into river. Tops broken to varying heights. Iron shoe on point. Part of wharf running along south bank.	Modern	Discarded on site
7575	Timber	Modern boxed timber 2m x 4m.	Modern	Discarded on site
7576	Timber	Round de-barked. Probable pile. Pointed end snapped off.	Modern	Discarded on site
7577	Timber	2.05 x 0.16 x 0.13 m. Possible tieback from 19th Century wharf running parallel to current wharf 10-15 m into river. Similar to 7579.	Modern	Discarded on site
7578	Timber	Pine boxed pile. Floated down from East area of dredging.	Modern	Discarded on site
7579	Timber	2.11 x 0.26 x 0.23 m. 3x partially boxed timbers. Rubbing/contact mark on one side of one. This suggest against upright timber at this point. Similar to 7577.	Modern	Discarded on site
7580	Timber	1.25 x 0.23 x 0.08 m. Thick plank with diagonally cut end and narrowing of thickness. Probably a piled plank for wharf wall/revetment.	Modern	Discarded on site
7581	Timber	1.48 m x 0.13 m. Possible pine pile. Iron point with 4 tails running up boxed sides of pile. Rest of pile debarked. Possible part of wharf or jetty.	Modern	Discarded on site



ID	Material	Description	Modern or Historic	Retained or Discarded
		Similar to timber 7553, recovered in similar location close to wall of coffer dam.		
7582	Glass	220 mm x 90 mm. Glass decanter found in with black sediment in west dredge area. Find came from area of round/partially boxed oak timbers. See Appendix 3 for more information.	Modern	Retained
7583	Timber	0.05 x 0.14 x 0.19 m. Softwood plank.	Modern	Discarded on site
7584	Timber	1.50 x 0.11 x 0.08 m. Possible mooring stake from shore reverting or jetty. Removed by long reach digger from silt at some depth from original mud surface. Oak. Pointed end not does not show tool marks but broad facets.	Modern	Discarded on site
7585	Timber	2.60 x 0.35 x 0.17 m. Slow grown softwood. Outer rings 1.5 mm – 2 mm. Dredged from silt 100 m east of coffer dam	Modern	Discarded on site
7586	Timber	2.80 x 0.21 x 0.15 m. Slow-grown softwood. Outer rings under 2 mm. Timber in good condition with one hinged break.	Modern	Discarded on site
7587	Timber	1.44 x 0.20 x 0.20 m. Oak with some damage on sides. Thick end has 2 facets - "chisel" Slight to moderately decomposed. Waterlogged. Possible mooring post.	Modern	Discarded on site
7588	Timber	2.90 m length. Possible timber associated with old wharf. Recovered from east of coffer dam. Iron shoe on pointed end.	Modern	Discarded on site
7589	Timber	1.10 x 0.22 x 0.09 m. Removed by digger from silt near old wharf. East of coffer dam. One half of a scarf joint. Six holes. Irregular from 0.03 m to 0.05 m bored into face of timber. Possible boat keel fragment in secondary use or keelson.	Modern	Discarded on site
7590	Timber	1 m to 2.5 m length. Group of 8 timbers retrieved by pontoon dredger from 60 -80m east of coffer dam, nearshore. 5 roundwood with sharpened ends (4 damaged at opposite end). One 0.10 m square dimensioned (x1m). One 0.02 x 0.25 x 1.40 m. One triangular section of softwood. Possible mooring posts.	Modern	Discarded on site
7591	Timber	0.75 x 0.12 x 0.03 m. Well preserved timber broken at both ends. Isolated timber. Unknown use.	Modern	Discarded on site
7592	Timber	2.70 x 0.32 x 0.23 m. One of two possible mooring posts, associated with 7593. Possible pine.	Modern	Discarded on site
7593	Timber	2.20 x 0.30 x 0.24 m. Possible mooring post. Associated with 7592. Good condition. Possible pine (Plate 16).	Modern	Discarded on site



ID	Material	Description	Modern or Historic	Retained or Discarded
7594	Timber	0.60 x 0.05 x 0.03 m. Four nails found on long thin timber. Unknown of use. Post lifted shortly after post 7593, possible relation.	Modern	Discarded on site
7595	Timber	0.98 x 0.64 x 0.30 m. Single nail found but does not go all the way through timber. Plank rounded at one end.	Modern	Discarded on site
7596	Timber	0.87 x 0.24 x 0.08 m. Broken piece of flat wood. No visible tool marks. Broken at both ends. Structure wood, possible from building site, modern? Found east of cofferdam.	Modern	Discarded on site
7597	Timber	1.86 x 0.30 x 0.18 m. Square broken wood, wood condition okay. No visible tool marks. Has flat side, machined? Possible structural/stable wood, possible part of jetty that has been removed. Found east of cofferdam.	Modern	Discarded on site
7598	Timber	1.18 x 0.19 x 0.12 m. Round with bark still on. Has hole through it at the wider end. Slightly curved. Possible pile but missing tapered end. Found east of cofferdam.	Modern	Discarded on site
7599	Timber	1 x 0.40 x 0.30 m. Tree trunk. Did not seem archaeological at first but has squared "branch" at one end, with another branch more natural look. But a carved circular at the base where branches meet trunk. Bark is on the trunk but not at square part. Found east of cofferdam. Function unknown.	Modern	Discarded on site
7600	Timber	0.98 x 0.11 x 0.09 m. Square timber broken at both ends with no signs of tool marks, contains an iron peg/nail? In the middle closer to one end. Goes through the other side contained a line of nails on one side. Found from dredging east of cofferdam. Peg indicates it was connected to something but function unknown. Possible post medieval or modern.	Modern	Discarded on site
7601	Timber	2.25 x 0.13 x 0.12 m. Square and slightly curved wood with two holes at one end (for joining) and pointier end with iron fastening (and nail) on. The wood is in fair condition but is splitting at end with iron. Part of structure or boat? Found east of cofferdam.	Modern	Discarded on site
7602	Timber	2 x 0.10 x 0.07 m. Slightly curved flat timber with no tool marks visible. Not in good condition as wood is flaking off. Broken at one end and rounded at the other end. Possible boat timber. Found east of cofferdam.	Modern	Discarded on site
7603	Timber	5 timbers recorded in one sheet. (1) 2.66 x 0.14 x 0.12 m. (2) 1.60 x 0.09 x 0.08 m. (3) 1.58 x 0.15 x 0.10 m. (4) 1.73 x 0.10 x 0.08 m. (5) 1.50	Modern	Discarded on site



ID	Material	Description	Modern or Historic	Retained or Discarded
		x 0.11 x 0.11 m. 5 narrow wood piles in poor condition. No tool marks visible due to condition. All are broken. 3 have tapered end and the other 2 seems to be middle parts. All similar thickness and seemed to be same wood so grouped together. Wood piles. East of cofferdam.		
7604	Timber	6 timbers recorded in one sheet. (1) 2.27 x 0.19 x 0.18 m (furthest from ranging rod) Broken pile with top (2) 3.20 x 0.14 x 0.14 m Complete wood pile with base end top (3) 2.23 x 0.19 x 0.13 m Broken wood pile with top (4) 1.23 x 0.19 x 0.13 m Broken centre of wood pile (5) 1.76 x 0.14 x 0.12 m Broken wood pile with base. Base iron nail or peg in tapered end (6) 1.72 x 0.15 x 0.12 m (nearest to the ranging rod) Broken wood pile with top. Timber piles. Found east of cofferdam.	Modern	Discarded on site
7605	Timber	2.34 x 0.32 x 0.08 m. Squared broken wood plank with 8 equally sized holes, better visible on one side than the other. Broken at both ends. Part of structure or jetty. Found east of cofferdam.	Modern	Discarded on site
7606	Timber	3.36 x 0.18 x 0.50 m. Complete wood pile/post with tapered base and flat top. No visible tool marks but most likely machined to make pointy end. No bark. Same as 7604. No metal pin/peg/nails in it. Found east of cofferdam.	Modern	Discarded on site
7607	Timber	2 timbers recorded on one sheet. (1) 2.50 x 0.13 x 0.10 m further away from ranging rod. (2) 2.65 x 0.13 x 0.10 m Closer to ranging rod. 2 round broken wood piles, same size. Piles are broken at the top end and both contain the bottom end (pointed end). Bark visible in some places but could be environmental damages to the wood. Wooden piles from east side of cofferdam.	Modern	Discarded on site
7608	Timber	2.40 x 0.24 x 0.10 m - 0.18 m. Timber broken on one end and tapers off into a pointed finished at the other end. One face is unworked and still retains trunk roundness. Rough surface. Opposite face is worked a cut. Pointed end is encased with metal. Four strips. One on each face bolted to the timber by 2 bolts for each strip. Timber lifted from west of coffer dam. Possible pontoon structure use.	Modern	Discarded on site
7609	Timber	2.40 x 0.29 x 0.15 m. Boxed pile. Pile has an iron shoe on point. 2 flanges on 2 sides. Timber	Modern	Discarded on site



ID	Material	Description	Modern or Historic	Retained or Discarded
		lifted from southern edge of channel in western dredge. Possible modern pile.		
7610	Timber	1.35 x 0.20 x 0.11 m. Possible hard wood, oak. Pile broken and damaged. Possibly from jetty along bank of Witham to north of sluice.	Modern	Discarded on site
7611	Timber	2.40 x 0.39 x 0.10 m. Loose timber. Broken with intact but broken treenails. May have been used as a pile. One end shaved down. Found in west dredge (Plate 17).	Modern	Discarded on site
7612	Timber	1.62 x 0.25 x 0.20 m. Stepped tenon joint on one end. T shaped iron braced with cross of T perpendicular to length of timber on same end. 2x iron nails. Possible structural timber for jetty or mooring dolphin. Post-medieval. Lifted from west dredge.	Modern	Discarded on site
7613	Timber	3.83 x 0.18 x 0.18 m. Possible pile, complete. Iron fitting towards tip. Loose timber. Possible part of the jetty, staithe or dolphin on south side of river Witham.	Modern	Discarded on site
7614	Timber	1.7 x 0.29 x 0.2 m. Part of jetty, boxed timber with impressions of iron fittings on sides. Part of staithe of jetty on south side of Haven	Modern	Discarded on site
7615	Timber	4.2 x 0.28 x 0.2 m. Part of jetty, boxed timber with impressions of iron fittings on sides. Part of staithe of jetty on south side of Haven	Modern	Discarded on site
7616	Timber	2.5 x 0.29 x 0.2 m. Part of jetty, boxed timber with impressions of iron fittings on sides. Part of staithe of jetty on south side of Haven	Modern	Discarded on site
7617	Timber	Four timbers: overall measurements 2.58 m high x 3.06 m long x 0.2 m thick. Sternpost, keelson, deadwood knee and chock. Sternpost has tenon joint to fit into mortice on keel on lower end with 2 treenail holes. Keel has 0.11 m wide recesses to receive lower frames and floors. Sternpost also has diagonal recess towards top, possibly for reinforced plank to form lower part of counter stern. Propellor shaft hole through to stern. Part of Hulk 1	Modern	Discarded on site
7618	Timber	2.7 x 0.37 x 0.37 m. Part of jetty, boxed timber with impressions of iron fittings on sides. Part of staithe of jetty on south side of Haven	Modern	Discarded on site
7619	Timber	2.5 x 0.3 x 0.32 m. Part of jetty, boxed timber with impressions of iron fittings on sides. Part of staithe of jetty on south side of Haven	Modern	Discarded on site
7620	Timber	Two joggled floor frames measuring approximately 1.45 x 0.14 x 0.1 m. Boxed timbers with joggles to receive planks on outer	Modern	Discarded on site



ID	Material	Description	Modern or Historic	Retained or Discarded
		edge. Treenails present on both frames. Part of Hulk 2.		
7621	Timber	Two planks: overall measuring 1.45 x 0.19 x 0.04 m planking with treenail holes and scarf on one end. Not complete, clearly broken up. Full original width is 0.19 m. Evidence of luting on one piece. Part of Hulk 2.	Modern	Discarded on site
7622	Timber	0.68 x 0.14 x 0.1 m frame segment. Single piece of timber boxed quartered. No evidence for joggled edges or treenails. Part of Hulk 2.	Modern	Discarded on site
7623	Timber	1.4 x 0.11 x 0.04 m thin piece of timber, possibly damaged planking or other part of hull from disarticulated hulk. Part of Hulk 2.	Modern	Discarded on site
7624	Timber	0.53 x 0.07 x 0.05 m thin piece of timber, possibly damaged planking or other part of hull from disarticulated hulk. Part of Hulk 2.	Modern	Discarded on site
7625	Timber	Two timbers: overall measuring 1.35 x 0.27 x 0.04 m. Thin piece of timber, possibly damaged planking or other part of hull from disarticulated hulk. Scarf on one piece and treenail hole on other. Part of Hulk 2.	Modern	Discarded on site
7626	Timber	Large joggled frame measuring 1.45 x 0.2 x 0.15 m. Boxed timber with joggles to receive planks on outer edge. Treenails present on at least 4 joggles. Part of Hulk 2.	Modern	Discarded on site
7627	Timber	1 x 0.18 x 0.08 m. Boxed halved timber with rounded outer edge. Could be part of rubbing strake or similar within timber vessel. Part of Hulk 2.	Modern	Discarded on site
7628	Timber	Three planks: overall measuring 1.5 x 0.22 x 0.04 m. Hull planking with nail holes in one end, still retain a curved shape. Not complete, clearly broken up. Part of Hulk 2.	Modern	Discarded on site
7629	Timber	1.1 x 0.16 x 0.02 m thin piece of timber, possibly damaged planking or other part of hull from disarticulated hulk. Part of Hulk 2.	Modern	Discarded on site
7630	Timber	Section of hull: overall measuring 1.6 x 0.18 x 0.04m. Carvel constructed hull planking still attached to three futtocks by square shafted iron nails. Part of Hulk 1	Modern	Discarded on site
7631	Timber	Eight planking: overall measuring 1.6 x 0.19 x 0.04 m. Hull planking with nail holes. Not complete, clearly broken up. Part of Hulk 2.	Modern	Discarded on site
7632	Timber	Section of hull: overall measuring 1.5 x 0.17 x 0.04 m. Clinker constructed hull planking, with two planks still in place overlapping each other. Damaged and incomplete. Part of Hulk 2.	Modern	Discarded on site



ID	Material	Description	Modern or Historic	Retained or Discarded
7633	Timber	Section of hull: overall measuring 1.4 x 0.20 x 0.04 m. Clinker constructed hull planking, with three planks still in place overlapping each other. Damaged and incomplete. Part of Hulk 2.	Modern	Discarded on site
7634	Timber	Four frames: overall measuring 1 x 0.12 x 0.11 m. Decayed and damaged frames. Broken and incomplete. Signs of joggles on two, iron nails or rivets in one. Part of Hulk 2.	Modern	Discarded on site
7635	Timber	Keel: overall measuring 13.05 x 0.29 x 0.18 m. Keel in two pieces with one being complete (aft end) measuring 6.7 m long with mortice joint at one end and scarf at other, to connect to incomplete section (missing maybe 1 m of length to bow?) Scarf was 1.2 m long. Incomplete bow section was 6.35 m long. Both had a recess on upper part of both sides to receive garboard strake and had three paired iron spikes along length to connect to some form of upright. Lower frames had recess in their apex to fit onto top of keel. Part of Hulk 1.	Modern	Discarded on site
7636	Iron	Admiralty/Fisherman's anchor- part of Hulk 1. No stock, metalwork was heavily corroded. Measured 1.25 m high and 0.9 m between the flukes. Part of Hulk 1. See Appendix 9 for more information.	Modern	Discarded on site
7637	Timber	Thirty planks: overall measuring up to 5 x 0.19 x 0.04 m. Carvel constructed hull planking, some complete, others broken or decayed. Evidence for iron nail holes in several. Similar to planks attached to frames 7641 and 7642. Part of Hulk 1.	Modern	Discarded on site
7638	Timber	Twelve frames: overall measuring up to 1.35 x 0.19 x 0.1 m. Floor frames with a recess in centre to connect to top of keel or keelson. Connected to futtocks and planking by scarfs and iron nails. Box halved or box quartered with circular saw marks on some edges. Part of Hulk 1.	Modern	Discarded on site
7639	Timber	Twenty-two frames: overall measuring up to 1.5 x 0.1 m, 0.06 m thick. Futtocks – single or paired. Attached to floor frames and carvel hull planking by scarfs and iron nails. Examples of attached fragments in 7641 and 7642. Minimal curve on frames so upper part of vessel was relatively vertical – possible rounded bottom vessel. Part of Hulk 1.	Modern	Discarded on site
7640	Timber	Five miscellaneous timbers. All squared in cross-section, with lengths measuring up to 1	Modern	Discarded on site



ID	Material	Description	Modern or Historic	Retained or Discarded
		m, 0.14 moulded x 0.22 m sided. Possible cross pieces in hull or reinforcing stringers. Contained square shafted iron nails and nail holes. Part of Hulk 1.		
7641	Timber	Plank similar to those in 7637 attached by iron nails to futtocks similar to those in 7639. Demonstration of carvel constructed hull planking. No obvious timber treatment or repairs. Part of Hulk 1.	Modern	Discarded on site
7642	Timber	Section of hull. Consisting of hull planking and 3 futtocks connected by iron nails. Upper frames are paired and planking is similar to disconnected planking 7637. Demonstration of carvel constructed hull planking. Part of Hulk 1.	Modern	Discarded on site
7643	Timber	1.3 x 0.35 x 0.35 m. Part of jetty, boxed timber with impressions of iron fittings on sides. Part of staithe of jetty on south side of Haven	Modern	Discarded on site
7644	Timber	Joggled frame: measuring 2.05 x 0.14 x 0.12 m. Frame had 6 joggles to fit planks onto. Each joggle is 0.22 m long and lower 4 have treenails still in situ. Timber has been fashioned boxed heart. Treenails are circular in cross-section and proud on outer face. Part of Hulk 2.	Modern	Discarded on site
7645	Timber	Plank measuring 2 x 0.23 x 0.03 m. Radically cleft plank, in poor condition and broken. Holes are present suggesting treenail fastenings. Part of clinker constructed hull planking. Hulk 2.	Modern	Discarded on site
7646	Timber	Plank measuring 1.75 x 0.23 x 0.04 m. Plank with regular scored lines on outer face and small circular cut depressions within them. Scored lines are between 0.12 m and 0.13 m apart. Square shafted iron nail holes are not parallel to scored lines. Part of Hulk 1.	Modern	Discarded on site

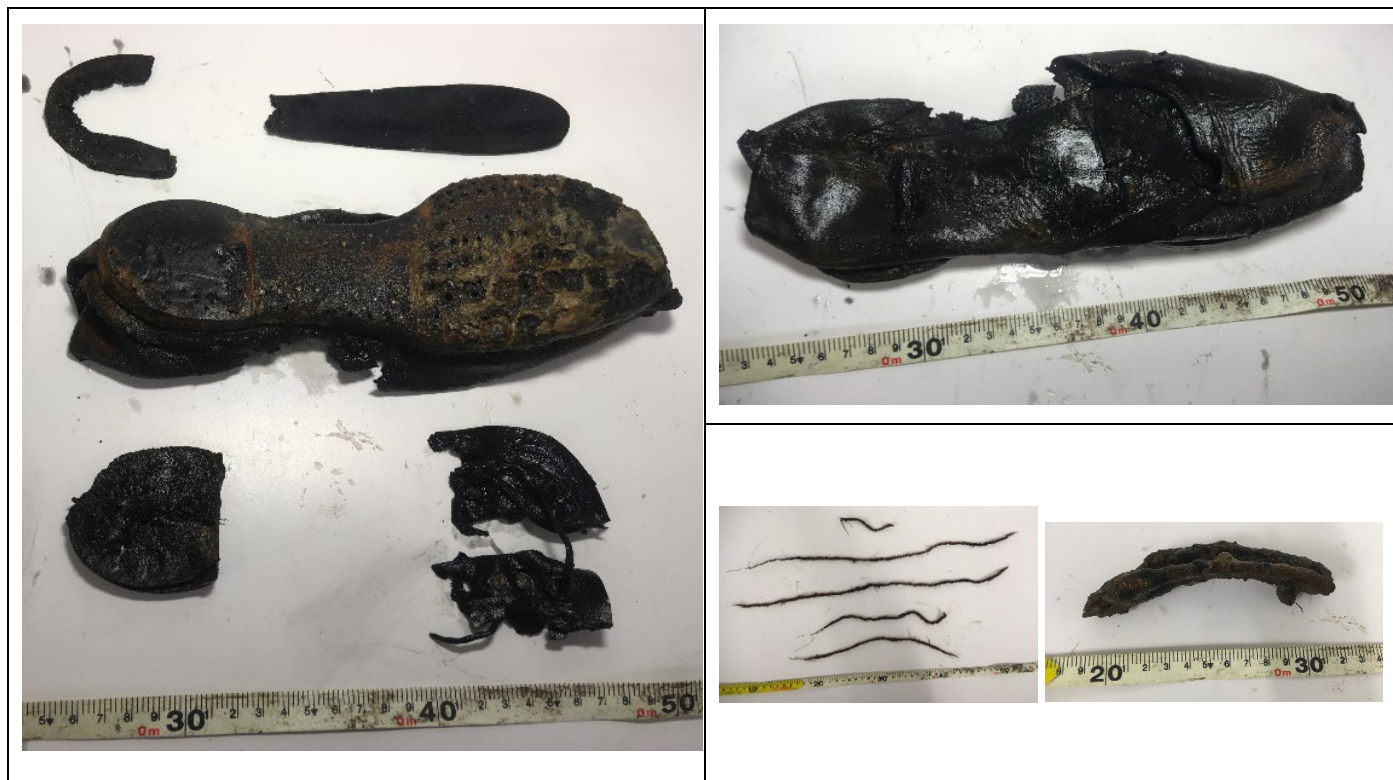


Appendix 2: Object 7545

Boston_7545: Shoe, twine and metal bracket

A shoe was discovered together with twine and a metal bracket during dredging of the western section of the study area in Boston on 18 December 2018 and reported by Grant Bettinson, Wessex Archaeology.

The items were brought to the Wessex Archaeology office in Salisbury for cleaning and were recorded by Danielle Wilkinson, Wessex Archaeology, on 10 January 2019. Until this point, the twine and bracket were hidden in mud alongside the shoe.



Description

An almost complete leather shoe was found in five pieces consisting of the sole, vamp (main front and sides) and heel. Sewn detail can be seen around the vamp, closest to the throat. The shoe has brass eyelets with a partial rectangular cross-section leather lace. Pieces of the sole (leather) are separated.

The largest piece comprises the bulk remains of the shoe. It has a complete length of 250 mm which is the equivalent of a modern UK men's size 8. The thickness of the sole is 13 mm. The heel of the sole has a length of 60 mm, the midsole is 80 mm long and the outer sole is 130 mm long making this shoe a total length of 270 mm. The front is 75 mm long and the heel seam is 63 mm in height, with a maximum height of the shoe (being the seam and the heel together) of 71 mm.

Only a small piece of the quarter is remaining however four eyelets can be seen on the right-hand side and two are remaining on the left. The brass eyelet has a diameter of 6 mm. The quarter is part of the shoe's upper, this covers the sides and back of the foot behind the vamp. The diameter of the shoelace is 3 mm with a thickness of 1 mm. The shoelaces are made of leather and have a a rectangle cross-section, shoelaces of this period where generally made of leather, cotton, jute, hemp. As it appears that this shoe is a work boot, it is likely leather laces were chosen for its durability.

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There is a separate piece of heel that has come loose from the main heel of the shoe. This heel piece is definitely part of the same shoe due to its matching size. It is 60 mm in length, 66 mm in width and 9 mm thick showing three layers of stacked leather forming a block.

The remaining pieces of the shoe are the leather tongue, which is 58 mm in length, 1 mm thick and with a width of 41 mm, and a leather U-shaped piece of leather 60 mm in length, 64 mm wide and 1 mm thick.

The shoe appears to be a hobnailed boot. All the hobnails, bar one of 12 mm diameter, have rusted away but the imprints are still visible as circles over the sole. The sole itself looks to be made of layered leather. It has a classic construction with wooden pegs through the waist (the middle part of the sole) and probably also the heel area. The U-shaped piece of leather is the rand which forms the shape on the inside of the shoe for the heel of the foot to rest on.

Hobnails were inserted into the soles of the boots, usually installed in a regular pattern. Hobnails provided traction on soft or rocky ground and snow, but they tended to slide on smooth hard surfaces. They have been used since antiquity for inexpensive durable footwear, often by workmen and the military. The design of the boot with the square toe looks to be similar to a World War One trench boot. Boots of this period usually had an iron horseshoe-shaped insert called a heel iron to strengthen the heel, and an iron toe-piece. Both iron reinforcements were attached to the outside of the boot. Although neither a heel iron or a toe-piece were found with this boot it is possible these may have been lost.

The shoe is of welted construction, which refers to the style of seam. This form of construction has been used since early medieval period until circa 1950. A welt seam is a flat thickened seam stitched first on the wrong side of the material and then on the right side, this seam is made entirely by hand and done directly to the insole. A cut is made into the lip of the outer part of the insole and the welt stitches are made into this. This also makes a cavity in the middle sole of the shoe, so this must be filled with cork paste or real cork, felt or leather instead making the construction more compact and the sole more durable.

'Wood-pegging' is an old method that is no longer used where you attach the insole, upper part of the shoe and outer part of the sole with wood. Uppers are secured to the insole with small pins, before pegs are hammered in. It was a quick and simple yet strong construction method. More common was the use of pegs, often of wood, for the waist. Instead of stitching the waist, pegging with wood making it easier to achieve a tight-fitting waist and also give some extra strength if done properly.

Pieces of loose weave twine were located in mud around the shoe. They consisted of three individual strands of wiry texture with a total diameter of approximately 4 mm. There were five pieces of twine in total, mostly with torn ends but three pieces had one cut end. The lengths were 550 mm, 550 mm, 120 mm (cut end), 230 mm (cut end) and 250 mm (cut end). It is not known what purpose this twine may have served, or if its purpose was related to the other two finds.

A metal bracket was also found in the mud surrounding the shoe. This bracket is curved with a lip and a fastener intact, however it is heavily corroded. The length is 138 mm with a width of 35 mm. It is not possible to say what this metal bracket was originally connected to or what its original purpose was. It is unlikely to be the iron heel or toe-piece for the shoe due to its shape – the lip is on the convex side of the bracket rather than the concave side, and the curve does not match the shape of the shoe.

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Interpretation

The hobnail construction shows that this boot was designed as a working boot, made for durability and traction in harsh terrain. This type of boot could have provided footwear protection in many applications and industries, possibly including activities associated with the Boston port or civil engineering works undertaken along the Witham. The shoe has a square toe which could suggest a World War One era trench boot which were somewhat common and well documented. Various hospital ships did pass through Boston docks with sick and wounded soldiers. It may also have been discarded or lost post-war.

The twine and bracket are of unknown purpose and too generic for detailed interpretation.

Period: Post Medieval

Date range: 1900-1950

Significance

Only about half of the boot is intact but the remains are relatively well preserved with visible details. This shoe is likely from the first half of the twentieth century and is ordinary in its design. Although the boot has no research potential, remains of this leather work boot could be used to reflect on port activities or civil engineering works in the area, or the World War One history of Boston.

The twine and bracket are of no significance.

Recommended action: The shoe has already been recorded in detail for preservation by record, to be included in the archaeological monitoring report and project archive. If possible, it is recommended that the shoe should be conserved and deposited with a willing museum. If no museum wishes to take the item, then it may be discarded.

The twine and bracket have been recorded in detail for preservation by record and it is recommended that they can be discarded.

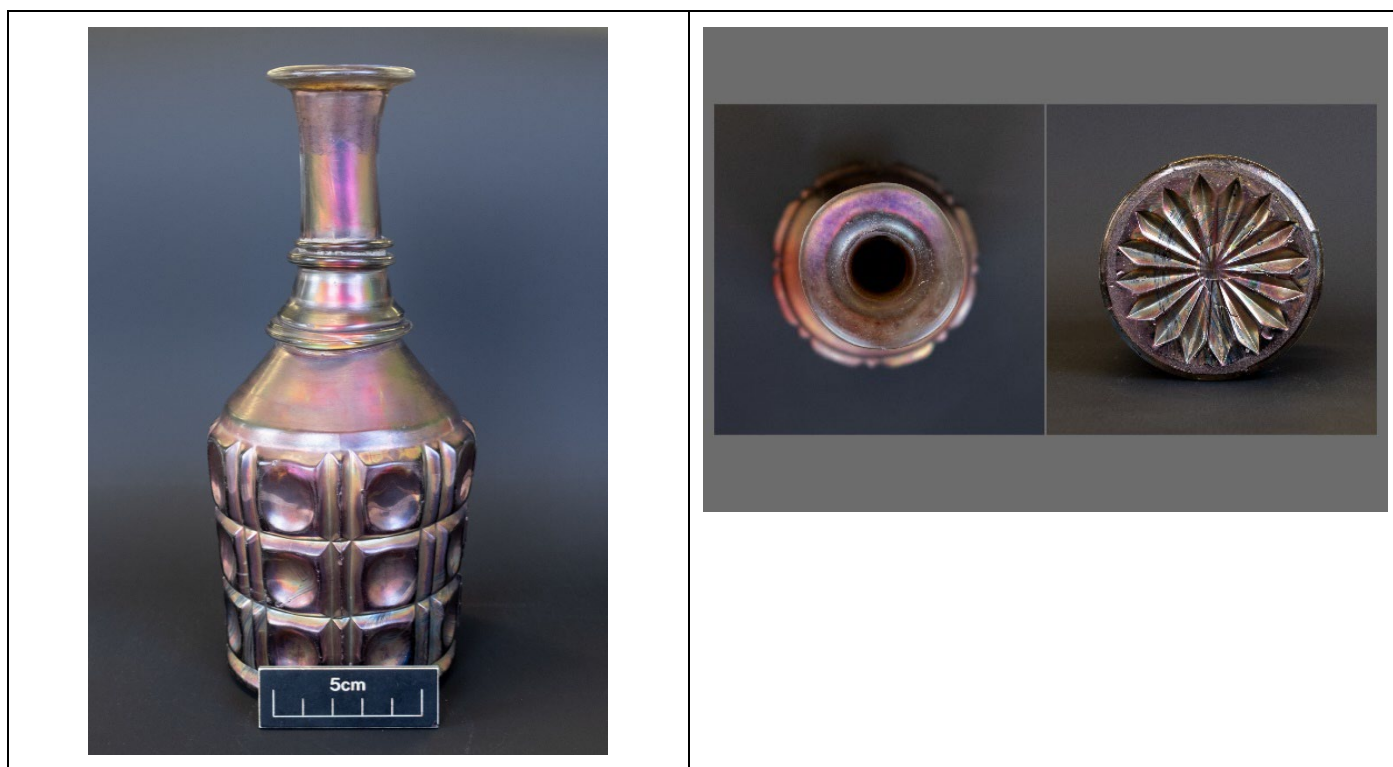


Appendix 3: Object 7582

Boston_7582: Decanter

A glass decanter was discovered during dredging of the West Dredge Area of the study area in Boston on 1 February 2020 and recorded by Ben Saunders, Wessex Archaeology, as part of the archaeological monitoring.

The item was brought to the Wessex Archaeology office in Salisbury for cleaning and recorded by Phil Trim, Wessex Archaeology, on 11 May 2020.



Description

The glass vessel has an overall height of 208 mm, with a diameter at the base of 88 mm. The height of the body, from heel to shoulder, is 95 mm. The exterior diameter of the mouth of the vessel is 50 mm, the internal diameter being 22 mm. The vessel, shaped to be used as a decanter, is made from clear, probably colourless, glass. Post depositional processes have degraded the fabric giving it a pearlescent appearance making it difficult to determine the exact original colour of the glass used.

The pattern on the body of the decanter consists of pillars divided into three blocks, each bearing a circular depression. The pillars are divided by a line of beading, which is also split into three vertically aligned sections. The width of each block is 26 mm, with the upper two being 30 mm in height with the lowest row of decoration being only 27 mm in height. A continuous bead encircles the heel of the vessel. The base of the decanter exhibits a star pattern with 16 points. The transition from body to neck, through the shoulder, is moderately steep having an angle of approximately 45 degrees.

The neck itself bears two sets of beading, with the lower consisting of two concentric rings whose upper surfaces angle toward the neck at a similar angle to the shoulder. The upper beading on the neck is again formed with two concentric rings, the smaller bead forming the uppermost ring, though the upper surface is perpendicular to the line of the neck. The neck narrows slightly above the lower beading before continuing vertically through the upper beading for approximately 45mm, when the neck flares outwards beneath the finish. The finish or mouth of the

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vessel consists of a single bead, considerably wider than the neck itself, forming a flat disc with a central hole designed to accommodate a glass stopper. The stopper was not recovered with the vessel.

There are four mould lines visible at the base of the vessel running vertically over the bead around the heel of the vessel. The mould lines are at right angles to one another and continue along the line of the vertical beading between the pillared blocks on the body. No mould lines are visible above the shoulder and it appears that these have been polished away. The neck of the bottle appears slightly out of true with the body, and both sets of beading on the neck are slightly irregular as is the finish/mouth of the decanter. There is also an irregular manufacturing scar on the base of the vessel.

Interpretation

As described, this vessel is a decanter with a stopper and is likely intended for the storage of spirits such as whiskey or brandy. Wine decanters are often wide mouthed and seldom stoppered as the wine benefits from being allowed to breathe and does not store well once it has. Spirits on the other hand, though not benefiting from aeration, do evaporate and so a stoppered decanter would be required.

The use of the decanter in British society dates back to the 17th century and was initially intended for wine, as this was often shipped unfiltered and, by decanting, any sediment could be separated from the wine (McConnell 2005). Wide bases decanters reduced the chances of spillage as well as adding aesthetic style and prestige (Dart Silver Ltd). Early decanters were hand made from leaded glass or crystal, patented by George Ravenscroft in 1673, though later examples moved away from lead. Lower quality vessels were also manufactured in plain glass pressed into moulds from the 19th century.

This particular example appears to have been manufactured from pressed glass rather than crystal, as evidenced by the four mould lines and mould scar on the base. However, the neck of the vessel exhibits a lack of uniformity that suggests it may also have been hand crafted. Consultation with the authors of PatternGlass.com has suggested the vessel has the appearance of early 19th century flint patterns (personal communication). It appears that this may be a deliberate attempt to make the decanter appear as if it is of high-quality cut glass and hand made. Rather, it seems likely that this is of modern manufacture and is not a high-quality item but a mass-produced replica.

Period: Modern

Date range: Late 19th to 20th Century

Significance & Recommended action

Assuming that the interpretation of this being a mass-produced replica is correct, then the decanter is of low archaeological significance.

The lack of available interpretative data for such a vessel leaves the interpretation of the decanter as tentative only and it may be beneficial to have it assessed by an expert in cut glass to corroborate the analysis.

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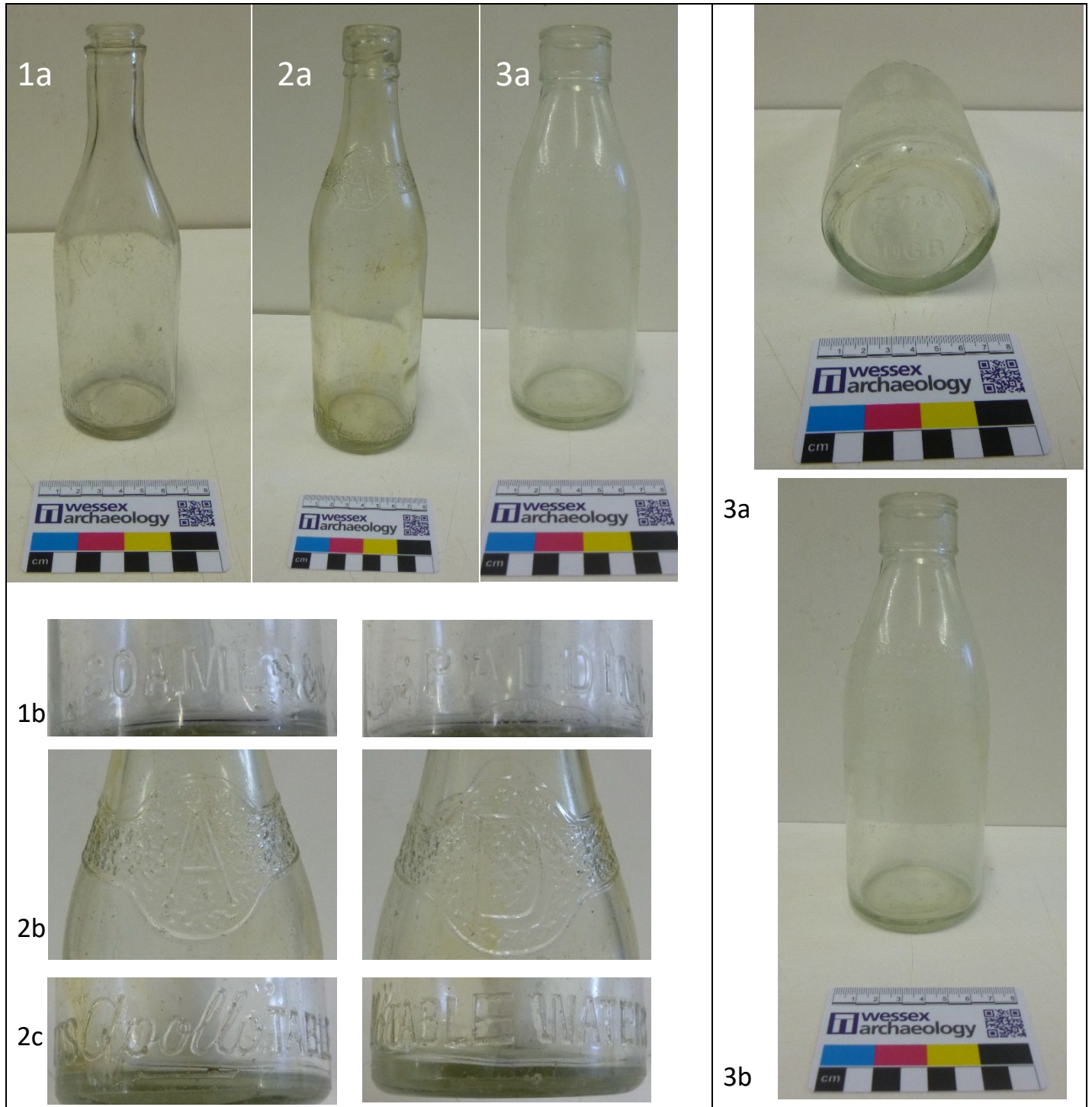
Appendix 4: Object 7002

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Boston_7002: Glass Bottles

These bottles were discovered in The Haven during commercial diving works associated with the Boston Barrier Project and reported to Wessex Archaeology by Steve Lowder, BAM Nuttall Ltd, on 3 April 2020. No further information regarding their find location has been provided.

The bottles were recorded by Wessex Archaeology, on 11 May 2020.



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Description

Bottle 1

The first of the three bottles (fig. 1a) has an overall height of 200 mm, with a diameter at the base of 63 mm. The height of the body, from the base to shoulder, is 100 mm. The exterior diameter of the mouth of the vessel is 26 mm, with the interior diameter being 13 mm. The clear glass bottle exhibits two diametrically opposite mould lines, running from the heel to the top of the bottle and a circular mould mark on the base itself, all indicative of machine manufacture.

The finish is a developed crown style known as a PRIOF finish, comprising of a locking bead around the extreme top of the bottle, beneath which is a ledge. This style of finish is designed to accommodate a crown cap, as might be seen on any common beer bottle, with the added feature of a ledge meaning that it could be opened with any form of lever rather than a bottle opener.

Embossed on the bottle, encircling the side of the vessel immediately above the base, are the words "SOAMES & Co Ltd SPALDING" (fig. 1b).

Bottle 2

The tallest of the three bottles (fig. 2a) has an overall height of 280 mm, with a diameter at the base of 80 mm. The height of the body is 160 mm. The exterior diameter of the mouth of the vessel is 33 mm, with the interior being 23 mm prior to narrowing further due to the internal thread. The clear glass bottle exhibits two diametrically opposite mould lines, running from the heel to the top of the bottle and a circular mould mark on the base itself, all indicative of machine manufacture.

The finish of the bottle is a variation either a Mineral/Double Oil or Straight Brandy style, both of which are very similar, though it could also be ascribed as an Internal Thread finish as the bottle is designed to accommodate a screw top. The screw top of the vessel was not recovered but is likely to have been manufactured from a hard rubber or possibly plastic should the bottle be late enough.

The vessel bears a raised decorative band around its exterior immediately above the shoulder. The band is 17 mm wide other than where there is "A" and "D" embossed (fig. 2b) diametrically opposite one another. Around the exterior of the vessel, just above the base, there is an additional embossment which reads "'Apollo" TABLE WATERS DAYBROOK NOTTS" (fig. 2c).

Bottle 3

This bottle (fig. 3a), also of clear glass, measures 210 mm in overall height, 125 mm from heel to shoulder and with a base diameter of 75 mm. The opening at the top has an external diameter of 38 mm and an internal diameter of 26 mm. The volume of liquid that could be held in this vessel, as embossed upon it, is 1 pint. Again, the bottle exhibits two diametrically opposite mould lines, running from the heel to the top of the bottle and a circular mould mark on the base itself, all indicative of machine manufacture.

The finish of the bottle appears to be an elaborated version of the Milk Bottle style finish, with a thick bead or capseat around the top. Beneath this, however, is a 17 mm wide band that is not commonly suggested to be part of such a vessel. A foil cap is likely to have been sealed over the capseat in order to contain liquid inside. This method of closure implies that the intended contents of the vessel were neither carbonated nor expected to remain in the vessel for any length of time after bottling.

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The base of the bottle (fig. 3b) has “Z742/R A 2/UGB” embossed upon it, within the circular mould scar. Upon the shoulder of the vessel, following the change from body to neck, are two diametrically embossed legends; “SEAMANS/CREAM/DAIRIES” and “CONTENTS 1 PT”.

Interpretation

Bottle 1

The company name, Soames & Co Ltd, embossed on this bottle refers to a large brewery initially based in Spalding, Lincolnshire. Incorporated in 1909, the company, at the time of the businesses sale in 1949, controlled over 200 public houses through south Lincolnshire, north Northamptonshire and north Cambridgeshire. This included The White Horse Hotel, 13 West Street, Boston, which at the time of purchase in 1899 was one of the three main hotels in the town (Cartwright 2014). Given the proximity of the hotel to the River Witham and The Haven where it was recovered, it is quite possible that the bottle originated from this premises. The brewery operated as a separate entity until 1957, when it was eventually wound up, The White Horse being demolished the following year (Gray).

Given the company name it is possible that this vessel was intended to contain an alcoholic beverage such as beer. However, until carbonated beers rose to popularity in the 1960’s, the use of a crown cap suggests the contents were carbonated and may therefore have related to a soft drink.

The circular mould mark or suction scar on the base of this bottle is indicative of an automated bottle making machine developed by Michael Owens in the 1890’s, and this type of machinery was widely used to produce bottles until the 1950’s (Dungworth 2012). The bottle, taking account of manufacturing methods and the company branding, is likely to date sometime between 1909 and 1957.

Period: 20th Century

Date range: 1909-1957

Bottle 2

The brand name “Apollo” refers to soft drinks produced by the Home Brewery Co. Ltd of Mansfield Road, Daybrook, Nottinghamshire. The A and D initials on the neck of the bottle likely refer to the brand, Apollo, and the location of the brewery, Daybrook. The company was registered in 1890 and continued trading until 1986 when it was acquired by Scottish and Newcastle Breweries Ltd, having at that time 447 public houses on its portfolio. The brewery at Daybrook closed in 1996 (Brewery History 2020).

The vessel was stoppered with a hard rubber or plastic screw top, as evidenced by the internal thread in the mouth of the bottle. The use of internal threads began in the late 19th century, eventually being replaced by external threads and metal caps during the 20th century (Dungworth 2012). It is likely that the vessel was intended to hold a carbonated soft drink, which could constitute sparkling water or flavoured sparkling drinks such as ginger beer, lemonade.

The circular mould mark or suction scar on the base of this bottle is indicative of the Owens automated bottle making machine developed in the 1890’s, this type of machinery was widely used to produce bottles until the 1950’s (*ibid*). This bottle, given the manufacturing technique, stoppering and date of operation of the company, is likely to date from the early to mid-20th Century.

Period: 20th Century

Date range: 1900 – 1950

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Bottle 3

This vessel is a 1 pint milk bottle from Seamans Dairy of Gaywood, Kings Lynn, Norfolk. The company appears to have existed from the 1950's until being bought out by the Milk Marketing Board during the 1970's.

As with the other two bottles the circular suction scar on the base of the bottle suggests manufacture using the Owens automated bottle making machine or similar. Additionally, the base of the bottle bears the letters UGB, which is the initials of the United Glass Bottle Manufacturers. This company formed as a conglomerate of other bottle manufacturers in 1913, with plants in Charlton, London and St Helens Lancashire (Grace's Guide 2013). The other lettering on the base refers to the mould number used to manufacture the bottle, Z742, and possibly the factory in which the vessel was made. The factory was usually noted by a single letter, however this vessel has R A 2 embossed upon it, which likely refers to the Ravenhead, St Helens plant operating from 1913 or the Alloa plant which operated from 1956. The use of UGB for a makers mark was replaced in 1968 by U.G. and from the 1980's the initials UG appeared within an elongated hexagon (Lockhart *et al* 2019).

Given the dairy began trading shortly after the Second World War and the manufacturers logo on the base of the bottle is no later than 1968, this bottle can be closely dated. The earliest it is likely to be is circa 1945 and it can be no later than 1968.

Period: 20th Century

Date range: 1945 – 1968

Significance

As these vessels are relatively modern, are likely to be common within the area and relate to local industries, their archaeological significance is assessed as low.

Recommended action: These items may be of interest to local museums or possibly the successor companies which bought out the two breweries and that are still trading today. Otherwise, now that they have been preserved by record, the bottles are recommended for discard.

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Appendix 5: Object 7001

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Boston_7001: Hulk Timbers

These timbers were discovered during dredging of The Haven, Boston, on 17 October 2018 and reported by Craig Bloodworth, BAM Nuttall Ltd. They were found at E 532811.579, N 342808.479

The timbers were recorded by Robert MacKintosh, Wessex Archaeology, on 22 October 2018



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Description

Bow Assemblage

This assemblage derives from the forward, or possibly the aft, section of a carvel-built wooden vessel. Assuming it is the forward part of the vessel, it consists of a keel, two garboard strakes, a further strake on the port side, an apron, a stem, a floor, three half floors and a first futtock. It has been broken off from the rest of the vessel, with the aft ends of the keel and strakes broken and frayed.

The keel in the assemblage measures approximately 3.03m to its break, and thinner strips extend for 0.45m beyond the break. It has a moulded depth of 0.21m and a sided dimension of 0.13m. There is a rabbet along each side of the keel where the garboard strakes are fitted. These rabbets are approximately 0.04m wide and 0.02m deep. The keel section is rectangular above the rabbets, and circular below them. It is possible these different shaped sections are made up of two separate timbers in which case they would be the keel and the hog.

Little remains of the stem, it is broken and frayed and stands to a lesser height than the apron. It has a sided dimension of 0.12m, and it survives to a moulded dimension of 0.10m. It's original moulded dimension is unknown. Two iron brackets, one on either (profile) side, fix the stem to the keel. The stem also seems to be eroded at its highest point, suggesting it may have been exposed above the river bank or bed. The ends of the floors are in a similar condition also indicating that they were exposed. It appears to be straight and raking.

The apron (or possibly deadwood knee) has an overall length of 1.5m and runs flat along the keel for 0.96m. It has a moulded depth of 0.14m and a sided dimension of 0.19m at its aft end and 0.23m where it curves upwards. There are five iron fastenings fixing the apron to the stem and keel, two of these are visible protruding out the front of the stem.

There is evidence of possibly seven stations for floors and half floors on the timber assemblage. From the stem to the aft there are two half floors, one half floor on the port side, a full floor, the impression of a full floor left on the keel and strakes, and finally the outline of an iron fastening in the section of the keel visible in the break. The forward half floors sit either side of the apron. A shallow rebate is cut into the starboard side of the apron for one of them. They have a moulded dimension of 0.15m at the apron and taper to their ends. Their upper faces are 0.25m long on the port floor, and 0.35m on the starboard. The room, or sided dimension, is 0.11m. The space between them and the following half floor is 0.20m. The following half floor sits immediately aft of the apron on the port side of the vessel. It has a moulded dimension of 0.11m, and a room of 0.12m. Its upper face is 0.53m in length. It is scarfed to the remains of the first futtock, which tapers to fit between the garboard strake and the keel. The space between this half floor and the first full floor is 0.28m. The first full floor has a room of 0.12m, and an extreme moulded dimension of 0.16m. A 0.03m deep rebate is cut into its base to fit the top of the keel or hog. A pencil line runs up its aft face marking the position of the port side of the rebate. There is a small wedge-shaped chock on the port side to fill a gap between it and the garboard strake. The floor has an extreme lateral width of 1.20m. A small, thin, heavily eroded piece of timber is attached to the aft face of the floor on its port side. A large iron fastening protrudes from the upper face of the floor, within an impression of another timber, 0.16m wide, which is most likely evidence of a keelson. Aft of the floor is the imprint on the keel and strakes of a further floor. Its room was 0.11m and its space to the surviving floor was 0.60m. Within the imprint is a hole for a fastening in the keel and an iron fastening surviving on the port garboard strake. There are further impressions and iron fastenings on the strakes, but not the keel, between this impression and the floor and also aft of it, suggesting the presence of further half floors. Within the main break of the keel there is another impression of an iron fastening running through the section of the keel, suggesting the position of another floor.

Three planks survive on the assemblage, two garboard strakes and the strake immediately above the garboard strake on the port side. The vessel was carvel built so the strakes abut, but do not overlap. They are 0.04m in

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thickness. On the port side, the garboard strake is 0.18m wide from the keel to its upper edge, and the strake above is 0.16m wide from its lower to upper edge. The garboard strake runs the length of the assemblage to the break, and the one above terminates unbroken at the first full floor. On the starboard side the garboard strake, actually consisting of two planks scarfed together, breaks initially at the impression of the floor (most likely where it was fastened to the floor), but a substantial part, still touching the keel, runs to the break of the keel. Iron fastenings attach the strakes to the floors and apron.

Keel

A separate timber has been recovered that is likely to be the keel from the same vessel. It measures 3.45m x 0.21m x 0.13m, the moulded and sided dimensions match the keel in the assemblage exactly. It also has rabbets along its length for garboard strakes, and a section profile that matches the keel in the assemblage (rectangular above the rabbet and circular below, and possibly made up of a keel and hog rather than a single timber). It also has two iron fastenings, with three other holes for fastenings, which sit within impressions of floors. It is broken at both ends.

Keelson

A separate timber was recovered that is likely to be part of the keelson of the vessel. This is 5.74m in length with a moulded dimension of 0.21m, which tapers to 0.12m towards its unbroken (forward?) end. The other end is broken. It has a sided dimension of 0.18m. It has four rebates cut into its underside, where it likely sat on floors. These are 0.12m in sided dimension, the same as the room of the floors on the assemblage. They have a space between them of 0.40m, 0.60m and 0.59m. The forward two have holes for fastenings in their centre, while the aft two have iron fastenings protruding. There are also two iron fastenings that protrude out the same face of the keelson further down. On the opposite face (the upper face), another timber is attached, 2.83m from the forward end. It measures 0.68m x 0.16m x 0.10m, and has a recess cut in the centre of its outer face that measures 0.22m x 0.08m. This was filled with marine/fluvial sediment but also has a wooden chock or wedge within it. This timber is possibly a mast step. There is a further recess 0.29m from the front of the keelson on the same face, that measures 0.16m x 0.06m.

Unknown Timbers

Two other timbers were recovered that were unidentifiable. The first of these measured 1.45m x 0.13m x 0.11m and was broken at both ends. One end was almost circular in section, and the other more rectilinear. There were a number of iron fastenings along a flat face where the timber was rectilinear in section. The final timber was 0.82m x 0.20m x 0.08m. It was semi-circular in section and had no discernible fastenings. Both of these unidentified timbers were heavily degraded.

Interpretation

It has not been possible to positively identify the type of vessel from which this assemblage originated, nor the dimensions of the original vessel. It has also not been possible to ascertain the date that the vessel would have been built or used. However, it is likely that the vessel represents a small vernacular working boat, possibly a fishing boat, dating from the 19th or 20th century. The Boston Smack was a carvel built wooden vessel used in the area for dredging oysters, but this vessel may be slightly too small to have been a smack, it is perhaps more likely to have been a shrimper (e.g. a Lynn Shrimper). This conclusion is highly speculative however.

Period: Post Medieval

Date range: 19th-20th century

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Significance

Without a positive identification it is difficult to assess the significance of the timbers. However, due to their condition, their lack of context and the partial survival of the vessel they are likely to be of local significance at most.

Recommended action: It may be worth checking with local museums to see whether they want the timbers for their collections, however, if there is no interest then preservation by record will suffice and the timbers may be discarded.



Appendix 6: Object Timbers_Hulk 1

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Boston Swinging Hole_Hulk 1: 7617, 7628, 7630, 7635, 7637-7642, 7646 Carvel-Built Hulk Timbers

Worked timbers relating to a partially exposed hulk of a wooden vessel were recovered during the dredging operations for the swinging hole on the south bank of The Haven opposite the dock entrance to Port of Boston. These were recovered to the bank during December 2020 and June 2021, and were recorded and reported on by Ben Saunders, Wessex Archaeology.



Image 1



Image 3



Image 2



Image 4

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Image 5



Image 6



Image 7



Image 8

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Description

Introduction

Following the notification through the Protocol for Archaeological Discoveries (PAD) that a hulk had been encountered in December 2020, advice on protecting the in-situ timbers and storage of the recovered timbers was provided to BAM Nuttall staff and a plan for recording and recovery was put into place. The hulk had been encountered during bank and barge based dredging operations within the swinging hole aspect of the Boston Barrier project, located on the south bank of The Haven opposite the dock entrance to the Port of Boston. This area was previously tidal mud flats with reedbeds on the upper slopes.

Prior to dredging operations beginning again in March 2021 an Unmanned Aerial Vehicle (UAV) survey and walkover photo survey were undertaken of the timbers remaining on the bank. About 100 recovered timbers were recorded on site. Bank and barge dredging recovered a further four timbers which were recorded, and a final post-excavation UAV survey was completed in June 2021.

The recovered timbers are likely to pertain to two differently constructed hulks, as seen in the different construction techniques being utilised. The timbers recovered mostly pertained to the hulks, however, six timbers were identified as jetty or revetment pieces (see PAD report for Jetty Timbers). The hulks were located within the western edge of the dredge area, with one of the hulks (Hulk 1) having the entirety of the remains recovered by the works and recorded on the bank. Timbers were recorded by component type (e.g. keel structure, stern/bow structure, frames, planking etc.) relating to their function rather than individually, due to the quantity of timbers recovered. Therefore, some of the timbers were recorded as one object number but were made up of multiple timbers. An iron anchor (**7636**; see separate PAD report) was also recovered from the bow area during the works.

The Hulk

The survey and description of where the recovered timbers had come from demonstrated that the hulk was lying roughly in a north to south orientation, with the stern facing north. The upper part of the batter for the dredge area cut across the location of the hulk, which proved to be in a partially decayed state. Starboard side frame timber heads were partially visible within the inter-tidal reed beds prior to the excavation works.

Recovered Timbers

The hulk timbers can be split into four groups: intact hull sections; loose planking; loose framing elements; and unidentified timber elements.

Sternpost

The largest section recovered was a section relating to the stern end of the hulk (**7617**, Image 2). This was found detached from the rest of the hulk and was made up of four pieces of timber: the partially incomplete sternpost; the incomplete keelson; the complete deadwood knee; and a triangular chock wedged between the sternpost and deadwood knee.

The sternpost measured 2.58 x 0.31 x 0.2 m and was fashioned as boxed heart, probably from oak timber. It had a tenon joint at its lower end attaching it to the keel, along with two treenails and the remains of two square shafted iron nails. Both moulded faces of the sternpost had a bevel edge, with the narrower end towards the fore, running along the whole length of the sternpost which would have allowed the aft ends of the hull planking to sit flush onto the sternpost. A diagonal recess measuring 0.27 m wide toward the upper end of the sternpost could have accommodated a heavier weight strake which may have extended aft beyond the sternpost to form a counter stern, common in smack style fishing boats. The lower aft end of the sternpost was tapered from fore to aft, possibly to assist in hydrodynamics although an area around the bored propellor shaft hole was left at full thickness to provide greater strength. This propellor shaft hole ran through the deadwood knee leading to the inside of the hull to allow for a propellor shaft to be fitted. Given the lack of repairs on the sternpost, the propellor

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shaft was likely added during the initial construction phase of the hull, rather than being a later addition, which would date the hulk to the early 20th century, at the earliest.

The keelson measured 2.8 x 0.23 x 0.17 m and was made of a single boxed heart timber. It was attached to the sternpost and fastened to the deadwood knee by means of treenails. The keelson contained iron nails still protruding from the lower side, that would have run through to the keel. It also had four recesses cut on either moulded side up to 10 mm deep and 105 mm wide. The aftmost of these extended the full moulded width and cut 20 mm into the deadwood knee, whilst the three forward of this were not quite the full moulded width. These recesses were probably to accommodate the frames and provide additional structural integrity. Recovered floor frames measured 105 mm wide and would have fitted snugly into these recesses.

The deadwood knee timber measured 1.32 x 1.5 x 0.17 m and was made of a single boxed heart curved timber with rounded upper edges. It was attached to the keelson and sternpost by treenails which also held the triangular chock between it and the sternpost, which measured 0.8 x 0.25 x 0.17 m. The knee provided structural stability between the sternpost, keel and keelson.

Keel

Two sections of the keel were found (**7635**, Image 5), with the complete forward section measuring 6.35 m in length and the slightly damaged aft section measuring 6.7 m in length. These two sections were joined by a three-planed (z) scarf which was 1.2 m in length. The cross section of the keel was rectangular, measuring 0.29 moulded and 0.18 m sided, with a deep recess for the garboard strake on either moulded face and bevelled edges on the upper face. A mortice joint with two treenail holes was present on the upper face of the forward section towards the bow, where the stempost of the vessel would have been attached (Image 2). No mast step was present, and as the vessel may have had a propeller and engine it may not have needed one. The aft section of the keel, while not totally complete (the very aft section had been snapped off, possibly when the sternpost broke off), did have four large, doubled iron staples protruding from the upper face which may have secured parts of the keelson.

Framing Elements

A selection of framing elements were recovered from the hulk, consisting of floor frames and futtocks (Image 7 & 8). The majority of these had saw marks, likely from a large circular saw, showing they had been converted using industrial processes typical of the late 19th or 20th centuries. Floor frames measured up to 1.35 in length, 0.14 m sided and 0.1 m moulded and would have fitted into the recesses located along the keelson. The floor frames (**7638**), 12 of which were recovered, were heavier than the futtocks and consisted of single frames. Grown timber seems to have been utilised for most of the floor frames, utilising the natural curve of the timber to create the curved frames. A 0.05 m deep recess was cut into the mid-section of the floor frames, in order to slot the frame onto the keel or keelson. All of the recovered floor frames were in good condition on one half (presumably the starboard side) but had decayed and been damaged for much of the other half, suggesting that the port side had been exposed for a greater period of time out of the covering inter-tidal silt.

Twenty-two futtocks (**7639**) were recorded (some were double), measuring up to 1.5 m in length, 0.11 m sided, and 0.08 m moulded. Square shafted iron nails were utilised to fasten the doubled futtocks to each other. The majority of these were only slightly curved suggesting that the hull shape was slightly curved at the turn of the bilge, becoming nearer to vertical towards the gunwale.

Four sections of the hull (**7630**, **7637**, **7641** and **7642**) were recovered preserving futtocks still connected to the outer planking. Three of the sections retained a single plank fastened to two doubled futtocks by square iron nails, while the fourth section had three planks attached to two doubled futtocks by square iron nails (Image 4). The planks were narrower than the largest recovered examples measuring 0.2 m wide. Similarly, the doubled futtocks were also smaller in dimensions to the floor frames.

Hull Planking

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The dredging works recovered outer planking (**7628**, **7637** and **7646**). These were mostly broken and incomplete but contained evidence for the general dimensions of the hull planking. Thirty (**7637**, Image 1) complete and fragmentary planks were recovered. The majority of examples were 0.04 m thick (1 inch thick) and measured between 0.2 and 0.27 m wide, with 0.27 m being the most common. The complete sections of hull strakes measured up to 5 m long and had retained some of the curve of the hull shape, although they may have warped slightly due to the deterioration of the hull. Multiple examples showed diagonal scarfs on one of their ends, with the scarf measuring up to 0.3 m long. Most examples of the planks had intact square shafted iron nails in them demonstrating the method of fastening to the frames. Plank **7646** exhibited regular scoring marks on the outer face. These scoring marks were running cross-grain and were alternatively 0.11 m and 0.13 m apart. The function/reason for these marks is unknown. Four planks (**7628**, Image 6), possibly pertaining to the bow or stern, were recovered adjacent to each other. These preserved square shafted nail holes as means of fastening them to the hull structure. They also had the characteristic curve and slight twist of aft or bow planking.

Unknown Timbers

Five other timbers (**7640**) were recovered loose from the sediment and may be cross beams within the hull as they were slightly thicker at 0.14 m. The exact function of these was unidentified during the recording process, beyond that they were likely to have come from the hull in some capacity.

The excavated material from within the hulk contained roughly moulded concrete blocks which may have been used as ballast for the barge during its working life or may have been dumped into it following its abandonment. An anchor was also recovered from within the area of the bow during the excavation (**7636**).

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Interpretation

The hulk remains belong to a wooden vessel with carvel planking, propelled by means of an engine as shown by the evidence of a propeller shaft hole, which is likely to have been installed during initial construction phase. From the visible remains, the construction sequence is likely to have consisted of skeleton first technique, with the keel, post ends and framing elements erected first, and hull planking fastened at a later stage.

While some of the timbers had clearly been broken during their extraction, the majority had already broken off or decayed while in-situ. The hull is likely to have lost its structural integrity after being abandoned; without any maintenance the timbers tend to warp and sag, allowing for the hull the fall open and become exposed to natural deterioration processes. From the visible remains, only parts of the starboard hull and stern were still preserved within the surrounding sediment.

Given the history of Boston as both a commercial port and a fishing dock, the vessel could be a fishing vessel or a barge/wherry. The sternpost having a slight rake towards the aft is similar to some fishing vessel designs, while the shape of the floor frames would suggest it had a rounded bottom, ruling out barge and wherries which had flat bottoms. The slightly curving futtocks were often paired up (double frames) to provide additional strength to the upper hull, with the planking being fastened by means of square shafted iron nails onto the framing elements. Given the presence of a propellor shaft hole in the sternpost and deadwood knee which appears to have been included during the initial construction of the vessel, is likely to have been constructed in the early 20th century.

It is likely that the vessel was hulked on the mudbanks of the Haven after it fell out of use during the 20th century, potentially during the years either side of the Second World War. Aerial photographs of the area around Boston harbour dating to 1930 do not show any beached vessels on the southern bank. However, a second aerial photograph from 1952 shows at least six, one of which could be the hulk in question, as this is in approximately the same position and orientation to the hulk found during these works. The shape of the hulks in the photograph would suggest that they were barges or fishing boats and had been abandoned in that location for a substantial period of time, potentially a decade or more. This is reflected by the loss of any decking that may have been present and parts of the upper hull planking.

The condition of the recovered timbers suggest that one half of the hulk (port side) had been exposed almost down to the keel with no timbers surviving, while the other half (starboard side) remained buried and preserved. The orientation of the hulk is clear from the location of the discovered sternpost further within the river, the location of the recovered anchor **7636** clearer to shore, and as suggested by the aerial photographs, the bow faced the shore (south). The lack of a recovered stempost may be due to it being the most easily accessible piece of timber on the hulk, being the closest to shore, and so it may have been salvaged at some point in the later 20th century.

The vessel is therefore interpreted as an early 20th century motorised fishing boat, possibly of smack design which had been hulked on the southern bank of the Haven by the 1950s. It is associated with the iron anchor **7636** found in the sediment around the bow.

Period: 20th century

Date range: Built c. 1900-1940, abandoned after 1930 and before 1952

Significance

The significance of the timbers is in their association with the hulk, rather than as individual timbers. The hulk is of local and possibly regional significance as an example of an early 20th century trading/transport vessel of vernacular design and build that was typical of the Witham and Wash area. It also demonstrates the history of utilisation of the river and Boston as a trading port during the late 19th and early 20th century.

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Recommended action: The larger sections of hull (e.g. the sternpost section and keel) have been recorded in detail for preservation by record, to be included in the archaeological monitoring report and project archive. Due to the general cost of successfully conserving waterlogged timbers, it is considered unlikely that any museum would accept them (no museum accepted the previously recovered hulk remains from elsewhere in the works) and so they are recommended for discard.



Appendix 7: Object Timbers_Hulk 2

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**Boston Swinging Hole_Hulk 2: 7620–7627, 7629, 7631–7634, 7644 and 7645 Clinker-Built
Hulk Timbers**

Worked timbers relating to a partially exposed hulk of a wooden vessel were recovered during the dredging operations for the swinging hole on the south bank of The Haven opposite the dock entrance to Port of Boston. These were recovered to the bank during December 2020 and June 2021, and were recorded and reported on by Ben Saunders, Wessex Archaeology.



Image 1



Image 3



Image 2



Image 4

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Description

Introduction

Following the notification through the Protocol for Archaeological Discoveries (PAD) that a hulk had been encountered in December 2020, advice on protecting the in-situ timbers and storage of the recovered timbers was provided to BAM Nuttall staff and a plan for recording and recovery was put into place. The hulk had been encountered during bank and barge based dredging operations within the swinging hole aspect of the Boston Barrier project, located on the south bank of The Haven opposite the dock entrance to the Port of Boston. This area was previously tidal mud flats with reedbeds on the upper slopes.

Prior to dredging operations beginning again in March 2021 an Unmanned Aerial Vehicle (UAV) survey and walkover photo survey were undertaken of the timbers remaining on the bank. About 100 recovered timbers were recorded on site. Bank and barge dredging then recovered a further four timbers which were recorded, and a final post-excavation UAV survey was completed in June 2021.

The recovered timbers are likely to pertain to two differently constructed hulks, as seen in the different construction techniques utilised. The timbers recovered mostly pertained to the hulks, however, six timbers were identified as jetty or revetment pieces (see PAD report for Jetty Timbers). The timbers were located within the western edge of the dredge area. About 20 of the recorded timbers relate to a clinker constructed hull, rather than the flush planking of the carvel constructed hull of Hulk 1. The clinker built timbers had been recovered closer into the shore within the immediate vicinity of the sheet pile wall along the south side of the swinging hole dredge area and so are considered to belong to a second hulk.

Timbers were recorded by component type (e.g. frames, planking etc.) relating to their function rather than individually, due to the quantity of timbers recovered. Therefore, some of the timbers were grouped and recorded as one object number but were made up of multiple timbers.

Recovered Timbers

The timbers recovered relating to Hulk 2 can be split into three groups: loose planking; loose joggled frames; and unidentified timber elements.

Framing Elements

A selection of disarticulated framing elements (floor frames and futtocks) were recovered from the inter-tidal zone. Four clearly identified floor frames **7620**, **7626** and **7644** were recovered. These measured up to 1.45 m long, 0.2 m moulded and 0.15 m sided. They were fashioned from a partially box quartered grown timber, with **7626** having seven treenails still in-situ along the joggled face. Timbers **7620** and **7644** also had joggled outer faces to receive planking with 4 and 5 joggles each (Image 1 and 2). Four further badly decayed framing elements (**7634**) were also recovered. These had evidence for iron nails or rivets being used to attach the planking to their outer sides.

Hull Planking

The dredging works recovered outer clinker planking. These were generally broken and incomplete but contained evidence for the general dimensions of the hull planking. Overall, 16 planking timber pieces were recovered (**7621**, **7625**, **7629**, **7631–7633**, **7645**). Most planks were 0.04 m thick (1 inch thick) and measured between 0.2 and 0.27 m wide, with 0.27 m being the most common. Three planks (**7631**) had intact square shafted iron nails in them demonstrating the method of fastening to the frames. Two (**7621**) contained an intact treenail and a treenail hole (Image 3).

A small number of partially overlapping planking sections were recovered (Image 4), which were built of slightly thinner planking, retaining a slight curve and twist (**7632** and **7633**). These sections clearly highlight the use of the clinker construction technique. Further evidence for this technique was found through the presence of luting

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(waterproofing material found between overlapping planks) on two thinner planking elements (**7625**). This luting was made of hair (probably animal hair) and tar.

Unknown Timbers

The component type of a small number of recovered timbers was unidentified during the recording process, beyond that they were likely to have come from the hull in some capacity. These included a number of worked timbers, a similar thickness to the planking identified as fillers within the hull planking. A box-halved timber (**7627**) with a rounded outer section may have been part of a rubbing strake (wale), which would have been located along the upper half of the hull, however, this is unclear.

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Interpretation

It is likely that the vessel was hulked on the mudbanks of the Haven after it fell out of use during the 20th century, potentially during the years either side of the Second World War. A series of aerial photographs from 1952 of the area around Boston harbour show a number of hulked barge hulls beached on the mudbanks on the southern side of the Haven, including two which are in approximately the same position and orientation to the hulk found during these works. These hulks are not present in a 1930 photograph of the same area. The shape of the hulks in the photograph would suggest that they were fishing boats or barges and had been abandoned in that location for a substantial period of time, potentially a decade or more. The photograph shows the loss of the planking around the upper frames, as well as the loss of any decking that may have been present.

The condition of the recovered timbers suggests that the hulk had suffered near total structural collapse prior to any dredging works, due to the erosion of the inter-tidal silts opposite the entrance to the Port of Boston wet dock. Unlike Hulk 1, which had remained partially supported and covered by the inter-tidal silts, the structure of Hulk 2 seems to have broken down and the remaining heavily decayed timbers were loose within the remaining silt. It is therefore not possible to understand the overall shape, design and size of this hulk from the recovered timbers, but the aerial photographs suggest that it was of similar size to Hulk 1 (c. 15 m long with a beam of c. 3 m and a depth of c. 2 m). From the visible remains, the wooden vessel is clearly clinker built, as seen by the joggled framing elements and the overlapping planks. However, it cannot be determined as to whether the construction sequence consisted of shell first technique or skeleton first technique, as a mixture of the two could have been applied.

There is a possibility that more of these timbers may remain to the south of the sheet pile wall which now forms the southern edge of the Haven but it is again likely that these will be fragmentary and not demonstrate the overall design and layout of the hulk.

Period: 20th century

Date range: Built c. 1900-1940, abandoned after 1930 and before 1952

Significance

The significance of the timbers is in their association with the hulk, rather than as individual timbers. The hulk, if it were better preserved and more of it was still intact, would be of local and possibly regional significance as an example of an early 20th century fishing vessel of vernacular design and build that was typical of the Witham and Wash area, demonstrating the long history of utilisation of the river and Boston as a trading port during the late 19th and early 20th century.

Recommended action: The disarticulated recovered timbers have been recorded in detail for preservation by record, to be included in the archaeological monitoring report and project archive. Due to the general cost of successfully conserving waterlogged timbers, and the current decayed state in which the timbers are in, it is unlikely that any museum would accept them (no museum accepted the previously recovered hulk remains from elsewhere in the works) and so they are recommended for discard.



Appendix 8: Object Timbers_Jetty

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Boston Swinging Hole_7614-16, 7618, 7619, 7643 Jetty Timbers

Worked timbers relating to a probable jetty or revetment were recovered during the dredging operations for the swinging hole on the south bank of The Haven opposite the dock entrance to Port of Boston. These were recovered to the bank during December 2020 and June 2021, and were recorded and reported on by Ben Saunders, Wessex Archaeology.



Description

Summary

Following the notification through the Protocol for Archaeological Discoveries (PAD) that a hulk had been encountered in December 2020, advice on protecting the in-situ timbers and storage of the recovered timbers was provided to BAM Nuttall staff and a plan for recording and recovery was put into place. The hulk had been encountered during bank and barge based dredging operations within the swinging hole aspect of the Boston Barrier project, located on the south bank of The Haven opposite the dock entrance to the Port of Boston. This area was previously tidal mud flats with reedbeds on the upper slopes.

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A total of six timbers relating to the remains of a wooden jetty or revetment were recovered from this area. These were recorded as object numbers **7614, 7615, 7616, 7618, 7619** and **7643**. Segments of jetties or revetments are still extant within the inter-tidal areas on the north bank and further east along the south bank of the Haven, and it is likely that the recovered jetty timbers relate to similar structures within the swinging hole dredge area.

Recovered Timbers

The timbers recovered were large heavy oak timbers, all converted as boxed heart and probably sawn with **7614-7616** having evidence of scarfs and iron fasteners. Most timbers recovered were likely to be either horizontal pieces of a timber jetty or revetment or may have been reused as individual piles (without pointed ends) as tie-up points for vessels.

Timbers **7614-7616** were large rectangular section timbers up to 4.2 m in length and measuring 0.29 m wide and 0.2 m thick. Saw marks were noted along the ends of the timbers; no other tool marks were visible, and the ends had not been pointed to form piles. The timbers had areas of concretion around square shafted nail holes; these fastenings may have joined them together into a larger structure. Timber **7616** had compressed recesses with staining suggesting that iron or steel fittings had previously been attached to the timber.

Timbers **7618** and **7619** were also boxed heart timbers measuring up to 2.7 m in length, 0.37 m wide and 0.3 m thick, again with square shafted nail holes and fittings suggesting they were part of a timber jetty or structure.

The final recovered piece of jetty was timber **7643**, which was a boxed heart timber measuring 1.3 m in length, 0.35 m wide and 0.35 m thick.

Interpretation

The conversion of the timbers shows that they were fashioned within an industrial sawmill and are unlikely to date to before 1850. These timbers are likely to have formed part of a jetty, wharf or revetment on the south side of The Haven or may have been part of such a structure further upstream which was demolished and from which they floated free. Given the regular shape and size of them, it is more likely that they are of 20th century date and demonstrate the development and expansion of the port of Boston, and the redevelopment which caused them to be removed/their parent structure demolished.

Period: Post Medieval/Modern

Date range: 1850-1950

Significance

The timbers are part of a larger structure that has been broken up, possibly during the development of the Port of Boston or through the abandonment of jetty structures on the south bank. While the overall structure may have some local significance to the development of the port and Boston's history as a trading port, the individual timbers do not have significance. It is therefore considered that they are of minimal or local significance at most.

Recommended action: The timbers have been recorded in detail for preservation by record, to be included in the archaeological monitoring report and project archive. Their significance does not justify any further conservation or recording, and so it is recommended that they can be discarded.



Appendix 9: Object 7636

Boston Swinging Hole_7636 Iron Anchor

An iron anchor, probably related to the wooden hulk recovered in the same area, was recovered during the dredging operations for the swinging hole on the south bank of The Haven opposite the dock entrance to Port of Boston. It was recovered to the bank during the shore-based dredging in March 2021, and was recorded and reported on by Ben Saunders, Wessex Archaeology.



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Description

Summary

Following the notification through the Protocol for Archaeological Discoveries (PAD) that a hulk had been encountered in December 2020, advice on protecting the in-situ timbers and storage of the recovered timbers was provided to BAM Nuttall staff, and a plan for recording and recovery was put into place. The hulk had been encountered during bank and barge based dredging operations within the swinging hole aspect of the Boston Barrier project, located on the south bank of The Haven opposite the dock entrance to the Port of Boston. This area was previously tidal mud flats with reedbeds on the upper slopes.

An iron anchor measuring 1.25 m long and 0.9 m maximum width and conforming to the Admiralty pattern was recovered during these works, from sediment around the bow area of a wooden hulk (see PAD report for Boston Swinging Hole_Hulk 1). It is possible that the anchor relates to this vessel, either located unused within the bow or used to anchor the vessel to its position on the bank.

The Anchor

The anchor was made of iron and was a classic Admiralty pattern shape, with two upward curved arms off a central vertical shank. No stock was present, but the possible remains of a ring was present on the top of the shank. The ends of the arms had leaf shaped flukes facing upwards, although one had almost entirely corroded away. Overall, the condition of the anchor was poor, with considerable deterioration and corrosion on all aspects. From fluke to fluke the anchor was 0.9 m wide, while the full length of it to the broken ring was 1.25 m. At the crown of the anchor, the arms were 0.1 m thick (0.18 m with expansion due to corrosion), while the remaining width of the arms was up to 0.18 m wide. The shank measured between 0.07–0.11 m wide, varying on the level of corrosion.

Interpretation

The anchor is of a standard fisherman's or Admiralty pattern stocked anchor, although the stock is not present on this example. The slightly thicker arms may suggest it is a kedge anchor. Given its location of recovery around the bow area of the hulk, it is thought that it belongs to this vessel, either left onboard or anchoring it to the shore when it was hulked. As such it is likely date to the 20th century.

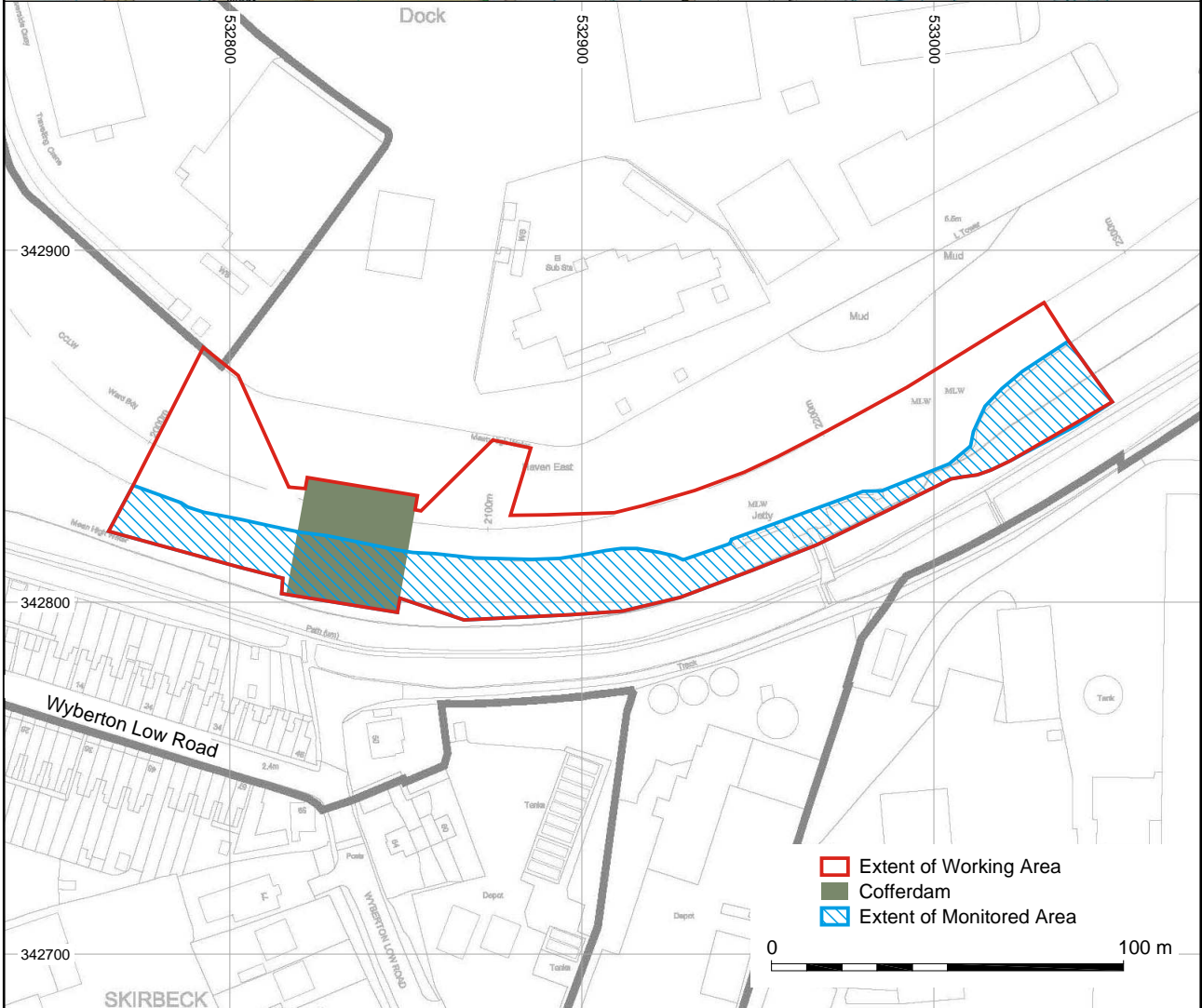
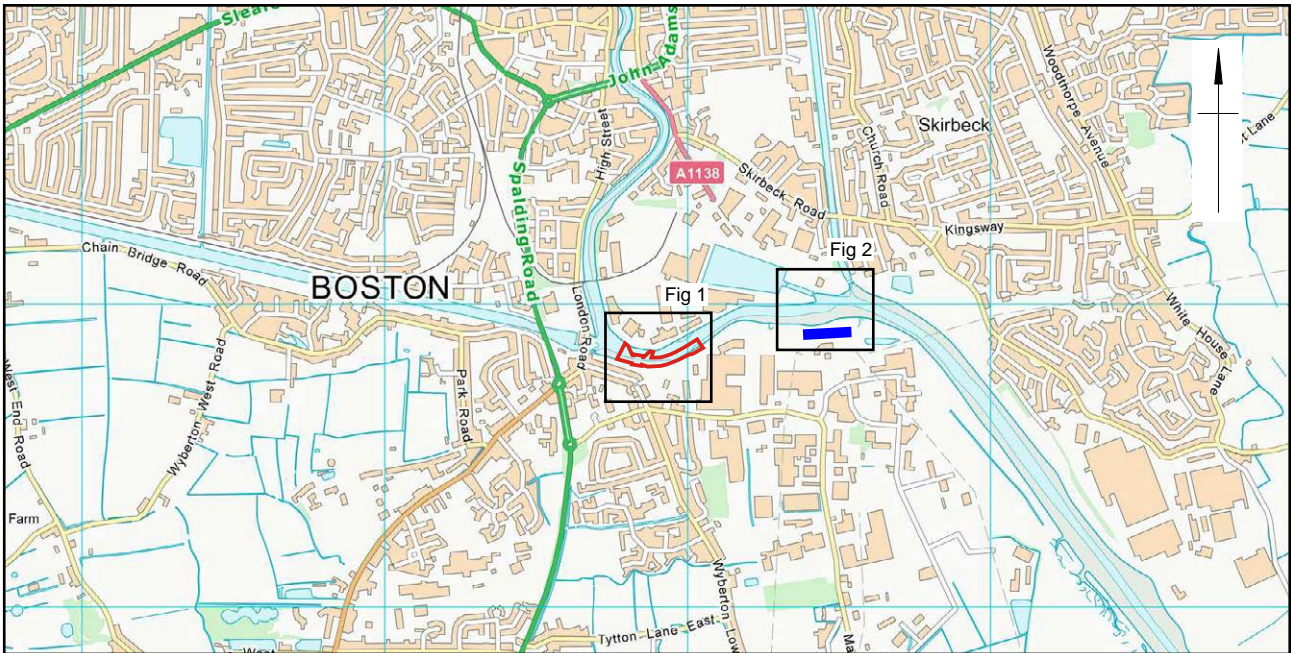
Period: Modern


Date range: 1900-1950

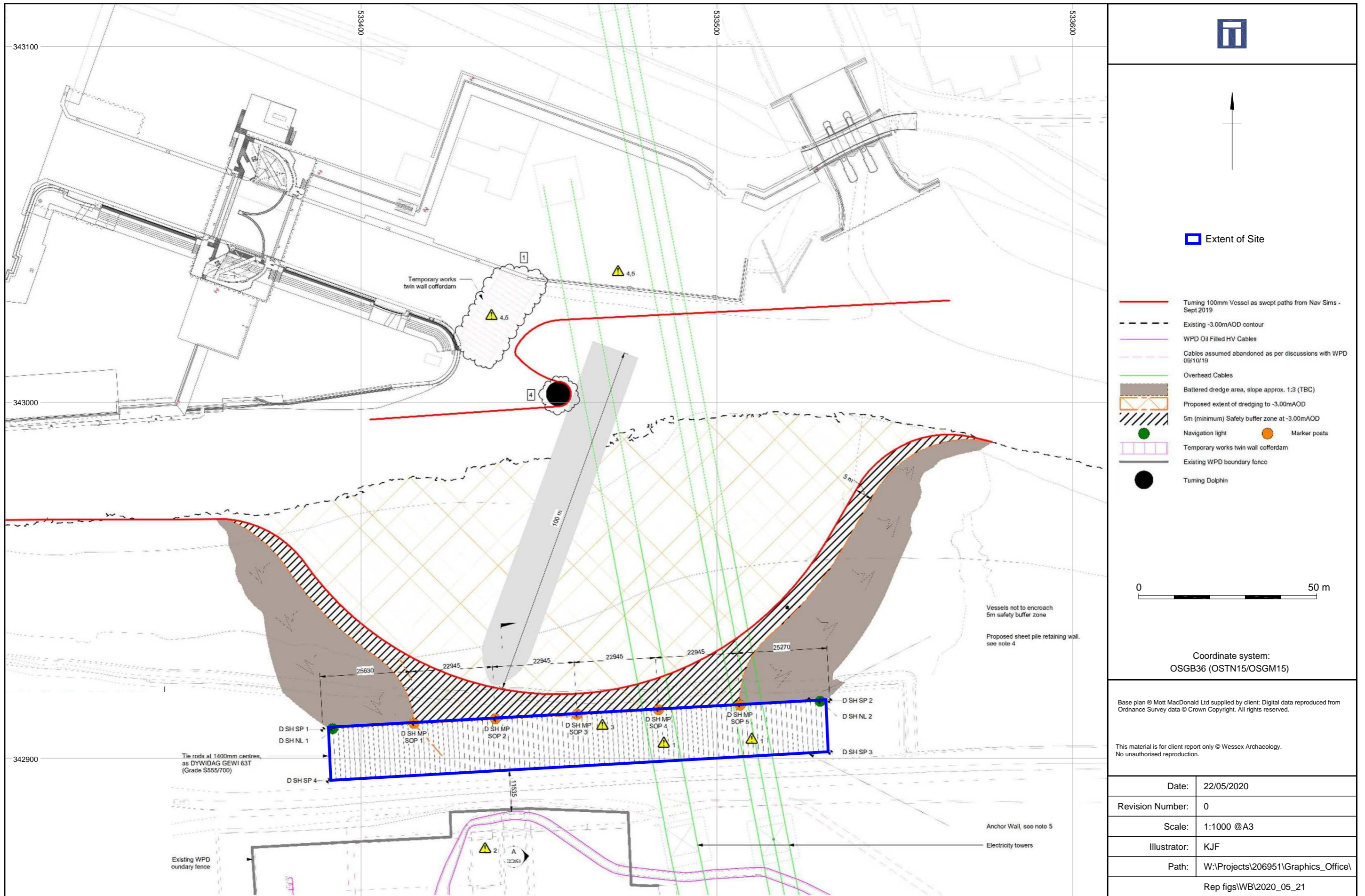
Significance

The anchor has significance in relation to the hulk as part of its overall position (the hulk has local to regional significance as an example of a late 19th/20th century fishing vessel) but as an individual artefact it is likely to be of local significance at most.

Recommended action: The anchor has been recorded in detail for preservation by record, to be included in the archaeological monitoring report and project archive. Its significance does not justify any further conservation or recording. Due to the poor condition and high costs of any conservation it is not thought that it would be of value to a local museum and so it is recommended to be discarded.



 Coordinate system: OSGB36 (OSTN15/OSGM15)	Base plan © Mott MacDonald Ltd supplied by client: Digital data reproduced from Ordnance Survey data © Crown Copyright. All rights reserved.			
	Contains Ordnance Survey data © Crown Copyright and database right 2020. This material is for client report only © Wessex Archaeology. No unauthorised reproduction.			
	Date:	22/05/2020	Revision Number:	0
	Scale:	1:2000 @A4	Illustrator:	KJF
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2020 phase of works

Figure 2

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**Boston Swinging Hole_Hulk 2: 7620–7627, 7629, 7631–7634, 7644 and 7645 Clinker-Built
Hulk Timbers**

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Image 1



Image 3



Image 2



Image 4

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Description

Introduction

Following the notification through the Protocol for Archaeological Discoveries (PAD) that a hulk had been encountered in December 2020, advice on protecting the in-situ timbers and storage of the recovered timbers was provided to BAM Nuttall staff and a plan for recording and recovery was put into place. The hulk had been encountered during bank and barge based dredging operations within the swinging hole aspect of the Boston Barrier project, located on the south bank of The Haven opposite the dock entrance to the Port of Boston. This area was previously tidal mud flats with reedbeds on the upper slopes.

Prior to dredging operations beginning again in March 2021 an Unmanned Aerial Vehicle (UAV) survey and walkover photo survey were undertaken of the timbers remaining on the bank. About 100 recovered timbers were recorded on site. Bank and barge dredging then recovered a further four timbers which were recorded, and a final post-excavation UAV survey was completed in June 2021.

The recovered timbers are likely to pertain to two differently constructed hulks, as seen in the different construction techniques utilised. The timbers recovered mostly pertained to the hulks, however, six timbers were identified as jetty or revetment pieces (see PAD report for Jetty Timbers). The timbers were located within the western edge of the dredge area. About 20 of the recorded timbers relate to a clinker constructed hull, rather than the flush planking of the carvel constructed hull of Hulk 1. The clinker built timbers had been recovered closer into the shore within the immediate vicinity of the sheet pile wall along the south side of the swinging hole dredge area and so are considered to belong to a second hulk.

Timbers were recorded by component type (e.g. frames, planking etc.) relating to their function rather than individually, due to the quantity of timbers recovered. Therefore, some of the timbers were grouped and recorded as one object number but were made up of multiple timbers.

Recovered Timbers

The timbers recovered relating to Hulk 2 can be split into three groups: loose planking; loose joggled frames; and unidentified timber elements.

Framing Elements

A selection of disarticulated framing elements (floor frames and futtocks) were recovered from the inter-tidal zone. Four clearly identified floor frames **7620**, **7626** and **7644** were recovered. These measured up to 1.45 m long, 0.2 m moulded and 0.15 m sided. They were fashioned from a partially box quartered grown timber, with **7626** having seven treenails still in-situ along the joggled face. Timbers **7620** and **7644** also had joggled outer faces to receive planking with 4 and 5 joggles each (Image 1 and 2). Four further badly decayed framing elements (**7634**) were also recovered. These had evidence for iron nails or rivets being used to attach the planking to their outer sides.

Hull Planking

The dredging works recovered outer clinker planking. These were generally broken and incomplete but contained evidence for the general dimensions of the hull planking. Overall, 16 planking timber pieces were recovered (**7621**, **7625**, **7629**, **7631–7633**, **7645**). Most planks were 0.04 m thick (1 inch thick) and measured between 0.2 and 0.27 m wide, with 0.27 m being the most common. Three planks (**7631**) had intact square shafted iron nails in them demonstrating the method of fastening to the frames. Two (**7621**) contained an intact treenail and a treenail hole (Image 3).

A small number of partially overlapping planking sections were recovered (Image 4), which were built of slightly thinner planking, retaining a slight curve and twist (**7632** and **7633**). These sections clearly highlight the use of the clinker construction technique. Further evidence for this technique was found through the presence of luting

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(waterproofing material found between overlapping planks) on two thinner planking elements (**7625**). This luting was made of hair (probably animal hair) and tar.

Unknown Timbers

The component type of a small number of recovered timbers was unidentified during the recording process, beyond that they were likely to have come from the hull in some capacity. These included a number of worked timbers, a similar thickness to the planking identified as fillers within the hull planking. A box-halved timber (**7627**) with a rounded outer section may have been part of a rubbing strake (wale), which would have been located along the upper half of the hull, however, this is unclear.

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Interpretation

It is likely that the vessel was hulked on the mudbanks of the Haven after it fell out of use during the 20th century, potentially during the years either side of the Second World War. A series of aerial photographs from 1952 of the area around Boston harbour show a number of hulked barge hulls beached on the mudbanks on the southern side of the Haven, including two which are in approximately the same position and orientation to the hulk found during these works. These hulks are not present in a 1930 photograph of the same area. The shape of the hulks in the photograph would suggest that they were fishing boats or barges and had been abandoned in that location for a substantial period of time, potentially a decade or more. The photograph shows the loss of the planking around the upper frames, as well as the loss of any decking that may have been present.

The condition of the recovered timbers suggests that the hulk had suffered near total structural collapse prior to any dredging works, due to the erosion of the inter-tidal silts opposite the entrance to the Port of Boston wet dock. Unlike Hulk 1, which had remained partially supported and covered by the inter-tidal silts, the structure of Hulk 2 seems to have broken down and the remaining heavily decayed timbers were loose within the remaining silt. It is therefore not possible to understand the overall shape, design and size of this hulk from the recovered timbers, but the aerial photographs suggest that it was of similar size to Hulk 1 (c. 15 m long with a beam of c. 3 m and a depth of c. 2 m). From the visible remains, the wooden vessel is clearly clinker built, as seen by the joggled framing elements and the overlapping planks. However, it cannot be determined as to whether the construction sequence consisted of shell first technique or skeleton first technique, as a mixture of the two could have been applied.

There is a possibility that more of these timbers may remain to the south of the sheet pile wall which now forms the southern edge of the Haven but it is again likely that these will be fragmentary and not demonstrate the overall design and layout of the hulk.

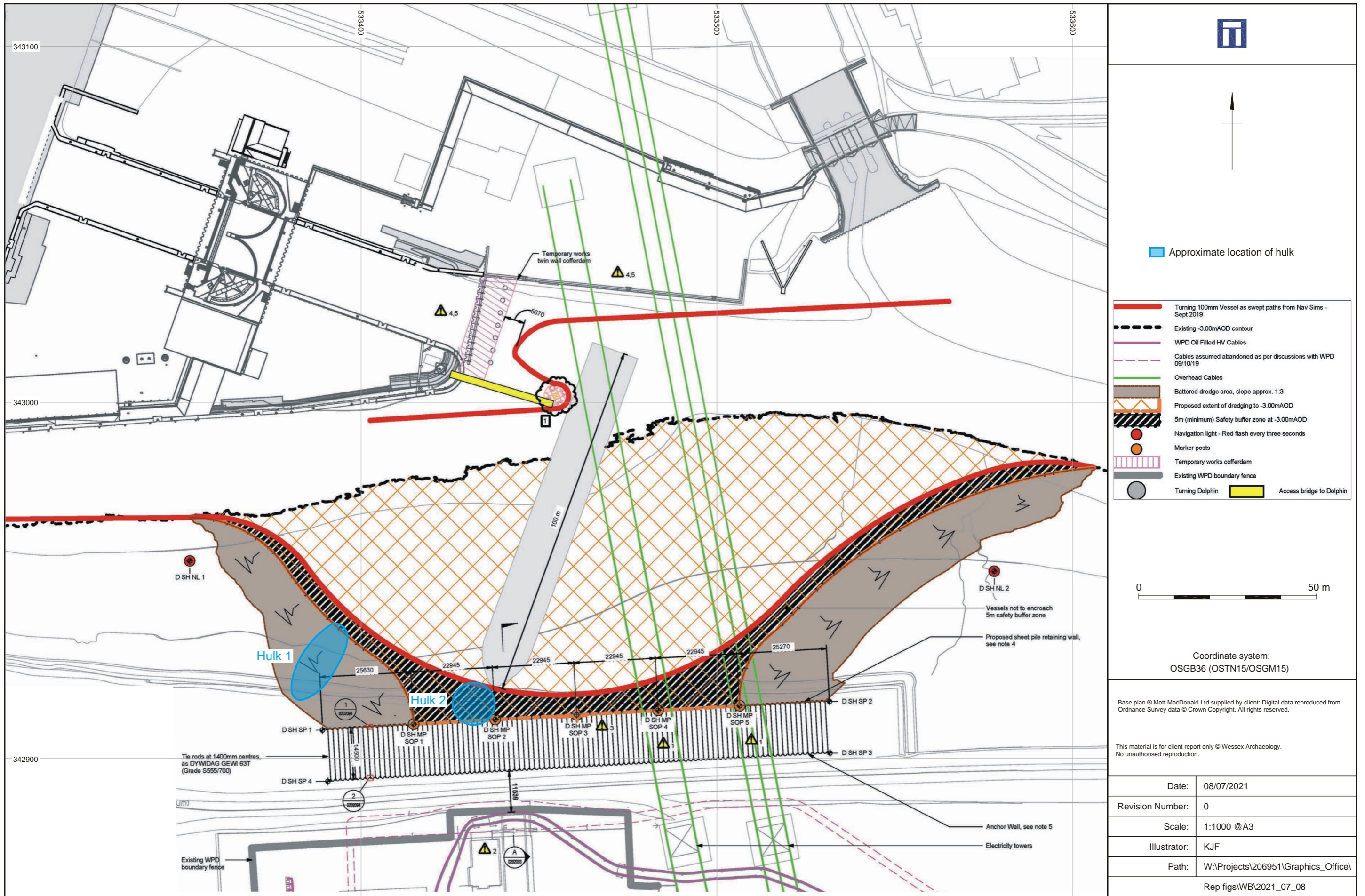
Period: 20th century

Date range: Built c. 1900-1940, abandoned after 1930 and before 1952

Significance

The significance of the timbers is in their association with the hulk, rather than as individual timbers. The hulk, if it were better preserved and more of it was still intact, would be of local and possibly regional significance as an example of an early 20th century fishing vessel of vernacular design and build that was typical of the Witham and Wash area, demonstrating the long history of utilisation of the river and Boston as a trading port during the late 19th and early 20th century.

Recommended action: The disarticulated recovered timbers have been recorded in detail for preservation by record, to be included in the archaeological monitoring report and project archive. Due to the general cost of successfully conserving waterlogged timbers, and the current decayed state in which the timbers are in, it is unlikely that any museum would accept them (no museum accepted the previously recovered hulk remains from elsewhere in the works) and so they are recommended for discard.



2020 - 2021 phase of works

Figure 3

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Plate 1: Dredging river to the east of the cofferdam from pontoon



Plate 2: Dredging river to the east of the cofferdam from riverbank

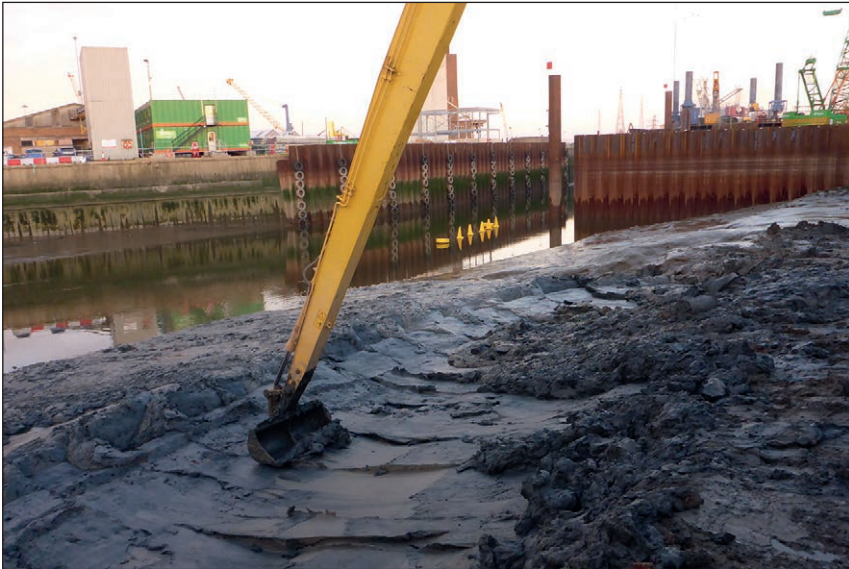


Plate 3: Dredging river to the west of the cofferdam from riverbank



Plate 4: Dredging river to the east of the cofferdam from pontoon



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Plate 5: Dredging river to the east of the cofferdam from riverbank



Plate 6: Excavating within the cofferdam



Plate 7: Excavating within the cofferdam. The horizon of peat is visible as a black line against the cofferdam wall



Plate 8: Dredging river to the west of the cofferdam from pontoon and transferring material into hopper



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Plate 9: Peat Sample (7549)

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Plate 10: 7501 and 7502



Plate 11: 7511 and 7512



Plate 12: 7513



Plate 13: 7548

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Plate 14: 7561



Plate 15: 7569



Plate 16: 7593



Plate 17: 7611

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Plate 18: Removing sediment from outside of the piling



Plate 19: Removing sediment up to 2m from inside the piling while piling is still ongoing



Plate 20: Removing sediment from outside of the piling



Plate 21: Removing sediment up to 2m from inside the piling while piling is still ongoing

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Plate 22: Backfilling the trench once the tie rods have been installed



Plate 23: Installation of the tie rods in the trench while excavation is still ongoing



Plate 24: Installation of the tie rods in the trench while excavation is still ongoing



Plate 25: End of archaeological watching brief with half the trench backfilled



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Plate 26: Southern bank of the Haven showing inter-tidal mud flats and individual mooring posts



Plate 27: Recovered keel timber from Hulk 1



Plate 28: Sternpost, keelson and deadwood knee showing hole for propellor shaft from Hulk 1



Plate 29: Framing elements recovered from Hulk 1


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Plate 30: Hull planking recovered from Hulk 1



Plate 31: Anchor 7636 from Hulk 1



Plate 33: Clinker planking segment from Hulk 2



Plate 32: Joggled frame from Hulk 2



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Plate 34: Historic aerial photograph looking south across Port of Boston in 1930 © Historic Environment Scotland

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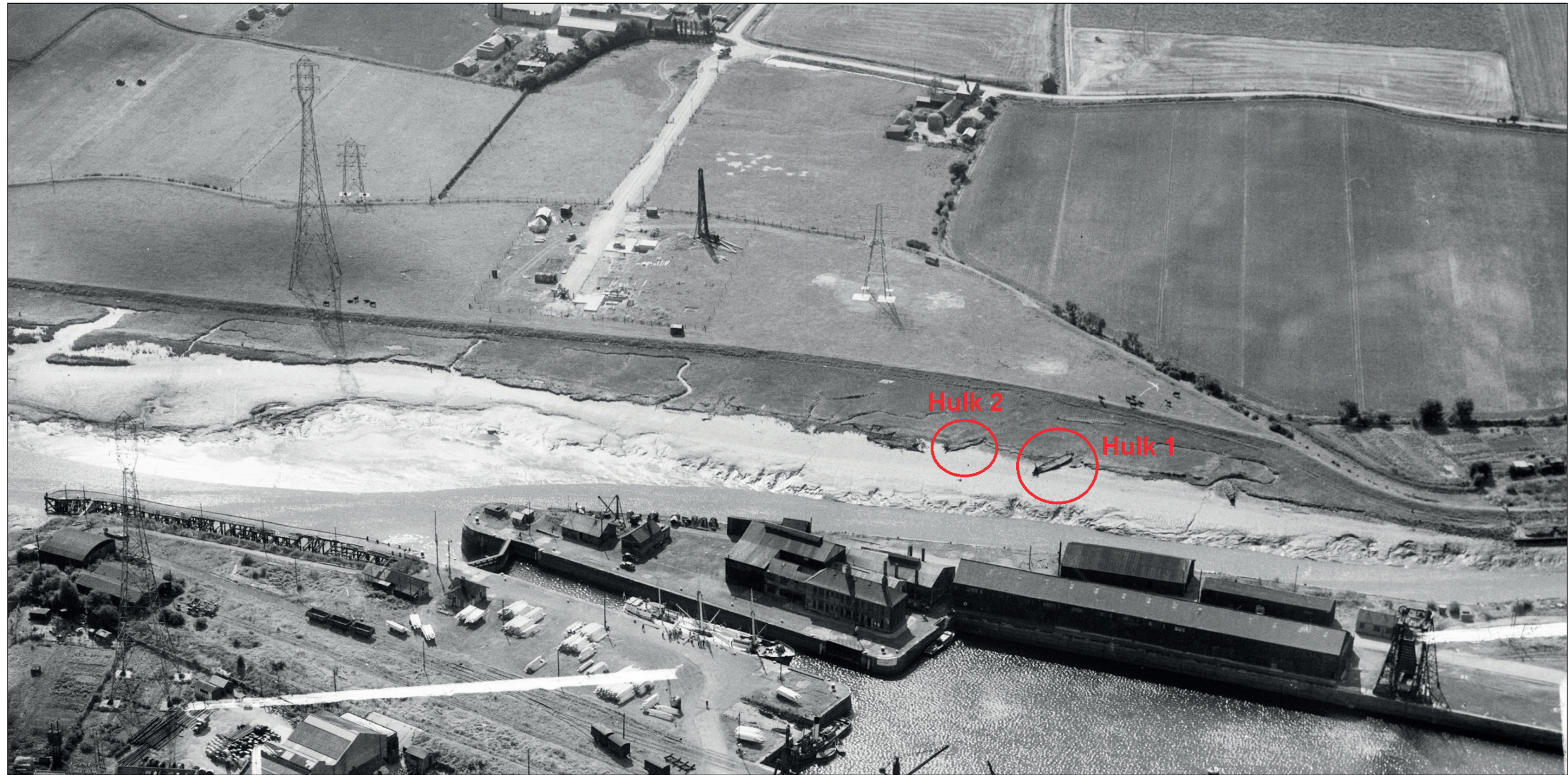



Plate 35: Historic aerial photograph looking south-west across Port of Boston in 1952 © Historic Environment Scotland

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