



London Gateway Port: Channel Clearance and Dredging

In-water Archaeological Observation and Recording

Final Report

Wreck 5204 (Pottery Wreck)



**LONDON GATEWAY PORT:
CHANNEL CLEARANCE AND DREDGING**

IN-WATER ARCHAEOLOGICAL OBSERVATION AND RECORDING

FINAL REPORT

WRECK 5204 (POTTERY WRECK)

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Summary

Wessex Archaeology was commissioned by the Port of London Authority to conduct in-water archaeological observation and recording for Wreck 5204 (Pottery Wreck). This work was undertaken as part of the archaeological mitigation strategy for the DP World London Gateway container terminal development. The wreck is located east of Sea Reach No.3, only six metres from the southern edge of the existing dredged channel.

This report provides a brief overview of previous fieldwork. Details of the methodology employed in carrying out in-water observation and recording, and the recording of recovered timbers, are also included.

Fieldwork took place in two phases. The first phase of the diving operation was undertaken between the 11th and 13th of June 2008. Two dives were conducted, with an average dive time of 80 minutes. An airlift was used to remove sediment overburden from within and around the wreck. Major structural elements were identified, and a mixed assemblage of artefacts was recovered. The second phase was undertaken between the 22nd and 24th of June 2008. Three dives were undertaken with an average dive time of 86 minutes. The removal of sediment overburden continued, and elements of the hull structure were raised for further study.

The recovered structural elements were recorded at the PLA's passive storage facility at Denton Wharf, between June 25th and 26th. The timbers were identified, assessed, photographed, measured and drawn in order to develop an understanding of the vessel's size, construction and date. Finds from the wreck were transported to Wessex Archaeology's Salisbury base for specialist analysis. Approximately 282 finds were recovered during the June fieldwork, these include coal, ceramics, glass, bricks, metal, wood, bone and leather.

Wreck 5204 (Pottery Wreck) is thought to be a Thames Bawley, a local fishing vessel of the type that operated in the Thames and along the east coast, fishing for prawns and small fish. The vessel probably sunk in the later part of the 19th century, based on the artefacts that were recovered.

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Wessex Archaeology would like to thank the Port of London dive team for their support and professionalism, particularly Mr Kevin Leadbetter the dive supervisor. The *Hookness* and her crew provided logistical support. We would like to acknowledge their professionalism, skill and enthusiasm for the project particularly the Captain and Mate.

The fieldwork was undertaken for Wessex Archaeology by Graham Scott, Niall Callan and Simon Adey-Davies. The report was compiled by Andrea Hamel, and the illustrations were prepared by Kitty Brandon. The project was managed for Wessex Archaeology by Stuart Leather, and quality assurance was provided by Steve Webster.

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1. INTRODUCTION

1.1. BACKGROUND

- 1.1.1. Wessex Archaeology (WA) was commissioned by the Port of London Authority (PLA) to undertake in-water archaeological observation and recording of Wreck 5204 as part of the archaeological mitigation strategy for the DP World London Gateway container terminal development.
- 1.1.2. The wreck was identified for in-water archaeological investigation and recording, as defined in the London Gateway Archaeological Methods and Procedures under Mitigation H, and it was agreed with English Heritage in October 2007 that this was the appropriate mitigation for this wreck.
- 1.1.3. The wreck is located east of Sea Reach No.3, only six metres from the southern edge of the existing dredged channel (**Figure 1**).
- 1.1.4. This report provides details of the in-water archaeological observation and recording and the surface recording of the raised ship's timbers that was undertaken in June 2008. The report includes an overview of previous investigations, a brief methodology, a review of fieldwork undertaken for this project and a detailed list of finds. It forms the Stage I, Mitigation 1E as defined in the Clearance Mitigation Statement (CMS) for Wreck 5204 (WA 2006a).

1.2. PREVIOUS INVESTIGATIONS

- 1.2.1. The CMS (WA 2006a) provides a detailed summary of previous investigations and sets out the various mitigation stages that this site has been subject to. This section will review recent work, based on that information.
- 1.2.2. The site was first located by the PLA in October 1999.
- 1.2.3. The site was not identified during Wessex Archaeology's analysis of the sidescan sonar data from 2001 and 2002. However, it was identified when Wessex Archaeology interpreted the PLA multibeam data from 2005. The site consisted of a prominent mound with a smaller mound like feature adjoining it to the south and a ridge like feature with less height to the north (**Figure 2**). There is a large area of scour on the eastern side of the site (Wessex Archaeology 2006a). The main mound was 8 metres by 8 metres with remains upstanding to 0.70 metres. The ridge like feature was 3 metres long by 2 metres wide, upstanding by 0.40 metres, and formed a curve to the west.

- 1.2.4. In 2005, the site was surveyed by the PLA, revealing a smooth mound measuring approximately 7 metres north-south by 3 metres east-west, with signs of debris up to 10 metres to the north. The initial inspection by PLA divers revealed that the obstruction was the remains of a wooden vessel with framing timbers protruding from the sand in a debris field. The frames were approximately 0.10 metres square and the side planking was 0.025 metres thick and 0.15 metres deep. A small sample of timbers was recovered.
- 1.2.5. Nigel Nayling, from the University of Lampeter, dived the site in 2005, and confirmed the presence of framing timbers. A 7 metre section of keel was discovered and a small number of pottery sherds were recovered for possible identification. The small pieces of loose timber previously identified were examined, and identified as oak, although they were not suitable for dendrochronological dating (Nayling 2005).
- 1.2.6. The site was dived by Wessex Archaeology in 2006 as part of a preliminary archaeological diving investigation of five wrecks in the Thames Estuary (Wessex Archaeology 2006b). The dive operation confirmed the initial interpretation of the site, and demonstrated the presence of the ship's structure and associated artefactual material. **Figure 2a** provides a record of the location of diver observations. After this dive, it was decided that Wreck 5204 should be subject to in-water observation and recording.

1.3. AIMS AND OBJECTIVES

- 1.3.1. The aim of this project was to carry out in-water archaeological observation and recording on Wreck 5204, and surface recording of any raised structural elements, in order to achieve a record that informs knowledge of the character, date and extent of the site, prior to the wreck being cleared for the DP World London Gateway container terminal development.
- 1.3.2. The archaeological objectives for this project were:
 - To establish the overall components, layout (form/distribution) and sequences of the site;
 - To recover and retain diagnostic structural elements, large finds and/or a representative assemblage of small finds from the site;
 - To record (describe, draw, sketch, photograph) structural elements, large finds and small finds that were not retained.

2. METHODOLOGY

2.1. INTRODUCTION

- 2.1.1. The methodology for this project was defined in the, *London Gateway Port: Channel Clearance and Dredging In-Water Archaeological Observation and Recording: Method Statement* (Wessex Archaeology 2008b), and a brief summary of the methodology follows.

2.2. ARCHAEOLOGICAL TEAMS AND RESPONSIBILITIES

Diving Team

- 2.2.1. In-water archaeological observation and recording was achieved by embedding diving archaeologists equipped with acoustic positioning within the Port of London Authority (PLA) dive team.
- 2.2.2. The Port of London Authority was the diving contractor, and as the Wessex Archaeology diving archaeologists were part of the PLA team, they worked to the PLA Diving Project Plan (DPP) and Risk Assessment (RA) which was informed by a separate DPP and RA supplied by Wessex Archaeology. An additional archaeologist was on board the vessel to record artefacts recovered from the site, however they did not form part of the PLA diving team.
- 2.2.3. The WA team structure comprised (**Table 2.1**):

Team Member	Role / Responsibility
Diving archaeologist on the riverbed	Undertaking underwater work
Archaeological recorder	Responsible for the archaeological direction of the diving operation
Finds processor	Processing finds recovered from the airlift and by the diver

Table 2.1: WA team structure

- 2.2.4. The PLA provided the airlift and diving support, and Wessex Archaeology provided the underwater positioning system.

Surface Recording Team

- 2.2.5. Surface recording was undertaken in the PLA's passive storage facility at Denton Wharf.
- 2.2.6. Two Archaeologists (Coastal & Marine) from Wessex Archaeology provided a limited recording of the structural elements raised by the diving team. Work was undertaken in accordance with a separate Risk Assessment (RA) developed by Wessex Archaeology.

2.3. POSITIONING

- 2.3.1. Underwater positioning was achieved using the Sonardyne SCOUT Ultra Short Baseline (USBL) acoustic navigation system, referenced to UTM zone 31 (WGS84) real world coordinate system and interfaced to the Wessex Archaeology recording system, DIVA.
- 2.3.2. The Sonardyne SCOUT USBL system calculates position by measuring range and bearing from the vessel-mounted transceiver to the submerged transponder that is attached to the diver. The vessel-mounted transceiver interrogates the submerged transponder, and the submerged transponder replies to the interrogation signal. The range is calculated from the time it takes the interrogation procedure to be completed. The transceiver comprises an array of transducers, and the bearing is calculated from the pattern (signal phase) of return energy that is received by this array. The term 'ultra short baseline' refers to the length of the transducer array within the receiver unit. The position is then relayed to Wessex Archaeology's digital recording system, DIVA.

- 2.3.3. The waterproof and portable surface command module running the SCOUT USBL software was installed in the wheelhouse. The SCOUT USBL transceiver was mounted on a pole over the side of the boat.
- 2.3.4. Ancillary equipment is integrated with the Scout USBL system. All instruments were connected to the SCOUT surface command module. A position check was carried out to test the integrity of the system prior to the commencement of fieldwork. Bearing was measured using a Meridian Surveyor gyro compass. Heave, pitch and roll were measured using a TSS Full Attitude Unit.

2.4. ARCHAEOLOGICAL RECORDING

- 2.4.1. All archaeological finds and deposits were recorded using a pro-forma recording system, based on a running matrix of assigned contexts for the site. Numbers were allocated in blocks that are unique to the site, and a number log was maintained.
- 2.4.2. All archaeological recording was undertaken using Wessex Archaeology's digital recording system DIVA. DIVA is a real time recording system working with three-dimensional position information. It comprises a Microsoft Access database working in conjunction with ESRI ArcGIS 9.0. The database is used to store information and the GIS is used to provide a graphic display and to georeference information.
- 2.4.3. The position of the tracked diver was output from the Sonardyne SCOUT surface command module in real world co-ordinates into the DIVA system and displayed in real time with geophysical data stored in the GIS system, Arc GIS 9.0. The diver's movements were overlaid onto the multibeam data for the site in order to reference the more prominent topographical features.
- 2.4.4. Observations made by the diver were entered into the database by the archaeological recorder on board the vessel. These observations, stored in the DIVA database, include the three-dimensional position, comments typed in by the recorder and mapping labels for display in the GIS system. Diver observations were used to correlate separate records for contexts, finds, samples, and photographs.

2.5. HULL RECORDING

Underwater

- 2.5.1. The overburden of sediment and artefacts was cleared using an airlift, and the exposed hull structure was investigated to clarify the extent and character of the site. Although one of the original plans was to record the exposed hull structure using the navigation system and tape measurements when appropriate, due to poor visibility, this was not undertaken.

Above water

- 2.5.2. Structural elements of the wreck were recovered to the surface using mechanical means and were transported to the PLA's passive storage facility at Denton Wharf.
- 2.5.3. The programme of surface recording was determined after an assessment of the volume and nature of the material recovered from the site. Due to the number of timbers and the complexity of some of the pieces, it was determined that only limited archaeological recording could be undertaken. A scale drawing and a brief

description were produced for each timber. A series of photographs was taken for each timber.

- 2.5.4. The hull remains were discarded after they had been recorded, as per an agreement with the Receiver of Wreck and English Heritage.

2.6. FINDS RECOVERY AND RECORDING

- 2.6.1. Finds were managed in accordance with the London Gateway Port: Channel Clearance and Dredging In-Water Archaeological Observation and recording Method Statement (Wessex Archaeology 2008b).
- 2.6.2. 'Wreck', includes all forms of material lost or deposited from a vessel, including hull, propulsion, fittings, cargo, and personal possessions. Wreck of archaeological interest was subject to the procedures relating to wreck in the Merchant Shipping Act 1995. All finds that have been recovered as part of the London Gateway project will be reported to the Receiver of Wreck at the completion of this project.
- 2.6.3. An airlift was employed to clear the sediment overburden and to recover artefacts not identified on the riverbed by the diver.
- 2.6.4. Where practicable, the position of the archaeological material on the riverbed was recorded prior to recovery. Identified finds were placed in a basket or suitable container by the diver for recovery to the surface.
- 2.6.5. In order to maximise artefact retrieval, the airlifted material was sorted on the deck through a system of cages. The finds were positioned based on the location of the diver during the dive. Finds were then labelled and put into an appropriate container. Suitable facilities for the storage of finds were provided onboard the diving support vessel.
- 2.6.6. The finds were initially assessed by WA's on board staff. The finds were logged in DIVA, and photographs were taken of each find. The finds were subject to passive holding at the point of recovery from the seabed, and finds considered to require further analysis were transported to WA's Salisbury base. On arrival, specialist find staff assessed the assemblage as a whole and provided a conservation assessment.
- 2.6.7. All retained finds were processed in accordance with the Institute of Field Archaeologists' *Standard and guidance for the collection, documentation, conservation and research of archaeological material* (2005). All finds were recorded and labelled appropriately.
- 2.6.8. All finds of archaeological interest form the material archive of this project. Decisions regarding recording, handling, treatment, and disposal were informed by archaeological and archival standards. Records and photographs of finds of archaeological interest are incorporated within the project archive.

3. FIELDWORK

3.1. INVESTIGATION DETAILS

- 3.1.1. In June 2008, two phases of diving investigations were undertaken to carry out in-water archaeological observation and recording. The aim of the first phase was to carry out in-water archaeological observation of the wreck to establish its character

and nature, and the aim of the second phase was to recover substantial structural elements of the wreck for archaeological recording on shore. A record of the location of diver observations during the dives of both phases can be found in **Figure 2b**.

- 3.1.2. The PLA diving vessel was mobilised on 11th June 2008 with Wessex Archaeology's acoustic positioning system on board. The first phase of the diving operation was undertaken between the 11th and 13th of June 2008. One dive was planned per day as Low Water slack tide periods were in the middle of the day. Two dives were conducted for a total dive time of 160 minutes.
- 3.1.3. The first dive was carried out on the 11th June 2008 and had a duration of 90 minutes. The objectives of the dive were to ascertain whether the site conditions had changed since the investigation in 2006 and to begin clearing the wreck for recording. The airlift was used to remove sediment overburden from within and around the wreck, and resulted in revealing the hull structure. The dive took place on the centre of the wreck, with a focus on the northern half. A mixed assemblage of artefacts was recovered from the airlift outwash, including glass, a small sherd of pottery and modern material. A frame from the vessel was recovered to the surface, and it appeared to be consistent with structural elements recovered in 2005. It was a clinker frame measuring approximately 1.2 metres long with a thickness of 0.10 metres. The dive is represented by the black dots in **Figure 2b**.
- 3.1.4. No diving took place on 12th June 2008 due to inclement weather conditions and problems with the diving vessel.
- 3.1.5. The next dive was undertaken on 13th June 2008. The diver worked along the eastern side of the wreck and continued clearing the sediment overburden with an airlift. On this dive, the diver verified the nature of the outlying material around the wreck. The finds assemblage recovered from the airlift spoil was similar in nature to the previous dive. The dive duration was 70 minutes, and the diver observations are represented by the pink dots in **Figure 2b**.
- 3.1.6. The dives confirmed that the wreck is approximately seven metres long and consists of a keel section and frames with fragments of planking. The notches on the frames suggested that the vessel was clinker-built.
- 3.1.7. The second phase of the diving operation was undertaken between the 22nd and 24th of June 2008, as part of the wreck recovery phase. Diving operations were planned for slack water periods at the Low and High Waters. The PLA diving vessel was mobilised on Sunday, 22nd June 2008 with Wessex Archaeology's acoustic positioning system on board.
- 3.1.8. The first dive was undertaken on 23rd June 2008, with an objective to assess the condition of the site following the removal of sediment overburden with an airlift. The airlift was then used to excavate areas around the hull structure to facilitate recovery. Both ends of the keel were identified and a strop was placed around the west end. This dive is represented by the red dots in **Figure 2b**.
- 3.1.9. Further straps and wires were attached to the wreck on the second dive, which took place on 23rd June 2008 and lasted for 81 minutes. The wreck was then lifted, and the keelson and part of the lower sternpost were recovered to the deck of the PLA salvage vessel. Due to the fragility of the wreck, much of the structure became disarticulated during the lifting operation. This dive is represented by the orange dots in **Figure 2b**.

- 3.1.10. On 24th June 2008, a third dive was undertaken with an objective of examining the site for any further upstanding material and to recover any loose structural material remaining on the seabed. It was determined that a section of planking and framing remains on the seabed, Some frames and hull planks were discovered in the previously excavated area and were recovered to the surface. The dive duration was 92 minutes, and is represented by the yellow dots in **Figure 2b**.
- 3.1.11. The recovered structural elements were stored at the PLA's passive storage facility at Denton Wharf where limited archaeological recording was undertaken by Wessex Archaeology on June 25th and 26th 2008. The timbers were identified and assessed in order to determine the size, construction and date of the vessel. The keel, frames and planks were measured, drawn and photographed (**Plates 1–4**). At the request of Touch Productions, the material was assessed by Damian Goodburn.
- 3.1.12. A list of contexts from the wreck, including the timber timbers, can be found in **Appendix I**. Finds from the wreck are recorded in **Appendix II**.

4. EVIDENCE

4.1. WRECK STRUCTURE / HULL REMAINS

Underwater

- 4.1.1. During the in-water observation and recording, the wreck was located. Although the extreme east and west ends of the keel were slightly exposed, the majority of the timber structure was covered by silty sediment of variable depth, approximately 0.1 to 0.30 metres deep. The structure was located above a natural clay surface.
- 4.1.2. The keel was identified, and it appeared to be oriented roughly east-west. The wreck lay at a slight angle and tilted over to the north. Both ends of the timber were eroded and incomplete, but the remaining timber measured approximately 6 metres long and 0.21-0.22 metres by 0.20 metres moulded / sided. The upper edge of the moulded faces were rabbeted. A slight curve suggested the proximity of a stem or stern post.
- 4.1.3. A 3 to 4 metre area of frames was explored on the north side of the keel, indicating timbers of variable length up to approximately 2 metres long, and about 0.12 metres by 0.12 metres moulded / sided. The frames were oriented approximately north-south and appeared to be joined to the keel. Thin planks, approximately 0.02 – 0.03 metres thick were observed above and below the frames in places. Both metal and wooden fastenings were attached to the frames.
- 4.1.4. A similar area of frames and planks was discovered to the south of the keel and appeared to be attached to it. The structure was set in the vertical plane, rising at least half a metre at an angle close to 90 degrees. Although only a small section of planking was exposed, the outer face appeared to be flush laid. The heads of the frames were eroded but exhibited no sign of recent mechanical damage. Soft metal sheet, possibly lead, was attached to the outer face of the planks.

Above water

- 4.1.5. Raised structural elements included the keel, the sternpost, five frames and five planks. These were stored at the PLA's passive storage facility at Denton Wharf, and a limited survey was conducted, including photographing, sketching and describing the timbers (**Plates 1-4**).

4.1.6. Each of the structural elements will be briefly described below.

Keel

- 4.1.7. The keel (5204-1010) was broken and eroded at both ends, so it is not possible to determine the original length. The remains of the keel measure almost 0.5 metres in length, 0.18 metres in width with a depth of 0.30 metres (**Plate 1a**). The keel tapers from the bow end, narrowing to 0.15 metres wide at the stern end. The stern end provided evidence for considerable damage due to marine borers. The drawings of the keel only include up to where a sample of the keel was removed for dendrochronological study, however the keel continued for an additional 35cm, including the sample and the marine-bored wood.
- 4.1.8. Metal and wooden fastenings were used on this vessel. The six large patches of iron oxide on the topside of the keel suggest metal bolts (**Plate 1b**). Evidence for wooden fastenings is provided by numerous square and round holes, one possibly still containing a peg.
- 4.1.9. The keel is double rabbeted, and the rabbeting changes significantly along the length of the keel (**Plate 1c**). The double rabbet line could represent re-planking, using carvel planks over the clinker originals.
- 4.1.10. There is a considerable amount of marine growth at the bow end; the plant marine growth extends about 0.70 metres from the end of the timber, and the white staining continues to 1.45 metres from the end of the timber (**Plate 1d**).

Sternpost

- 4.1.11. The two pieces of stern post were still joined during the in-water observation, however they separated when raised. They are numbered 5204-1011a and 5204-1011b (**Plate 2a**). Large concretions on both pieces indicate where they were joined by metal fastenings (**Plate 2b**).
- 4.1.12. Piece 5204-1011a would have been located fore of 5204-1011b. The end where this piece joined the keel or keelson is in good condition, suggesting it may still have been connected before being raised (**Plate 2c**). The upstanding end has been eroded by marine borers. The timber measures 1.30 metres in length, 0.25 metres in width, and 0.11 metres in depth. Numerous square and round holes were located along the side of the timber.
- 4.1.13. Piece 5204-1011b was the outer piece of the stern post and would have been located at the very stern of the vessel. The top of the timber has been badly eroded by marine borers, so it is not possible to determine the original length of this piece of the sternpost. The remaining timber measures almost 1.20 metres in length, up to 0.20 metres in width and with a depth of 0.10 metres. The marine growth begins approximately 0.65 metres from the base of the timber. When 5204-1011a and 5204-1011b are laid side by side, the base of 5204-1011b reaches 0.21 metres beyond the base of 5204-1011a.

Frames

- 4.1.14. Four frames and one floor timber were recovered from the site (**Plates 3a-f**). All of the frames were from a clinker-built vessel.
- 4.1.15. The top of frame 5204-1003 is eroded and covered in considerable marine growth. The remaining frame is 1.54 metres in length and on the outside of the curve there

are ten notches (**Plate 3a**). There are a number of holes for fastenings, and an intact treenail was discovered (**Plate 3b**).

- 4.1.16. Frame 5204-1005 has notches for planks on the outside of the curve (**Plate 3d**). The frame is considerably eroded at one end, and the remains measure 178cm long, and 0.11 to 12 metres square.
- 4.1.17. Unlike the above frames, frame 5204-1004 exhibits notches on the inside of the curvature (**Plate 3c**). The frame measures 1.58 metres, and tapers considerably at one end. A cross section at the thick end of the frame measures 0.085 by 0.11 metres; 1.20 metres further along the frame, it measures 0.065 by 0.09 metres; and at the other end of the timber, it measures 0.145 by 0.035 metres. About 0.90 metres from the thickest part of the timber, there is a large square hole with a depth of 0.015 metres.
- 4.1.18. Frame 5204-1007 also has notches located on the inside of the curvature (**Plate 3f**). There appear to be seven notches for planks on this timber. The frame measures 1.38 metres and the dimensions of the frame are 0.08 metres by 0.09 metres. One end of the frame is twisted, but does not taper. There is a large patch of rust staining in the middle of the frame.
- 4.1.19. 5204-1006 appears to be a floor timber (**Plate 3e**). It is 0.82 metres long and has a depression in the centre with a depth of 0.02 metres. There is a large crack along the back of the floor timber, and it is 0.10-0.11 metres square.

Planks

- 4.1.20. Five planks were recovered from the site (**Plate 4a-e**). Plank fragment 5204-1008 is 1.58 metres long and 0.03 metres thick (**Plate 4a**). It is broken diagonally, making it difficult to determine the original length and width, but at its widest point, the remaining wood measures 0.18 metres across. A large diagonal crack crosses the plank. There are a number of metal concretions, and the plank has two round holes, one of which still contains a wooden peg. It appears to be a plank used in carvel construction.
- 4.1.21. This short plank fragment (5204-1012) measures only 0.93 metres, as the end is broken, it is not possible to determine the original length (**Plate 4c**). The width of the plank is 0.15 to 0.17 metres and the depth is 0.018 metres. There are a number of holes along the plank, some of which have concretions, indicating metal fastenings. One of the features of this plank is particularly interesting, as it appears to have been joined to the plank beside it with a lap joint protruding from the short end of the plank. It appears to be a plank used in carvel construction.
- 4.1.22. It is impossible to determine the original length of plank fragment 5204-1013, however what remains measures 1.53 metres long, 0.19 to 0.22 metres wide with a depth of 0.03 to 0.04 metres (**Plate 4e**). There is a large crack running lengthways along the board. It has three holes and two metal fastenings. The limited number of fastenings indicates that this is a plank used in carvel construction.
- 4.1.23. Plank fragment 5204-1014 has one broken end and one eroded end, and therefore it is not possible to determine the original length (**Plate 4d**). The remains are approximately 1.65 metres long, with a width of 0.20 to 0.21 metres and a depth of 0.03 metres. There are 13 square holes in the plank with no apparent pattern, and one square peg still remains in a square hole. There is a patch of concretion at one end. This appears to be a plank used in carvel construction.

- 4.1.24. Plank 5204-1009 is broken diagonally, and there are diagonal cracks in three other places, generally near holes along the long edge (**Plate 4b**). Although it is not possible to determine the original length of this plank, what remains measures 1.24 metres in length, 0.14 metres in width and measures 0.02 to 0.04 metres thick – with one side of the plank generally 0.005 metres thicker than the other. There are two lines of square holes and square pegs along the length of the plank, and it appears to be a clinker plank. There are three small round holes at the widest end of the plank.

4.2. FINDS

Introduction

- 4.2.1. All finds that were recovered from the site were dealt with in accordance with the methodology outlined above.
- 4.2.2. There were 282 finds recovered from wreck 5204 in June 2008, and include stone, glass (**Plate 5**), ceramics (**Plate 5**), brick (**Plate 6**), metal (**Plate 6**), wood, bone (**Plate 8**), leather (**Plate 7**) and synthetics (**Plate 7**). A detailed record of the finds can be found in **Appendix II**.
- 4.2.3. The finds were brought to Wessex Archaeology and were examined by specialist finds staff. Dates were assigned when appropriate and some of the finds were researched in more detail.
- 4.2.4. Artefacts were found throughout the site and not limited to a single area.

Stone

- 4.2.5. Sixty large lumps of coal were recovered from the wreck (5204-0023, 5204-0025, 5204-0039).

Glass

- 4.2.6. The glass assemblage dates from the 19th to the 21st century.
- 4.2.7. A small dark green bottle top has been dated to the 19th century (5204-0003) (**Plate 5a**). It has a squared form with a squat neck and out-turned flat rim.
- 4.2.8. Finds from the 19th or 20th century include three green vessel fragments and four pieces of a clear square jar including the square base (5204-0015 (**Plate 5f**), 5204-0047). A piece of the neck from a small, clear, thin walled glass bottle is thought to belong to an oil lamp (5204-0045).
- 4.2.9. Glass finds from the late 20th or early 21st century include a broken half litre brown glass bottle and seven fragments from a clear glass jar (5204-0002, 5204-0029). Three sherds of a brown glass 0,33L bottle embossed 'no return' were recovered, along with five pieces from a clear screw top jar and two various pieces of glass (5204-0021).

Ceramics

- 4.2.10. Although this wreck is referred to as the 'Pottery Wreck', the pottery from the wreck is not abundant, unique or even particularly remarkable: the finds consist of 37 sherds of pottery dating from the 19th to the early 20th century (**Plates 5a-e,g**)
- 4.2.11. Two pottery samples were recovered by Nigel Nayling in 2005 and assessed by Wessex Archaeology. Both were post-medieval coarse redware fabrics (general utilitarian wares). The first sherd is a white-slipped and glazed flared bowl dating from the 19th to early 20th century, and is a type particularly characteristic of the northern production centres of south Yorkshire and Newcastle (WA 2006). The second vessel may be a large cup or porringer (handled bowl). The fabric is a relatively fine variant of the general redware.
- 4.2.12. From the dives in June 2008, sherds of refined whiteware of the pearlware type, including a jug handle, were recovered (5204-0009). These finds were dated to the 19th century.
- 4.2.13. The majority of pottery finds date from the late 19th to the early 20th century. Several sherds of glazed redware include a base and side looped handle, body sherds, and a domed lid with a side flange missing its top (5204-0004, 5204-0013, 5204-0014). Two sherds of a refined redware glazed vessel were recovered (5204-0046), as well as one rim fragment of yellow ware, with a banded decoration below the rim (5204-0010). Eight sherds of refined whiteware include five from a ribbed bowl and one from a jar base (5204-0028, 5204-0043).

Bricks

- 4.2.14. Two brick fragments were discovered (504-0007) (**Plate 6b**). One is stamped with an L or a T, and the fragments exhibit possible frogging. The frogging indicates that the bricks were produced after the early 1800's.

Metal

- 4.2.15. Various types of metal were recovered from the wreck site, however few of them were diagnostic (**Plates 6a, c, d**)
- 4.2.16. Several pieces of lead were discovered, including a small lead strip that may be a sheet offcut (5204-0018). There were other possible sheet offcuts such as the lead sheet fragments with nail holes (5204-0005) (**Plate 6a**). A small lead tube, with a two millimetre diameter appears to be 20th century insulated wire (5204-0008) (**Plate 6c**).
- 4.2.17. The back of a small two-part button could be made of copper alloy or possibly pewter. It consists of a plain disc with a rear attachment loop and has been dated to the 19th or 20th century (5204-0020) (**Plate 6d**).
- 4.2.18. Numerous concretions were found, including a large lump that could be made of iron and may contain a treenail and part of a leather shoe (5204-0024, 5204-0027, 5204-0030, 5204-0042).

Wood

- 4.2.19. In addition to the ship's structure detailed above, various other wooden remains were recovered, some of which were considerably worn while others also showed evidence of marine borers. These finds include worn wooden planking (5204-0026)

and numerous small fragments of worked wood, such as squared posts, laths/planks and rounded posts/stakes (5204-0022, 5204-0041).

Bone

- 4.2.20. The only bone recovered from this wreck is the scale bone handle from a knife or fork (5204-0012). The handle has an incised cross-hatched decoration (**Plate 7b**).

Other Organics

- 4.2.21. Several leather artefacts were recovered. The sole of a left shoe (5204-0040) (**Plate 7e & f**) and a sailor's palm thimble (5204-0044), could provide evidence for the crew. An unidentifiable triangular fragment of leather was also recovered (5204-0011) (**Plate 7a**).
- 4.2.22. Several fragments of possible textile were recovered of unknown type or origin (5204-0016) (**Plate 7c**).

Synthetics

- 4.2.23. A number of synthetic materials were recovered from the wreck, including a small rubber ball found with some wood (5204-0026) and a small strip of imitation leather with stitched edges, thought to be a piece of clothing (5204-0017) (**Plate 7d**).

Finds Conservation / Disposal

- 4.2.24. None of these finds warrants further treatment in terms of conservation or analysis. Sufficient work has been undertaken by Wessex Archaeology finds specialists in order to characterise and date them. The recommendation is that they should be discarded.

5. DISCUSSION

- 5.1. From the structural remains discussed above, it is concluded that this was originally a clinker planked vessel that was later converted to carvel construction. The notches on the frames indicate a clinker vessel, however with the exception of one clinker plank, the majority of recovered planks are from a carvel vessel. In addition, the second rabbet on the keel could indicate where the outer layer of carvel planks joined the keel.
- 5.2. The practice of replacing clinker planks with carvel planks was common amongst boat builders around the Thames estuary in the nineteenth century. As boats aged and their hulls became worn new hull planking was overlaid over the original timbers (pers. comm. Damian Goodburn).
- 5.3. The vessel was built with metal and wood fastenings. Evidence for metal fastenings includes: the six concretions on the keel, that are indicative of iron bolts; the concretion that formerly joined the two sternpost timbers; and various small concretions on the frames and planks. Wooden fastenings include the treenail still protruding from frame 5204-1003 and the pegs still extant in a number of round and square holes in the planks.
- 5.4. After the structural elements were recorded, the material was assessed by Damian Goodburn, at the invitation of Touch Productions. He noted that the frames exhibit hand saw marks, characteristic of pit sawing. As this technique was developed in

the post-medieval period, it indicates that the wreck dates to during or after this period.

- 5.5. A possible arrangement of the recovered frames has been produced in **Figure 3**. Based on their curvature, and because the notches for the frames are on the inside of the curve, frames 5204-1004 and 5204-1007 would have been located closest to the keel, and frames 1003 and 1005 would have overlapped them and would have been situated above. Having evaluated the frames in a number of positions, it was determined that 5204-1003 and 5204-1004 would have formed a complete frame, and 1005 with 1007 would have formed another complete frame.
- 5.6. By reversing the 'full frame', it is possible to develop two hull sections (**Figure 3**). Because of the steep, almost flattened 'S' shape of 5204-1004, and the deep V shaped hull it creates when mirrored, this frame (5204-1003/1004) would have been located near the stern of the vessel. Since 5204-1005/1007 exhibits a less deep V, it would have been located forward of 5204-1003/1004, but still near the stern.
- 5.7. The hull sections provide an indication of the width of the vessel. 5204-1005/1007 provides the minimum possible width for the vessel: 3.75 metres, and 5204-1005/1007 provides the minimum possible width for the vessel: 3.75 metres.
- 5.8. Having analysed the wreck structure, Damian Goodburn concluded that Wreck 5204 is the remains of a Thames Bawley, a local fishing vessel used in the Thames and along the East Coast.
- 5.9. In general, Bawleys are beamy, transom sterned, straight stemmed, decked smacks with cutter rigs that incorporate a boomless mainsail with a long gaff (Greenhill & Mannering 1997: 85). They were developed in the 1850's, when shrimp boilers, or coppers, were added to Peter Boats.
- 5.10. Bawleys were used for making daily trips into the Thames Estuary to fish for prawns or shrimp and small fish such as whitebait. The shrimp boiler, or copper, was used to cook the freshly caught shrimp or prawns before landing, in order to preserve the catch for transport by train. The boiler led to the boats being called 'boillie boats' which in turn became 'Bawley' (Greenhill & Mannering 1997: 85). The sixty large lumps of coal recovered from the wreck could have been fuel for heating the shrimp boiler.
- 5.11. In the 1860's, shipbuilders in Gravesend were producing clinker built bawleys around 28 feet long (8.53 metres) (Greenhill & Manning 1997: 85). As these vessels did not work much further into the estuary than the Lower Hope, they were relatively shallow drafted vessels, with beamy, stable hulls so that the hot water used for boiling shrimps was not spilled from the copper (*ibid*). Bawleys built at Leigh and Southend were larger and could venture further out into the estuary. Many of the Leigh bawleys were built by Aldous of Brightlingsea and J & H Cann at the Gas House Creek yard in Harwich. The Harwich Bawleys were identical to the Leigh Bawleys, as they were built in the same shipyards. Medway Bawleys were similar to the Leigh and Harwich Bawleys, but had less draft and a more upright transom stern. The Medway Bawleys were predominantly used to dredge Medway oysters.
- 5.12. Until the 1950's, there was still a small fleet of Bawleys shrimping from Gravesend, although many of the vessels had been sold for conversion for yachts (Greenhill & Manning 1997: 86-88)

- 5.13. By comparing the dimensions of known bawleys, it is possible to appreciate the possible dimensions of Wreck 5204 (**Table 4.1**). The *Bona* is described in Greenhill and Manning (1997: 87), the *Monarch* and the *Doris* are listed in the National Historic Ships register, the *Saxonia* is used for charters, and the *Banjo* is currently for sale.

	<i>Monarch</i>	<i>Doris</i>	<i>Bona</i>	<i>Saxonia</i>	<i>Banjo</i>
Overall Length	12.2m	12.2m	10.97m	10.36m	7.9m
Beam	4.15m	3.96m	3.96m	4.19m	2.4m
Draught	0.91m	1.68m	1.31m	1.52m	1.07m

Table 4.1: Dimensions of Thames Bawleys still active around the Thames (based on <http://nationalhistoricships.org.uk/>, <http://www.saxoniacharters.co.uk/>, <http://marinedirectory.ybw.com>, and Greenhill & Manning 1997: 87).

- 5.14. The remains of the keel of Wreck 5204 were broken and eroded at both ends, making it impossible to determine the vessel's original length. However, the reconstructed hull section in **Figure 3** indicates a beam of at least 3.75 metres. Since this section was taken from frames located close to the stern, it is likely that this vessel was considerably beamier, and possibly similar in size to the *Monarch*, *Doris*, *Bona* or *Saxonia*, with a length of 10 to 12 metres.

6. CONCLUSIONS

- 6.1. This project attained the archaeological aims and objectives as laid out above:
- It established the major structural elements of the site, the layout and sequences of the site;
 - Diagnostic structural elements, large and small finds were recovered from the site;
 - The structural elements, large finds and small finds were recorded. The structural elements were photographed, described, and sketched, photographs were taken of the large and small finds, and all finds were reviewed by finds specialists to determine their significance.
- 6.2. The major structural elements have been recovered from this site, including the keel and some planking. The recovery of the sternpost and frames provide evidence for the construction of the stern of the vessel.
- 6.3. The vessel is thought to be a Thames Bawley, a local fishing vessel of the type that operated in the Thames and along the East Coast. These vessels fished for prawns and small fish such as whitebait. The vessel could have operated for around 50 years, and probably sank in the later part of the 19th century.
- 6.4. This date is corroborated by the artefacts from the wreck, the majority of which date from the late 19th to early 20th century.
- 6.5. Although Wreck 5204 is known as the 'Pottery Wreck', the pottery is not necessarily the most interesting facet of the assemblage. The leather artefacts and ships timbers, among others, provided a rare opportunity to examine the archaeological evidence for a small local work boat, providing insight into the everyday lives of people working on the water and their experiences of late 19th / early 20th century maritime life on the Thames.

6.6. No further will be carried out on this site as the wreck has been cleared.

7. REFERENCES

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APPENDIX I: CONTEXTS FROM WRECK 5204

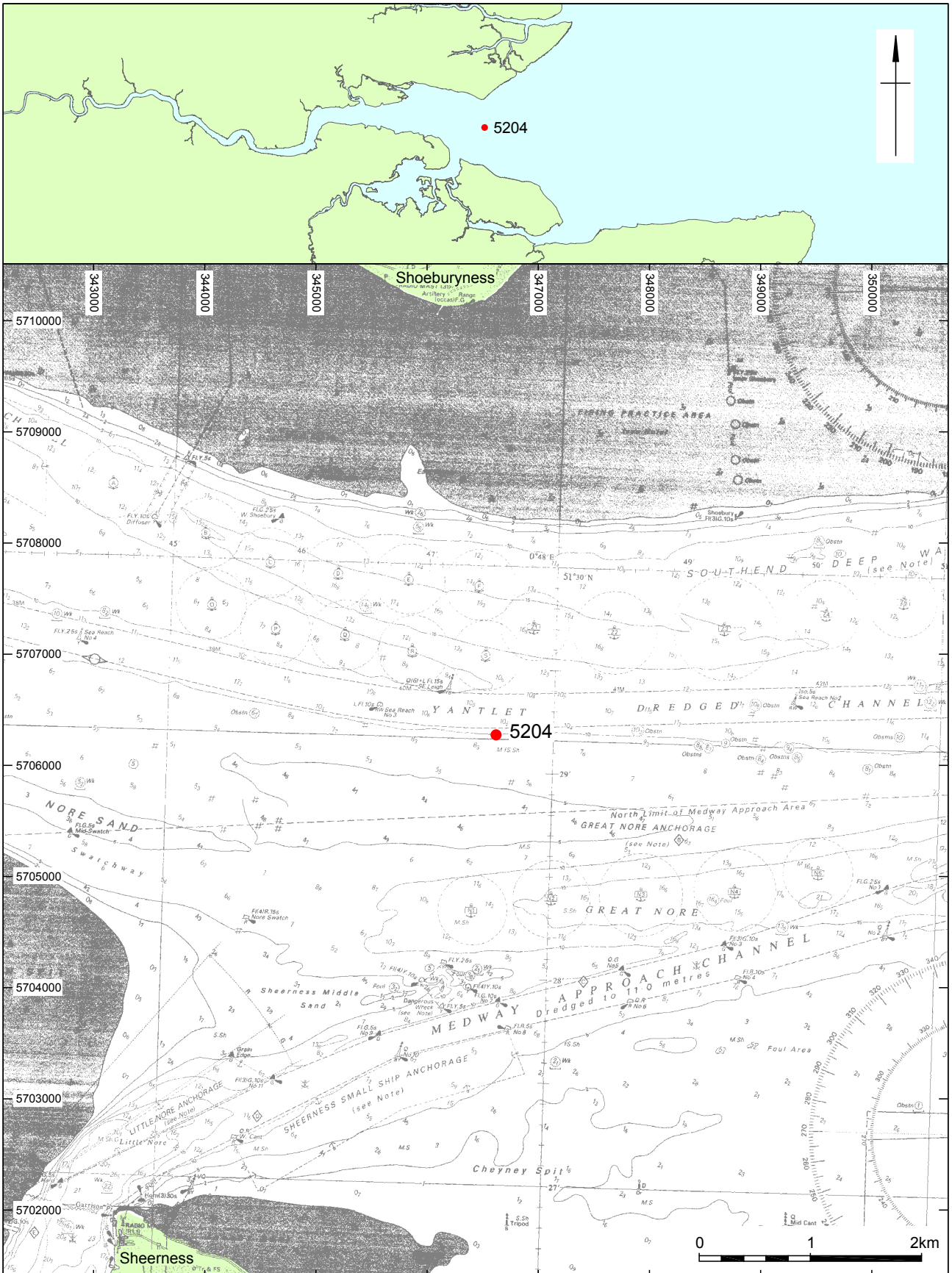
Context No.	Component of / Filled with	Description	Location	Interpretation
1000		Natural silt overburden, finds may have been lying directly on 1001 and therefore not within 1000.	Stratigraphically above 1001 & 1002 Extent not defined.	Silt overburden accumulated since wrecking event. Mobility / stability unknown.
1001	Component of 1003 (timber)	Vessel structure comprising possible keel / frames / planking (length c. 6m, width c. 3m)	Stratigraphically below 1000 Stratigraphically above 1002	Wreck structure
1002		Occasional gravel lenses	Stratigraphically below 1000, 1001, 1003	Natural estuary bed
1003	Component of 1001	Timber record: frame / futtock,	Stratigraphically below 1000	Frame / futtock clinker – oak?
1004	Component of 1001	Timber record: frame	Stratigraphically below 1000 Stratigraphically above 1002	Frame, clinker- oak?
1005	Component of 1001	Timber record: frame	Stratigraphically below 1000 Stratigraphically above 1002	Frame, clinker – oak?
1006	Component of 1001	Timber record: frame	Stratigraphically below 1000 Stratigraphically above 1002	Frame, clinker – oak?
1007	Component of 1001	Timber record: frame	Stratigraphically below 1000 Stratigraphically above 1002	Frame, clinker – oak?
1008	Component of 1001	Timber record: plank	Stratigraphically below 1000 Stratigraphically above 1002	Probable hull plank (fragment)
1009	Component of 1001	Timber record: plank	Stratigraphically below 1000 Stratigraphically above 1002	Probable hull plank fragment (old # 5204-0036)
1010	Component of 1001	Timber record: keel	Stratigraphically below 1000 Stratigraphically above 1002	Section of keel – oak?
1011	Component of 1001	Timber record: possible base of sternpost	Stratigraphically below 1000 Stratigraphically above 1002	Possible base of sternpost – oak?
1012	Component of 1001	Timber record: plank	Stratigraphically below 1000 Stratigraphically above 1002	Plank fragment
1013	Component of 1001	Timber record: plank	Stratigraphically below 1000 Stratigraphically above 1002	Plank fragment
1014	Component of 1001	Timber record: plank	Stratigraphically below 1000 Stratigraphically above 1002	Plank fragment

APPENDIX II: FINDS RECOVERED FROM WRECK 5204

Object No	Material Type	Object Type	Count	Length (mm)	Width / Diameter (mm)	Thick (mm)	Description	Date	Created
5204-0001			1				Context 1003; part of 1001; clinker futtock/frame recovered Dive 33		11-Jun-08
5204-0002	Glass		1				Modern mechanically blown glass bottle; half litre, broken	Late C20 / C 21	17-Jun-08
5204-0003	Glass		5				Dark green bottle top, squared form with squat neck and out-turned flat rim. Rim outer diameter 45mm, inner diameter 15mm.	C 19?	17-Jun-08
5204-0004	Pottery		14				Sherds of glazed redware, including base and side looped handle	Probably C 19 / C 20	17-Jun-08
5204-0005	Lead		4				Lead sheet fragments with nail holes, possible sheet offcuts. Largest strip over 500mm, small pieces 100 – 150 mm	Unknown	17-Jun-08
5204-0006	Animal bone		1				Cattle rib	Unknown	17-Jun-08
5204-0007	Brick (CBM)		2				2 brick fragments, 1 stamped T or L, possible frogging	C 19 / C 20	17-Jun-08
5204-0008	Lead		1				Lead tube, 2mm internal diameter, 315mm long, insulated wire?	C 20	17-Jun-08
5204-0009	Pottery		3				Sherds refined whiteware (pearlware type) including jug handle;	C 19	17-Jun-08
5204-0010	Pottery		1				Rim fragment of yellow ware, banded decoration below rim	C 19 / C 20	17-Jun-08
5204-0011	Leather		1				Triangular fragment; two layers; tapered strip	Unknown	17-Jun-08
5204-0012	Animal bone		1				Scale bone handle from knife or fork, incised cross-hatched decoration	C 19 / C 20	17-Jun-08
5204-0013	Pottery		5				5 body sherds of glazed redware vessel	C 19 / C 20	17-Jun-08
5204-0014	Pottery		1				Glazed redware, large domed lid with side flange, top missing. Outer rim 220mm, inner rim 120mm.	C 19 / C 20	17-Jun-08
5204-0015	Glass		3				3 fragments –green vessel fragments	C 19 / C 20	17-Jun-08
5204-0016	Unknown		1				Possible textile; several fragments	Unknown	17-Jun-08
5204-0017	Synthetic		1				Small strip of imitation leather, stitched edges, part of clothing	C 20	17-Jun-08
5204-0018	Lead		1				Small lead strip, possible sheet offcut	Unknown	17-Jun-08

Object No	Material Type	Object Type	Count	Length (mm)	Width / Diameter (mm)	Thick (mm)	Description	Date	Created
5204-0019	Pottery		1				Small white glazed plate fragment; refined whiteware, plate rim	C 19 / C 20	17-Jun-08
5204-0020	Copper alloy / pewter?		1				Back of small two part button, plain disc with rear attachment loop	C 19 / C 20	17-Jun-08
5204-0021	Glass		10				3 brown bottle, 0,33l, embossed NO RETURN; 5 clear, from screw top jar, 2 various (2)	Late C 20 / C 21	17-Jun-08
5204-0022	Wood		36				Various small fragments, including plank of 18mm thickness; excavated 11/06/08; some very worn lumps; worm-eaten; sawn squared posts and laths	Sawn pieces probably modern	17-Jun-08
5204-0023	Stone		18				Coal, 18 pieces; large lumps; excavated 11/06/08	Unknown	17-Jun-08
5204-0024	Iron		20				Small lumps; plate fragments; fragments of concretion, probably iron; excavated 11/06/08; some curved, some very corroded	Unknown, probably modern	17-Jun-08
5204-0025	Stone		20				Coal, 20 pieces; large lumps; excavated 13/06/08	Unknown	17-Jun-08
5204-0026	Wood		40				Various small wood fragments, including planking; excavated 13/06/08; some very worn lumps; worm-eaten; sawn squared posts and laths; small rubber ball in with wood	C 20	17-Jun-08
5204-0027	Iron		10				Small concretion fragments, probably iron; excavated 13/06/08; lumps and plate fragments, very corroded	Unknown	17-Jun-08
5204-0028	Pottery		2				2 small sherds of refined whiteware	C 19 / C 20	17-Jun-08
5204-0029	Glass	Jar	7				7 small fragments of a modern clear glass jar	Late C 20 / C21	17-Jun-08
5204-0030	Concretion		16				16 small fragments of unidentified concretion; heavily concreted	Unknown	02-Jul-08
5204-0031							VOID		02-Jul-08
5204-0032							VOID		02-Jul-08
5204-0033							VOID		02-Jul-08
5204-0034							VOID		02-Jul-08
5204-0035							VOID		02-Jul-08
5204-0036							VOID		02-Jul-08
5204-0037							VOID		02-Jul-08
5204-0038							VOID		02-Jul-08

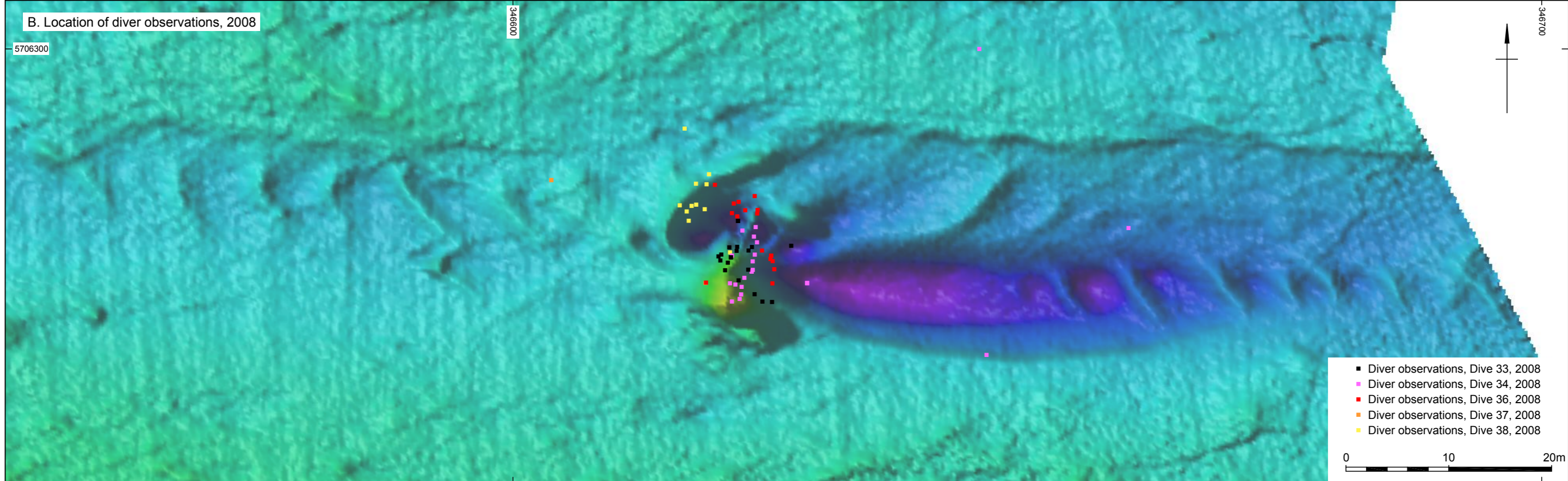
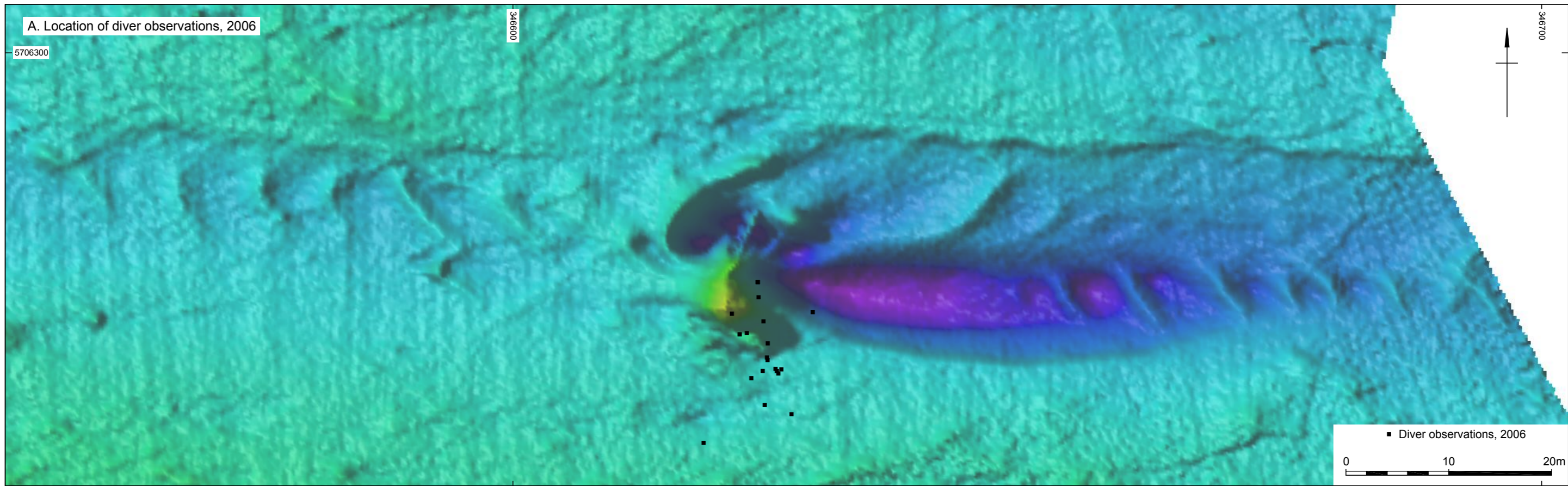
Object No	Material Type	Object Type	Count	Length (mm)	Width / Diameter (mm)	Thick (mm)	Description	Date	Created
5204-0039	Coal		22				Some large lumps	Unknown	02-Jul-08
5204-0040	Leather	Shoe	1				Sole of left shoe		02-Jul-08
5204-0041	Wood		16				16 fragments of worked wood; laths/planks, some rounded ?posts/stakes; some very worn	Unknown	02-Jul-08
5204-0042	Concretion		1				Large lump of concretion; could include iron object, treenail, possible part of leather shoe	Unknown	02-Jul-08
5204-0043	Pottery		6				6 sherds of refined whiteware: 5 from ribbed bowl, 1 jar base	C 19 / C 20	02-Jul-08
5204-0044	Leather	Sailor's palm thimble	1				Possible palm thimble		02-Jul-08
5204-0045	Glass	Bottle	1				Part of neck of small clear thin walled glass bottle; from oil lamp?	C 19 / C 20	02-Jul-08
5204-0046	Pottery		2				2 sherds of refined redware, glazed vessel	C 19 / C 20	02-Jul-08
5204-0047	Glass	Bottle	4				4 pieces of clear squared jar, including square base	C 19 / C 20	02-Jul-08



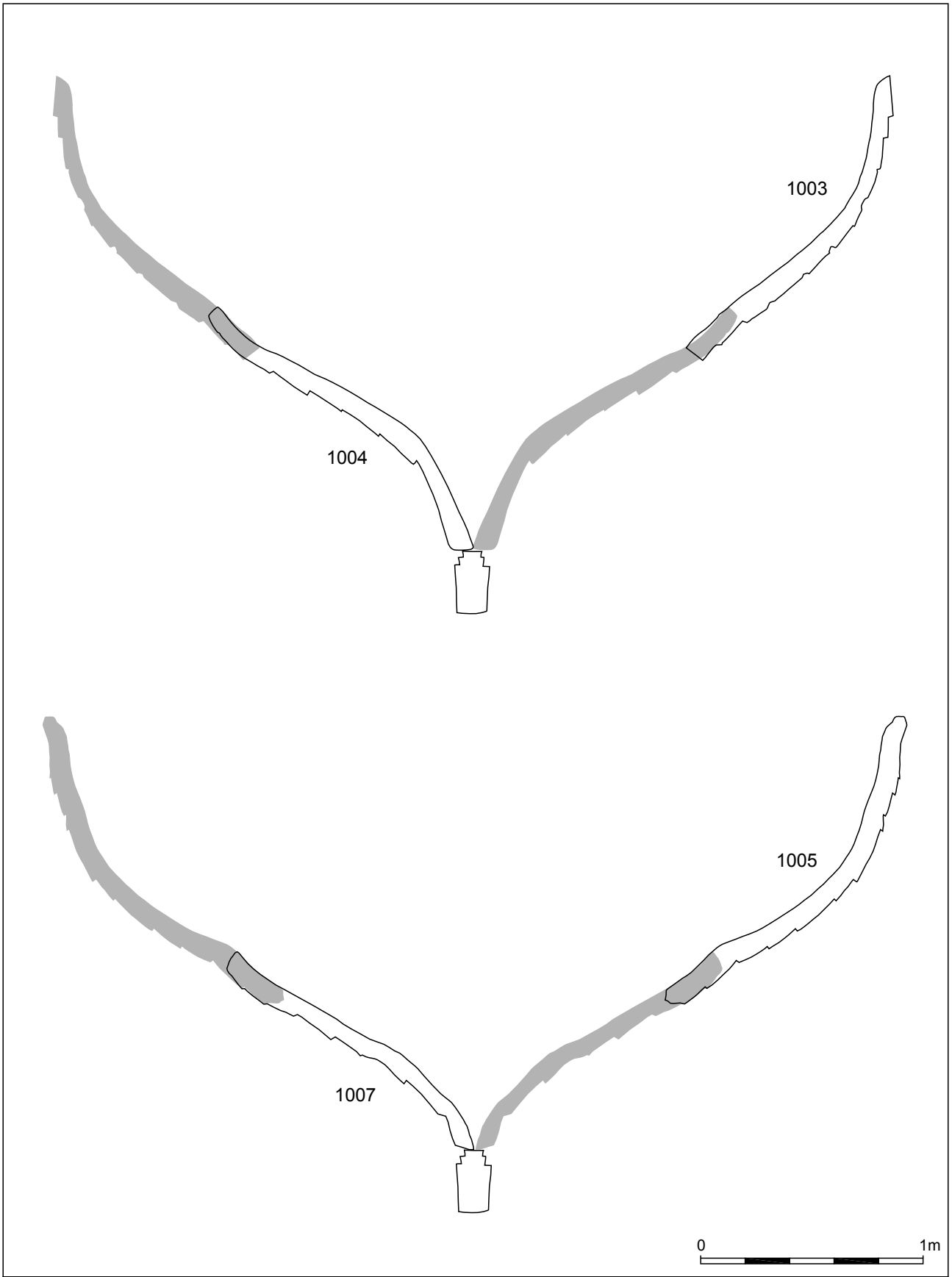
<p>Admiralty Chart 1185 (dated 1999) Drawing Projection UTM WGS84 z31N</p> <p>● Site location</p> <p> Wessex Archaeology</p>	<p>This product has been derived, in part, from Crown Copyright Material with the permission of the UK Hydrographic Office and the Controller of Her Majesty's Stationary Office (www.ukho.gov.uk). All rights reserved. (Wessex Archaeology Licence Number 820/020220/11) NOT TO BE USED FOR NAVIGATION WARNING: The UK Hydrographic Office has not verified the information within this product and does not accept liability for the accuracy of reproduction or any modifications made thereafter. Digital data reproduced from Ordnance Survey data © Crown Copyright 2008 All rights reserved. Reference Number: 100020449. This material is for client report only © Wessex Archaeology. No unauthorised reproduction.</p>			
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Location of Wreck 5204

Figure 1



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Date: 07/10/08

Revision Number: 0

Scale: 1:25

Illustrator: KJB

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Possible arrangement of frames at the stern of the vessel

Figure 3

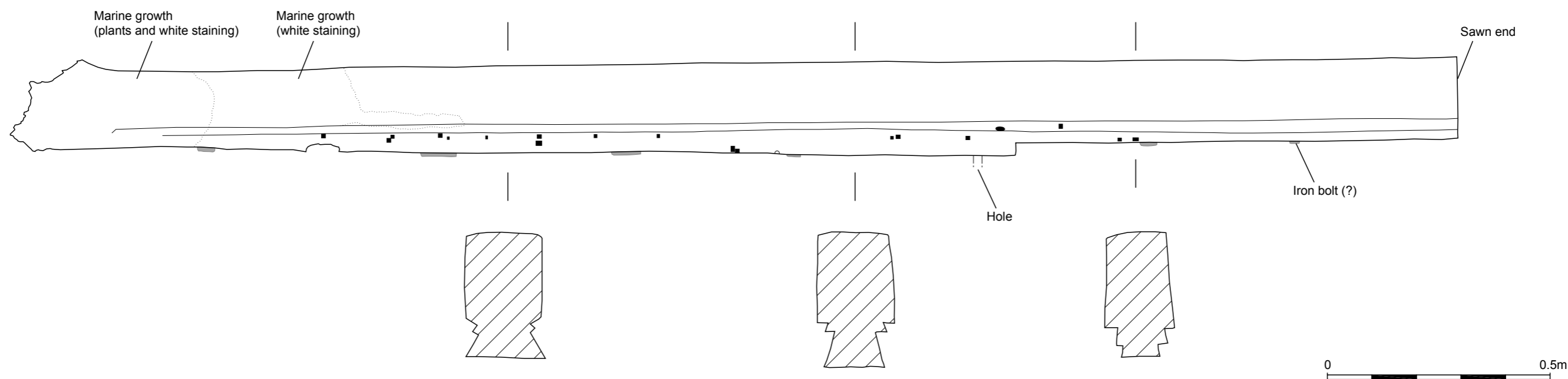
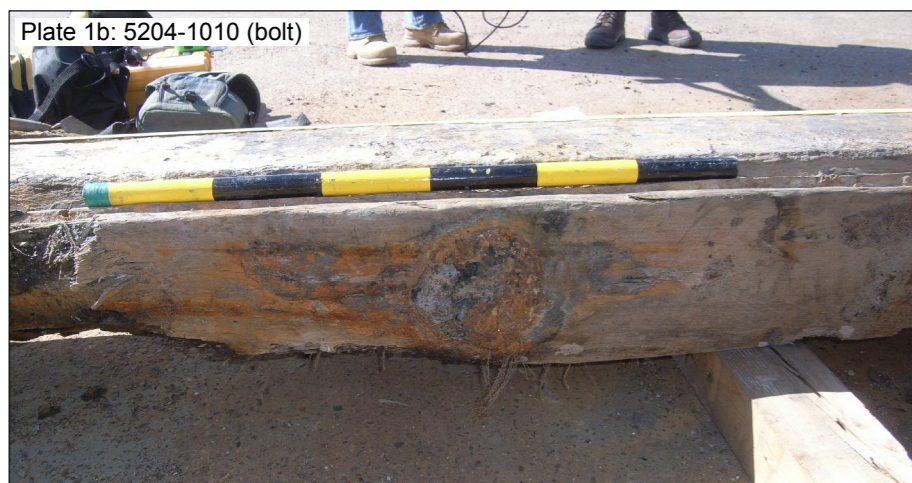


Plate 2a: 5204-1011a&b



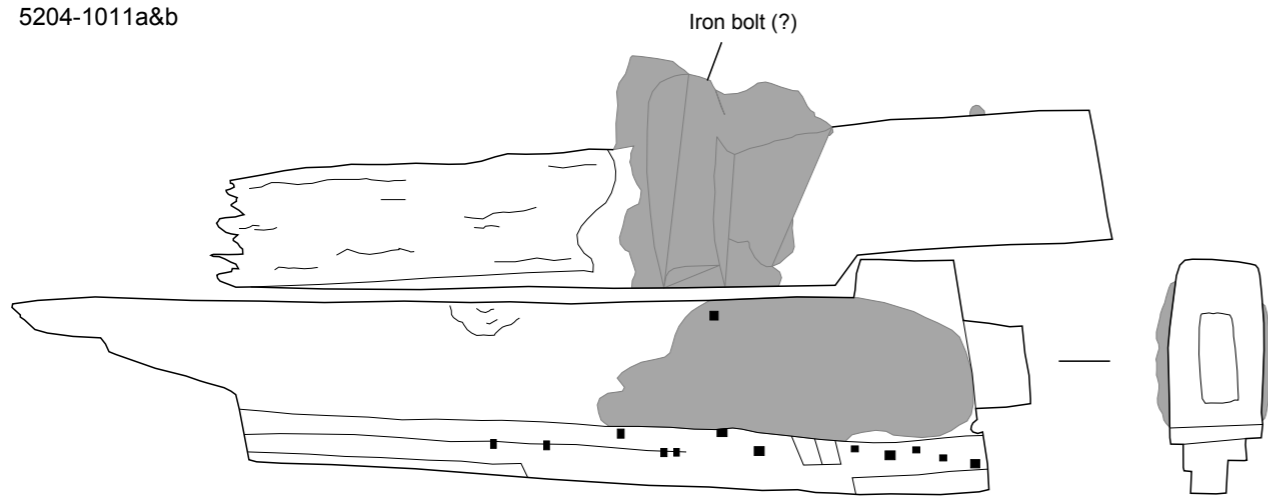
Plate 2b: 5204-1011a



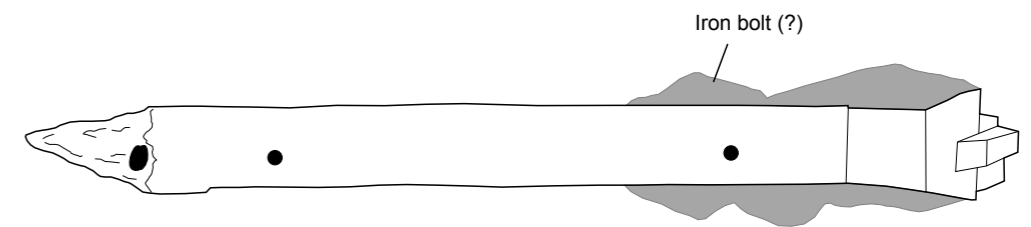
Plate 2c: 5204-1011a



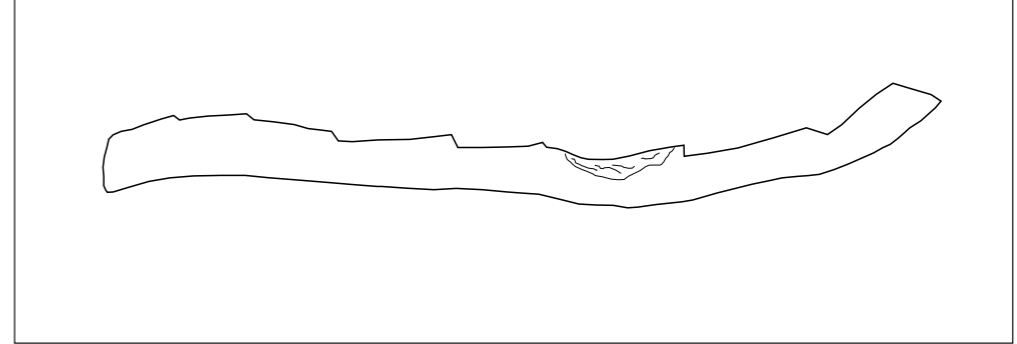
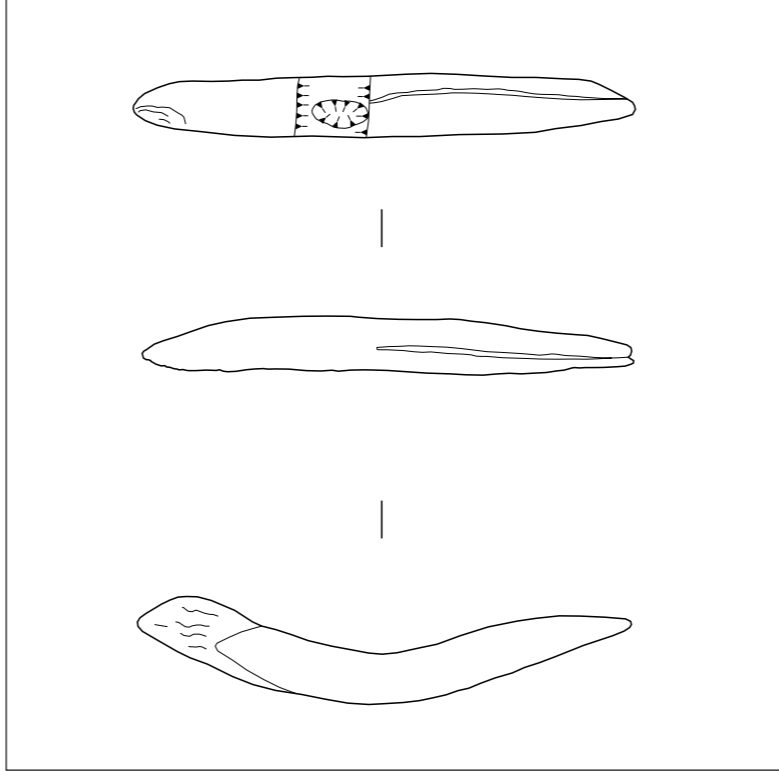
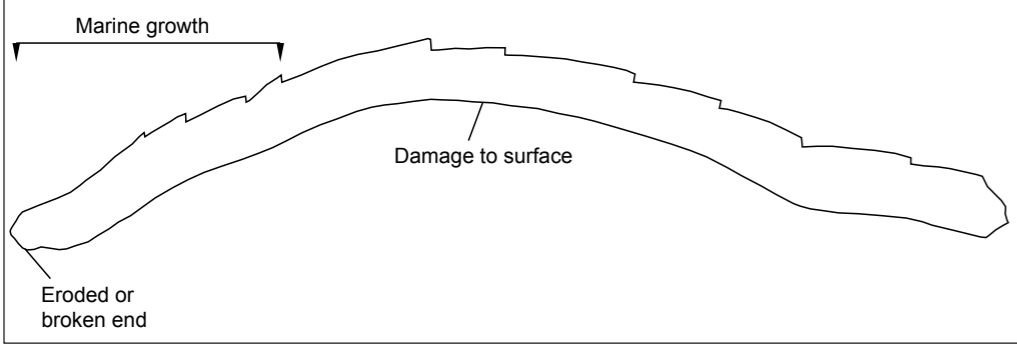
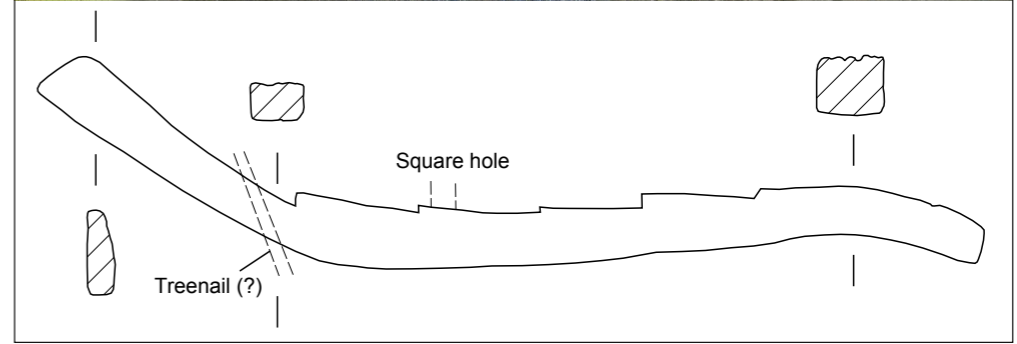
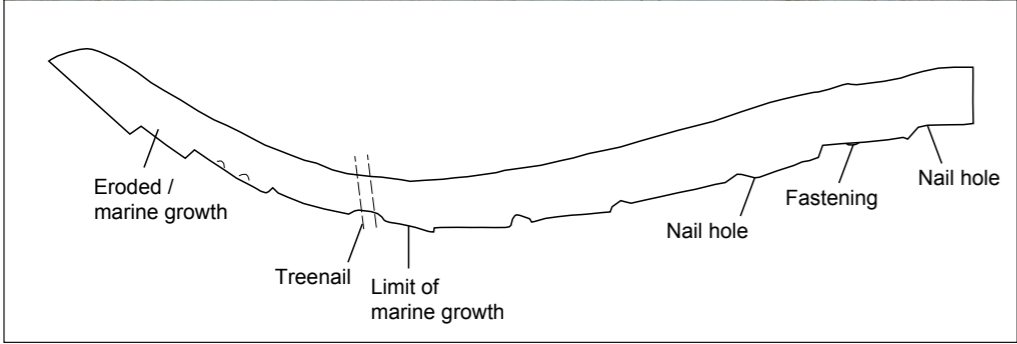
5204-1011a&b



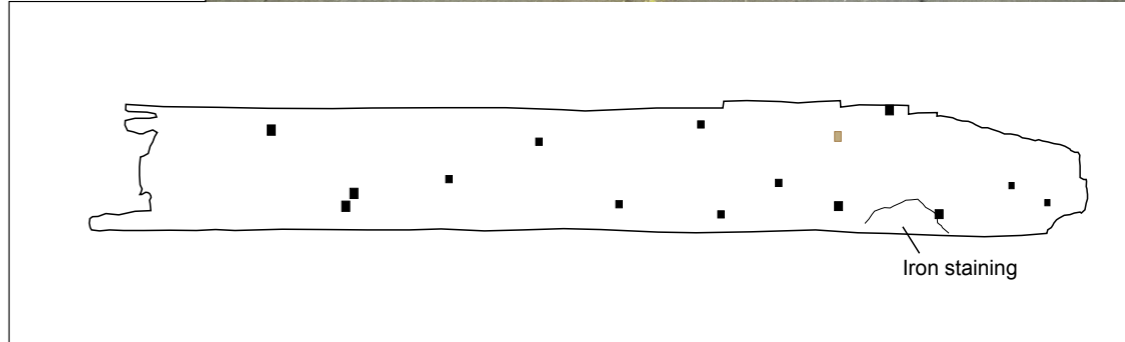
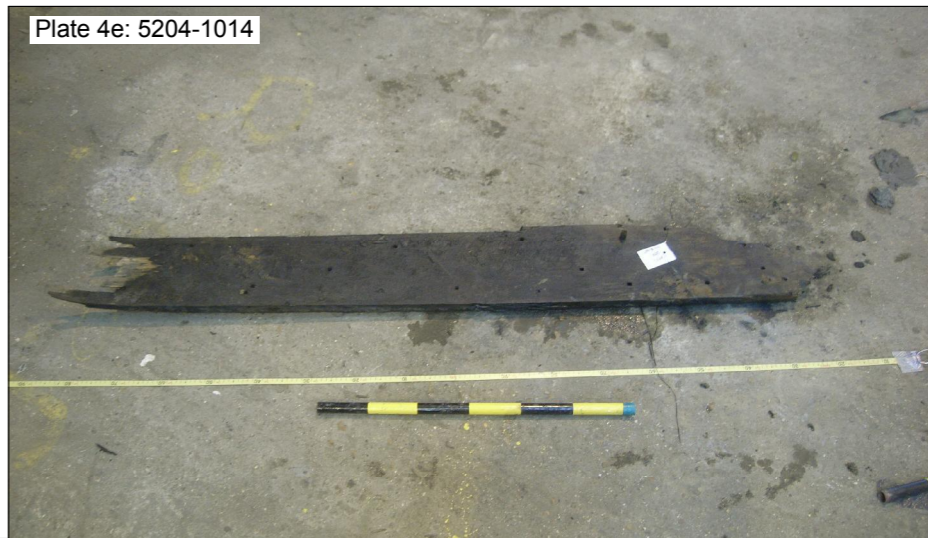
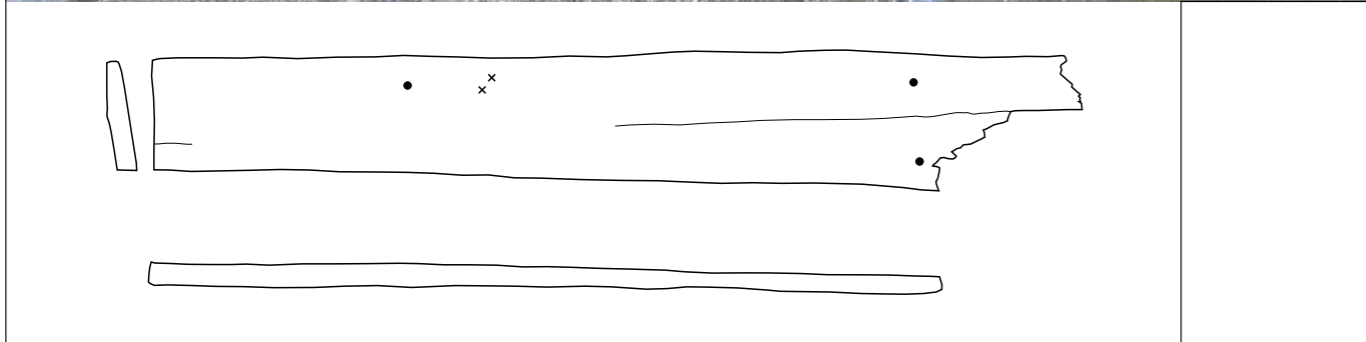
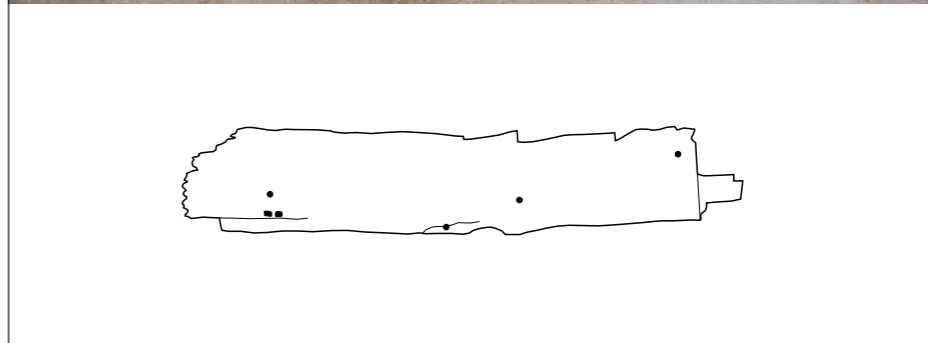
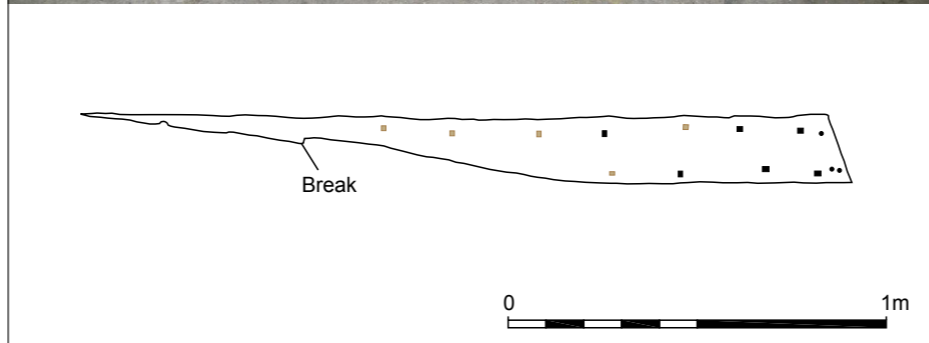
5204-2011a



0 0.5m



0 0.5m



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- Concretion
- Nail / treenail hole
- Wooden peg
- × Metal fastening

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Date:	06/10/08	Revision Number:	0
Scale:	a-b 1:20 c-e 1:12.5 @A3	Illustrator:	KJB
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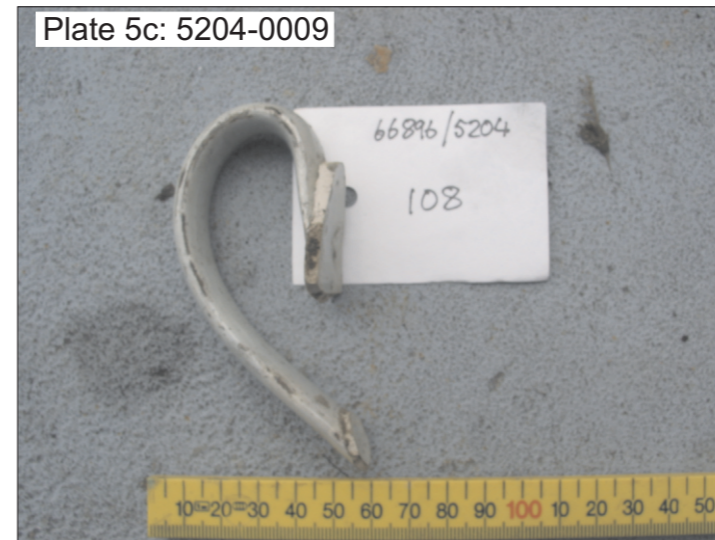


Plate 6a: 5204-0005



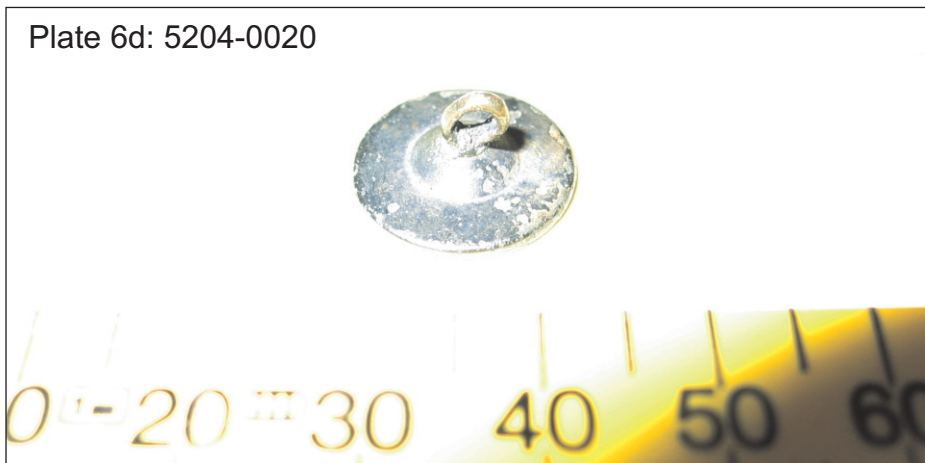
Plate 6b: 5204-0007



Plate 6c: 5204-0008



Plate 6d: 5204-0020



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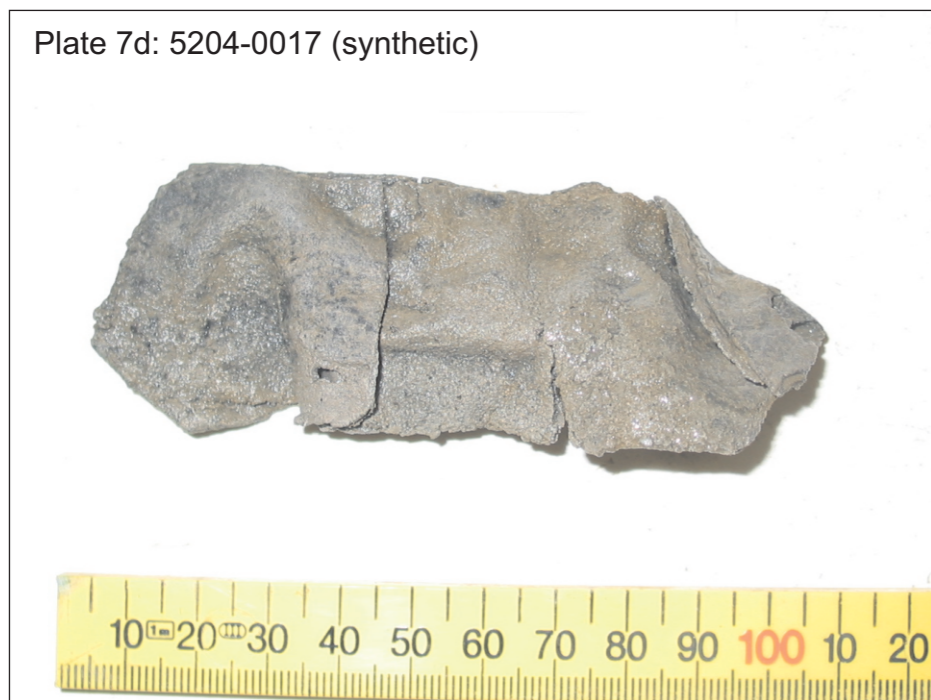
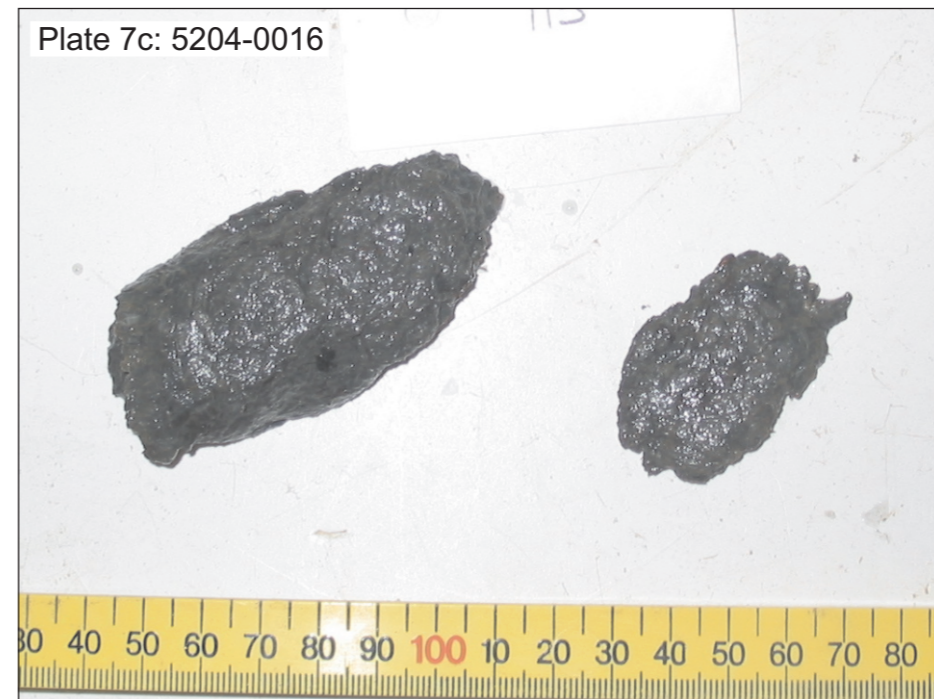
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