

Tresco Channel

Isles of Scilly

Exploratory Excavation 2013



Project Report

Kevin Camidge

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3H Consulting



Ambient Pressure
Diving



Isles of Scilly Travel



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Summary Project Description

The presence of medieval pottery in Tresco Channel has been known for some time. In 2011 a local diver (Dave McBride) recovered 69 pieces of medieval pottery from around yacht moorings in the channel and brought it to the attention of CISMAS. This pottery was of French origin and dated to the late 13th/ early 14th century. Later that year CISMAS undertook a survey of the seabed in this area and recovered 264 sherds of pottery. This again was mainly French (Saintonge) and was also dated 1350-1450 AD. The pottery distribution was mapped and shows a distinct concentration around two of the mooring buoys.

It seemed likely that this pottery was being removed from the seabed sediments by the action of the mooring chains scouring the surface of the seabed. The narrow date range, restricted origin and confined geographical location of this pottery suggest a single event leading to its deposition. The most likely event would seem to be a medieval shipwreck, but other scenarios are possible. Further investigation of the site was undertaken in 2013. This took the form of four small exploratory trenches situated within the areas scoured by the two mooring buoy chains. No evidence of intact shipwreck was found in any of the trenches excavated. However, in total 914 objects were recovered, including a further 385 sherds of medieval pottery, 280 pieces of animal bone and a number of medieval artefacts. We now have a good understanding of the stratigraphy around the mooring buoys - by which, unsurprisingly, these deposits are subject to disturbance.

The work this year has also enabled us to refine the location and extent of the epicentre of the pottery on and within the sediments of the seabed. A strategy to further investigate the site has also been suggested.

Background

Location

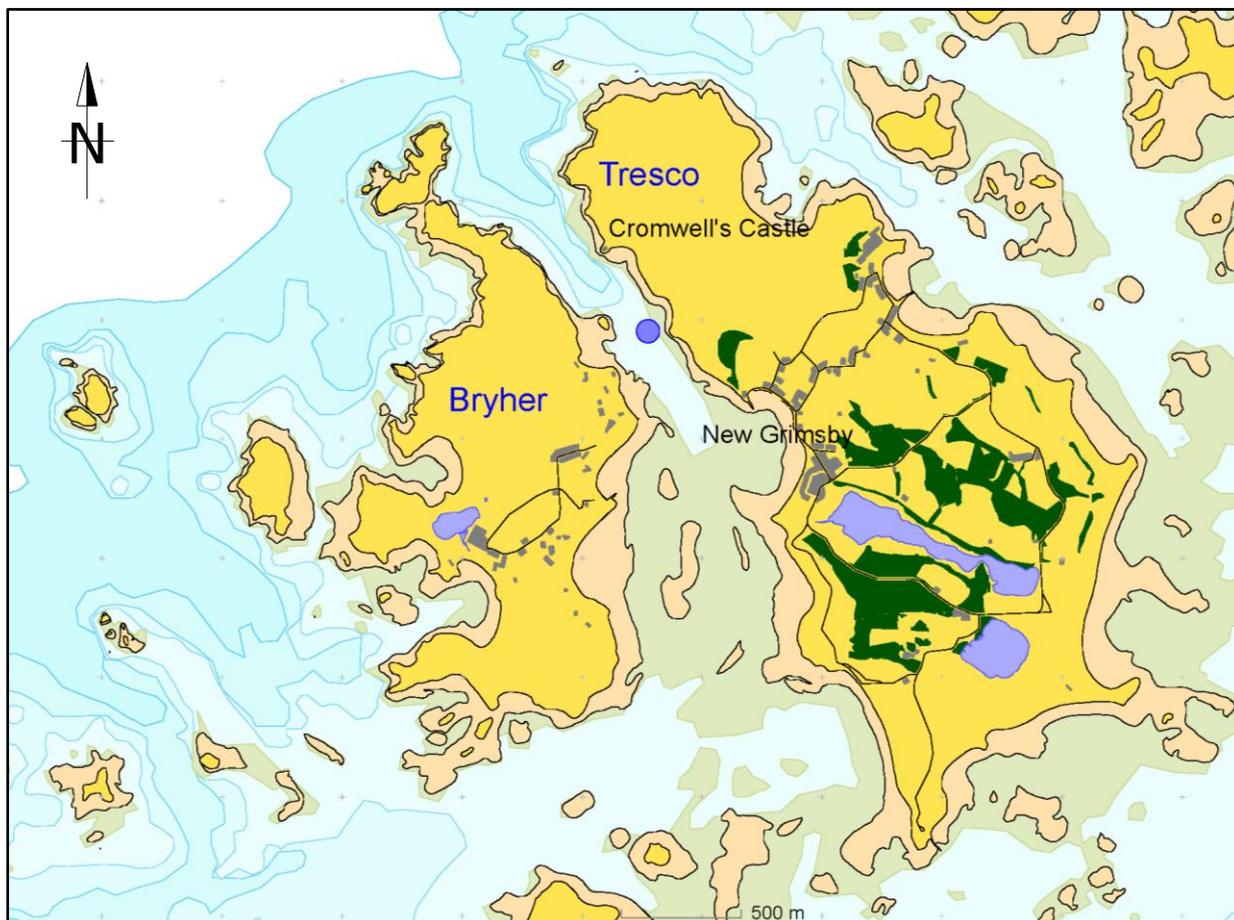


Fig 1

The site is located in Tresco Channel, between the islands of Tresco and Bryher, on the Isles of Scilly. The site location is shown by the blue circle – position 49° 57.540N, 006° 20.830W (WSG84).

The Site

Tresco Channel is a narrow stretch of water between the islands of Tresco and Bryher in the Isles of Scilly (fig. 1). There is a small harbour on the Tresco side of the channel, New Grimsby, which lies close to the site (400m). The channel is defended by small coastal forts on Tresco. These are of multiple periods, and lie approximately 350m from the site. The earliest of them is a small blockhouse built in 1548-1554, which was replaced by Cromwell's Castle (see cover illustration) built in 1651 and enlarged in the mid-18th century. On slightly higher ground above Cromwell's Castle there is a ruined civil war artillery fort, King Charles's Castle, built in the mid-sixteenth century. All these defences were designed to protect the deep water approach to Tresco Channel.



Fig 2

Tresco Channel from the north; Cromwell's Castle is visible in the centre of the picture. The island of Tresco is on the left, Bryher is on the right – photo Sarala Shama

Shipping activity in medieval Scilly is mentioned (Thomas, 1985, p.200) “Scattered references hint that, in the twelfth and thirteenth centuries, ships from many parts of Atlantic Europe called at Scilly. There are fragments of French polychrome pottery of the time from Samson, St. Helen’s and Tean”.

Local Context - St Nicholas Priory, Tresco

The Abbey Gardens on Tresco contain the ruins of a monastic settlement. This was the Priory of St Nicholas, a cell of the Benedictine Abbey of Tavistock, in Devon.

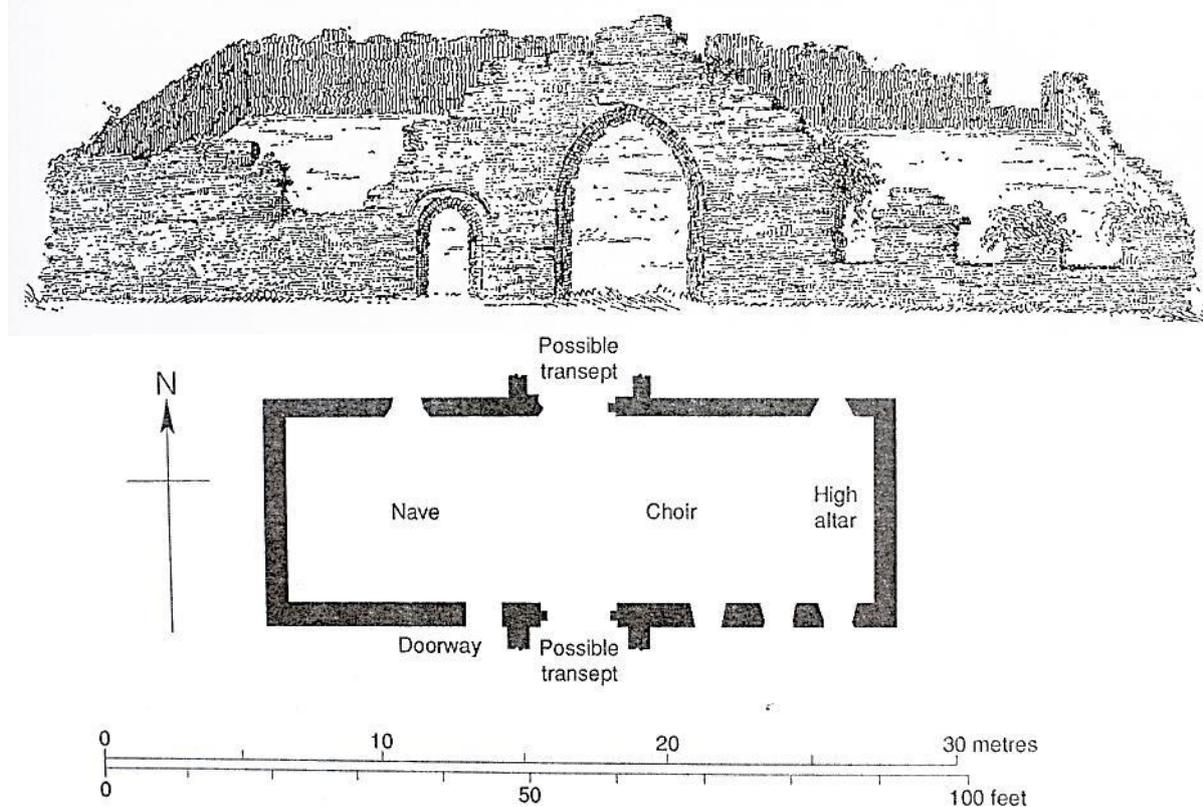


Fig. 3. The remains of the abbey church on Tresco recorded in 1756 by William Borlase

In 1114 all the religious houses on Scilly came under the control of Tavistock Abbey, together with all wrecks except whole ships (Johns et al., 2004, p.75) (Bowley, 1968, p.39). St Nicholas' Priory was established on the island of Tresco. The priory was granted rights of wreck, a valuable and much wrangled-over asset which would only have any value if wreck was a reasonably common event. There is surprisingly little known about the abbey on Tresco; no record of its dissolution survives, and it may have already ceased to function before 1539 (Bowley, 1968, p.39).

There is some evidence that the abbey was involved with foreign trade. The 13th century *Orkneyinga Saga* tells how an early 12th century Viking, Svein Aseifarson, robbed a merchant ship belonging to the Monks of Scilly (Orme, 2010). This example of a monastic house engaging in shipping is by no means unique – another documented example is provided by Beaulieu Abbey in Hampshire, who owned their own ship *La Stelle* in 1269 (Ransley et al., 2011, p.247). The abbey may well have had links with foreign trade and further background research may yield useful information.

The Pottery

The presence of medieval pottery in Tresco Channel has been known for some time. In 2001 Mac Mace, a mooring contractor in Scilly, informed the author that green-glazed pottery was often found in Tresco Channel and was mostly French in origin. A dive at the time only revealed small, isolated fragments of green glazed pottery. The Archaeological Diving Unit (ADU) investigated the site in 2002 but they did not take the matter any further. The pottery is also mentioned in the Rapid Coastal Zone Assessment for the Isles of Scilly (Johns et al., 2004, p.123).

A significant quantity of French medieval pottery (mainly Saintonge) in material recovered from excavations undertaken as part of the electrification of Scilly (1985) is of interest, as this type of pottery is often seen as high status and the inhabitants of Scilly would seem unlikely owners of high status pottery (Ratcliffe, 1991). Saintonge is a small region on the French Atlantic seaboard, from whence pottery was widely exported in the medieval period, although this type is relatively rare on the Cornish mainland. This possibly betokens direct maritime trade between Scilly and France rather than transshipment via Cornwall, and is an important part of the maritime heritage of Scilly.

Pottery is one of the few trade items which survive well in archaeological contexts, and it is probable that it arrived as part of other, more perishable cargos. For instance in the mediaeval period wine was an important trade item, but other items such as pottery often accompanied it. (Ransley et al., 2011, p.273). Only small quantities of wine were produced in England and wine was imported, principally from Bordeaux. It was a high status commodity mainly consumed by the church and nobility. The measure of a ship's capacity was in fact derived from the number of standard Bordeaux wine tuns (c.252 gallons) which a ship could carry (Ransley et al., 2011).

Further evidence of trade links with France is provided by the presence of Caen limestone reported in the fabric of the abbey church on Tresco and in the buildings on St Helen's (Ratcliffe, 1991, p.93).

A Chance Find

More recently, pottery has been recovered in considerable quantities (53 pieces in 2011) by David McBride, a local dive charter boat skipper. This has been recovered from a relatively small area and appears to have been pulled from the seabed sediments by the action of a mooring chain. Very recently (June 2011), a concentration of animal bones has been found about 20m from the concentration of pottery, and eight jaw bones were also recovered by Dave McBride.



Fig 4

Some of the pottery collected by Dave McBride in 2011 (scale 10cm) – photo Dave McBride

Survey of Tresco Channel (2011)

In October 2011 a survey project was undertaken jointly by Cornwall and Isles of Scilly Maritime Archaeology Society (CISMAS) and Promare. This project was funded by Promare. The survey consisted of a methodical search of the seabed, centred on the find spot for the pottery collected by Dave McBride. The search was conducted by divers using circular searches based on shot lines positioned by GPS. Position of the pottery was fixed by distance and bearing from these shot lines. Over 250 sherds of pottery were recovered and sent for analysis by John Allan. A plot of all the located pot sherds was produced, which showed a concentration mainly between two of the existing mooring buoys on the site – see fig 6 below. The full report for this project is available on the CISMAS website (www.cismas.org.uk)

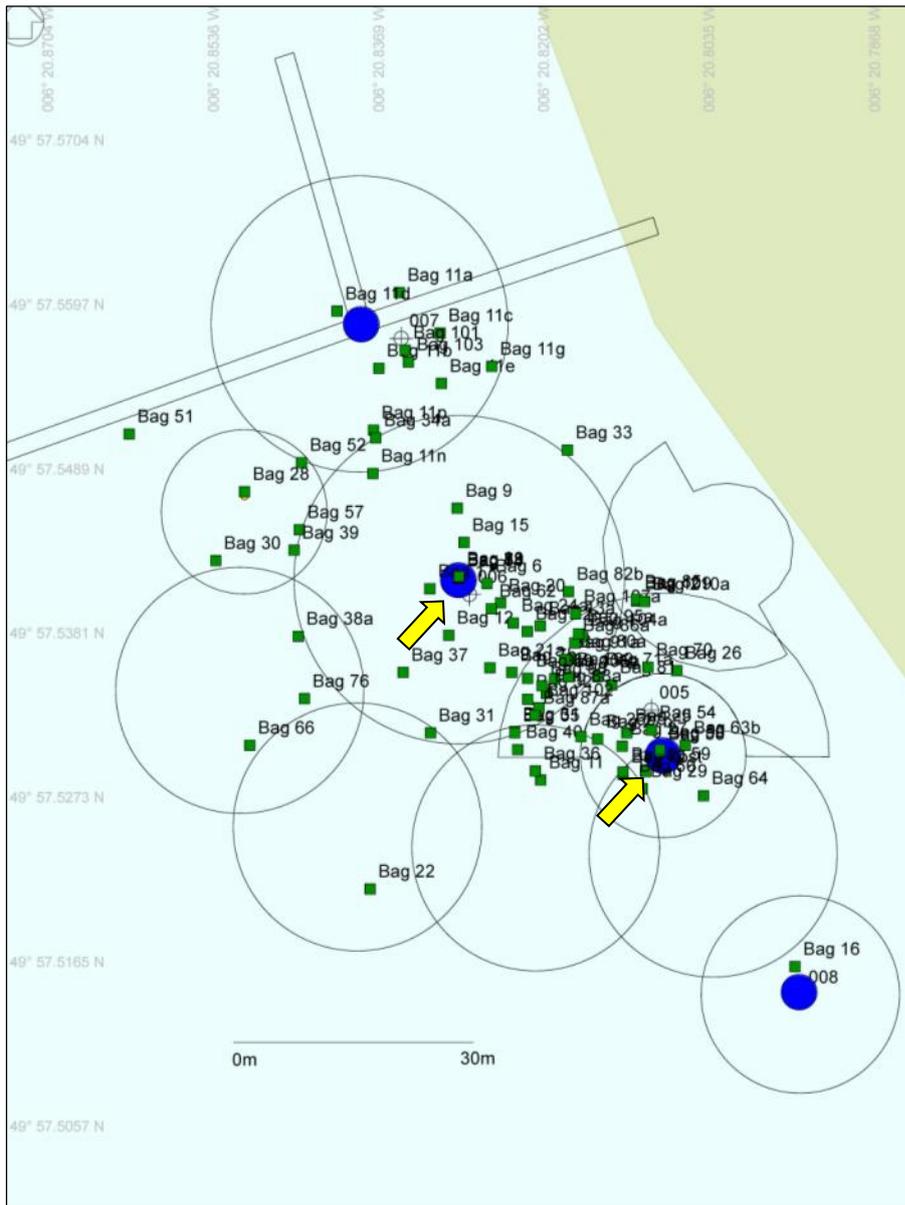


Fig 5
 Distribution of the pottery found in 2011. The mooring buoys are shown in blue. The circles show the areas searched. The two mooring buoys around which the pottery is clustered are indicated by yellow arrows. These were located at:
 49° 57.528N
 006° 20.810W
 and
 49° 57.540N
 006° 20.830W

The pottery recovered in 2011 was mainly French (Saintonge), and after careful study was also dated largely to the late 13th / early 14th century. The pottery distribution was mapped and shows a distinct concentration around two of the mooring buoys. It seems likely that this pottery was removed from the seabed sediments by the action of the mooring chains scouring the surface of the seabed. The narrow date range, restricted origin and confined geographical location of this pottery suggest a single event leading to its deposition. The most likely event would seem to be a medieval shipwreck, but there are other possibilities. Given the date assigned to the pottery recovered, any associated wreck material would be of great importance to our understanding of maritime Scilly, and any surviving hull structure would be of national importance given the scarcity of wrecks of this period in the UK. Clearly further investigation of this pottery was required.

Objectives

The pottery located in the 2011 survey is concentrated around two of the yacht moorings present on the site (fig 5). It seems likely that the freshly broken pottery discovered has been dragged from the seabed sediment by the action of the mooring chains on the seabed. Each mooring has approximately 3m of heavy chain attached to a granite sinker on the seabed, the chain being attached to the mooring buoys by a length of rope 'riser'. The mooring chains have each created a shallow, circular depression on the seabed, of approximately 3m radius. This demonstrates that damage to these sediments and any archaeological material they contain is being caused by the mooring chains. We have no way of knowing whether there is any mobility of sediment outside the area being swept by the mooring chains.

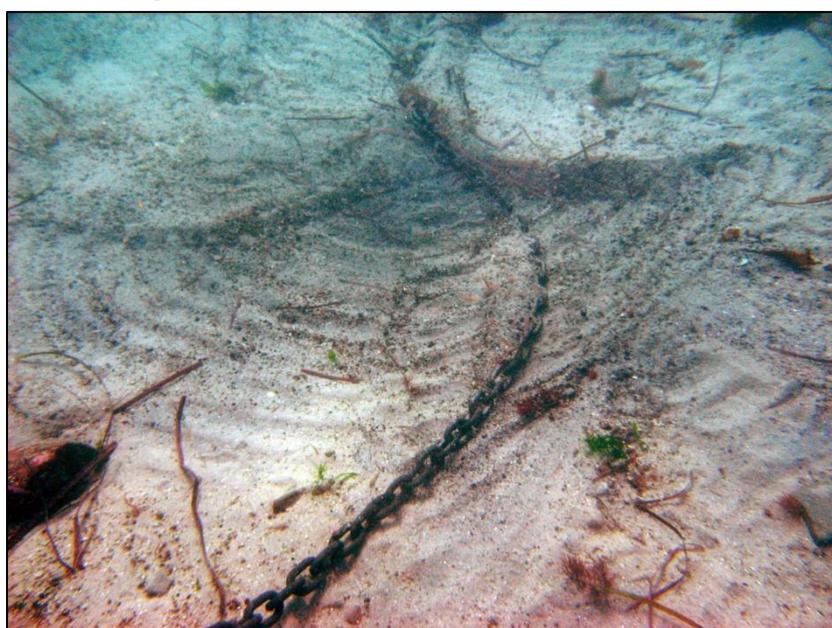


Fig 6
The scouring of the seabed by the mooring chain, mooring block 05, October 2013

The main aim of this project was to excavate in the area being scoured by the mooring chains to establish exactly what remains buried in the seabed sediments. It seems likely that further, more complete pottery will be found. What needs to be established is whether there is any associated wreck structure. The excavation only took place where the sediment is threatened by the action of the mooring chains – so only 'at risk' sediments were excavated. This project should be seen as an exploratory excavation to establish where this remarkable pottery is coming from.

Permissions

A licence from the Marine Management Organisation was required for this project. This was granted in June 2013 (Licence number L/2013/00199). A licence was also required from the Crown Estate, and this was granted in August 2013. Consent was also obtained from Tresco Estate, which administers the yacht moorings on the site.

Methods

The fieldwork for this project was undertaken by the Cornwall and Isles of Scilly Maritime Archaeology Society (CISMAS) under the direction of Kevin Camidge. The project was undertaken between 29th September and 11th October 2013 - a total of 12 working days. This project was scheduled to take place so late in the diving season in order to avoid the large number of yachts which use the moorings in Tresco Channel during the summer months.

CISMAS has previously carried out work on the wreck of *Colossus* including a two year survey of the debris field in 2004-5, facilitated by a grant from the Lottery Heritage Initiative. More recently, CISMAS undertook the excavation in 2012 on *Colossus* commissioned by English Heritage. Although CISMAS is an organisation of volunteers, the survey standard achieved by its members is very high.

Positioning

Survey positioning was achieved using temporary control points fixed around the excavated trenches. These control points consisted of steel rods 10mm in diameter and 0.4m long, driven into the seabed. The control points were measured relative to the mooring blocks using direct survey measurements and 3H Site Recorder 4 software. The position of these control points is shown in figs 8 & 9.

The trenches were situated close to the two mooring buoys (numbers 5 & 6 in fig 9), within the area scoured by the mooring chains (fig 6). These two moorings are about 33m apart; to aid diver transit between the two mooring blocks a leaded bottom line was laid between them (shown by the dashed line in fig 9).

Mooring Block Locations	
No	Position UTM (WGS84)
05	690295.484E 5537424.112N
06	690270.771E 5537445.489N
07	690258.909E 5537476.620N
08	690311.926E 5537395.295N

Fig 7

Table of positions for the seabed mooring blocks. The positions were established using a Garmin 76C GPS unit.

Control Point Location			
CP No	Easting	Northing	Depth
CP1	690295.130	5537428.543	5.8
CP2	690299.505	5537424.747	6.0
CP3	690295.893	5537420.095	6.1
CP4	690291.065	5537424.245	6.0
CP7	690270.789	5537449.723	6.0
CP8	690274.937	5537446.048	6.1
CP9	690271.262	5537441.269	6.1

Fig 8

Table of positions for the temporary control points. The positions were established relative to mooring blocks 05 and 06

CP10	690266.841	5537445.258	6.5
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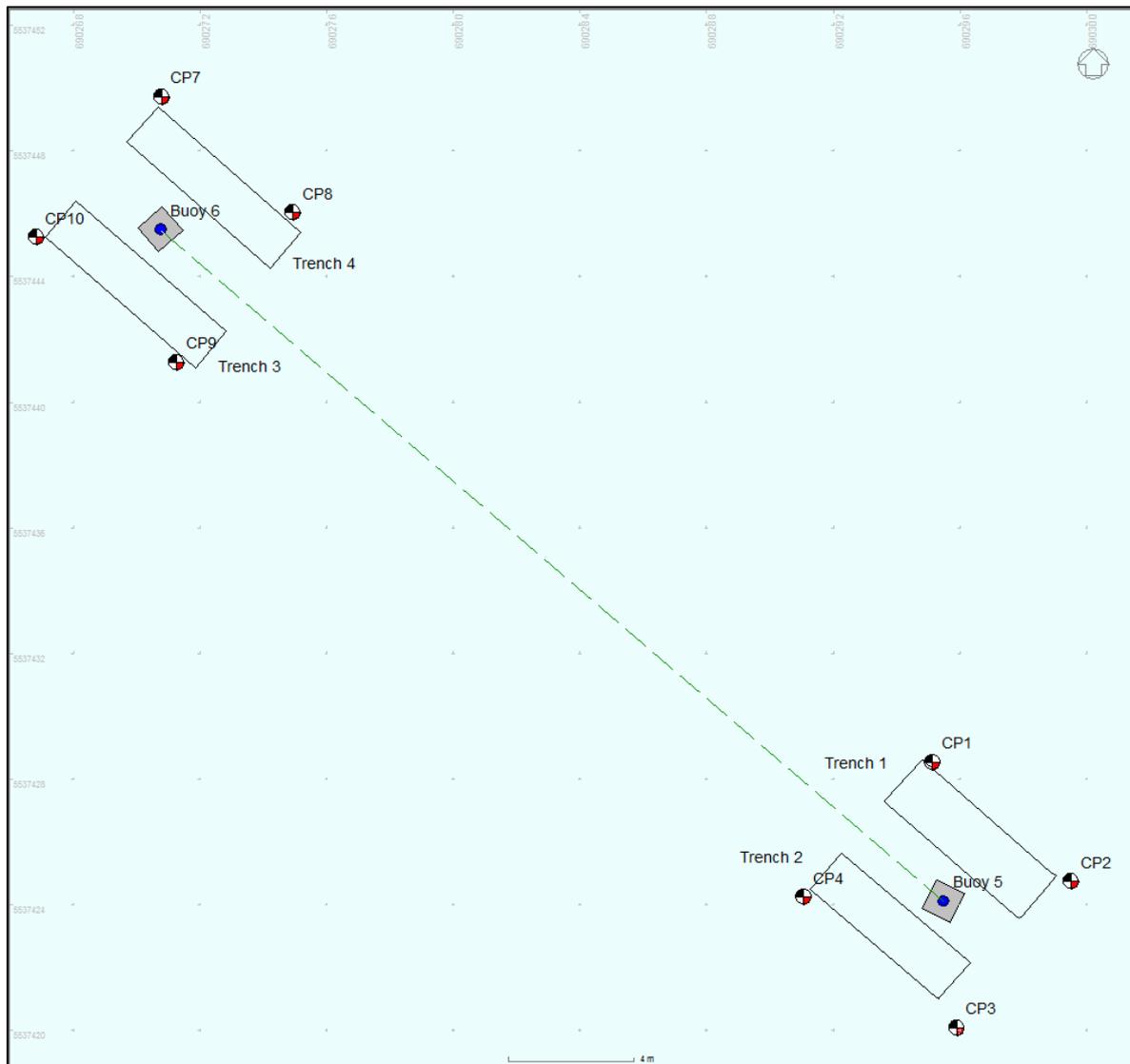


Fig 9

Plan showing the location of the trenches, mooring buoy blocks and the temporary control points (CP1 – CP4 and CP7 – CP10). The dashed line indicates the position of the swim line between buoys 5 and 6.

Excavation

The excavation was performed by two teams each made up of three divers. Each team undertook two 70-minute dives each day, with a two-hour surface interval between dives. At any given time there were three divers on the seabed: one excavating, one recording and one assisting with the recording and taking photographs. Thus on a normal day a total of 280 minutes of excavation took place (4.6 hours).

Excavation was accomplished using a small pointing trowel and by hand fanning. All layers encountered were excavated separately; each layer was completely removed before beginning excavation of the next layer. A reaction dredge was employed to remove sediment from the excavation to a spoil heap. The spoil was contained by placing the reaction dredge outlet pipe under an area of polypropylene scaffold mesh, secured to the seabed using sandbags. The reaction dredge was powered using a petrol driven 3" Honda fire pump, which was situated in an inflatable boat on the surface. The water outlet of the pump was connected to the dredge using 15m of flexible fire hose.



Fig 10
The components of the reaction dredge

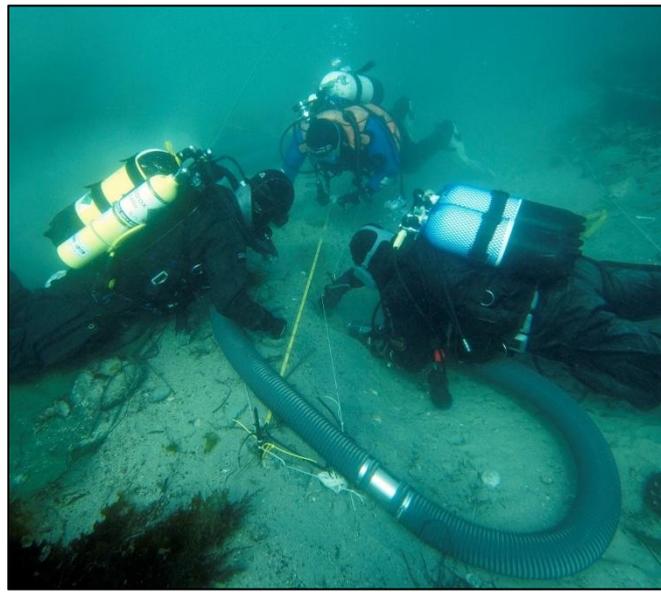


Fig 11
Excavation in progress using the reaction dredge

The spoil from the first trench was placed on a spoil heap situated to the east of the trench. During excavation of the second trench, the spoil was placed directly into the now complete trench 1. On completion of trench 2 the spoil from the trench 1 heap was used to backfill trench 2. A similar technique was used for the excavation of trenches 3 and 4. At the completion of the project all the trenches had been backfilled.

Finds Recording

Each object was allocated a unique number when found. All material recovered from site was recorded in the same number sequence and recorded in the same way (this included sediment samples as well as pottery, bone and small finds). The position, depth and context were recorded on the seabed. This was achieved using a baseline (tape) stretched between two of the temporary control points. An offset and depth below the baseline was recorded underwater for each object recovered. The context (layer) was recorded for each object and an underwater photograph taken of all unusual objects.

The object was then bagged and recovered to the support vessel inside a pre-numbered minigrip bag. Detailed recording of the object was then undertaken 'out of water' by the finds supervisor and the conservator. The object was photographed using a Nikon D800E digital SLR on a copy stand using a Nikkor 60mm micro lens. All photographs were illuminated using a Sigma macro ring-flash. Although the 36 megapixel D800E is ideal for recording fine detail on objects, a significant drawback is the large size of the digital files produced. The finds record for each object recovered was made directly onto a Microsoft Excel spread sheet, and the data recorded is listed in the table below (fig 12). The complete finds record and the finds photographs are reproduced on the DVD ROM which accompanies this report.

Artefact record	
Field	Recorded
No	Pre-numbered bags
Position	Underwater
Depth	Underwater
Context	Underwater
Object type	Surface
Material	Surface
Description	Surface
Record date	Surface
Date found	Surface
Destination	Surface
Dimensions	Surface
Condition	Surface
Photographs	Surface & underwater
Drawn	Only selected objects
Current location	Surface
Recorded by	Surface
Conservation	Surface

Fig 12
Artefact record metadata



Fig 13
Finds recording in progress



Fig 14
Finds photography

Finds Processing

A number of objects were selected by the conservator, Ian Panter, for conservation. These objects were accordingly sent to York Archaeological Trust for conservation. Once conserved, these will go to the Isles of Scilly Museum on St Mary's. The table below (fig 15) lists those objects which were sent to York for conservation:

Objects to be conserved		
No	Material	Description
555	Wood	Dowel or peg?
558c	Leather	Fragments
564	Wood	Tool handle?
648	Copper alloy	Buckle
697	Wood	Dowel, possible bale pin
773	Wood	Dowel, possible bale pin
793	Wood	Dowel, possible bale pin
799	Wood	Dowel, possible bale pin
920	Lead alloy	Spoon
921	Wood	Dowel, possible bale pin
923	Leather	Shoe parts
924	Wood	Tool handle?
924a	Leather	Fragments

Fig 15
Objects to be conserved by York Archaeological Trust. These will then go to the Isles of Scilly Museum.

Another group of objects was sent to York for further analysis by Ian Panter. This includes many of the iron concretions, which will be x-rayed. The table below (fig 16) lists those objects which were sent to York for further analysis:

Objects for analysis			
No	Description	No	Description
533	Unrecognised material	780	Iron concretion
559	Organic fibres	783a	Wood fragment
560b	Leather fragments	783b	Woven fibres
561	Iron concretion	795	Lead or pewter?
597	Iron concretion	806	Iron concretion, knife?
615	Iron concretion	821	Iron concretion, slag?
619	Iron concretion	822	Iron concretion
621	Organic material	838	Iron concretion
671	Iron concretion	844	Glass?
688	Iron concretion	873	Iron concretion
705	Iron concretion	886	Iron concretion
716	Iron concretion	931	Iron concretion
719b	Leather fragments	932	Iron concretion
768	Organic fibres	981	Iron concretion

Fig 16
Objects selected for further analysis at York Archaeological Trust.

The pottery was photographed and recorded and then desalinated. The desalination was achieved by placing the pot into net containers (fine Netlon tube was used) as shown in fig 17 below. These were then placed into a 250 litre water tank containing fresh water (tap water) – fig 18. The water in the tank was completely changed every seven days. The pottery was desalinated for four weeks. The pottery was then dried and marked before being sent to Duncan Brown at English Heritage for appraisal.



Fig 17
Pottery in Netlon tubes



Fig 18
Pottery desalinating in fresh water

The bone was similarly desalinated before being dried and sent to Polydora Baker at English Heritage for appraisal.

A number of objects were assessed by Ian Panter as undiagnostic or unlikely to survive conservation. These were recorded and photographed then reburied in Trench 4 at the end of the excavation. They were reburied 0.95m below current seabed level at position 690270.48E 5537448.41N (UTM WSG84). In total 129 objects were reburied, the majority of these being small fragments of wood (fig 19). All the reburied objects are marked in the finds record as 'Reburied on site'.

Objects Reburied	
Number	Type
2	Bone fragments
1	Tobacco pipe
1	Copper alloy
2	Glass (modern)
6	Iron concretion
107	Wood fragments
129	Total Reburied

Fig 19
Objects reburied on site

Sediment Samples

Ten sediment samples were taken, and these are listed in the table below (fig 19). Each sample consisted of approximately 3kg of sediment which was placed directly into a large self-sealing polythene bag on the seabed.

Four samples were sent to York Archaeological Trust and subjected to chemical analysis to determine the likely survival of any possible organic remains such as timber. Each sample consisted of 0.4kg extracted from the samples 603, 609, 626 and 915. The aim of this analysis is to establish 'baseline' environmental conditions on the site. Parameters measured include pH, total sulphur, sulphates, sulphides, conductivity, loss on ignition, ammoniacal nitrogen and carbonates. These proxy indicators were used to determine whether the sediments are anoxic and whether they contain nutrients that may promote microbial decay of timber and other organic artefacts. The results of this analysis appear below in the *Geochemical Assessment of Sediment Samples* section.

Tresco Channel 2013 – Sediment Samples		
Trench No	Sample No	Context
T1	604	L3
T1	603	L4L
T1	606	L4U
T2	609	L7U
T3	629	L8
T3	628	L10U
T3	915	L10L
T4	616	L12
T4	617	L13U
T4	626	L13L

Fig 20

The sediment samples and the contexts from which they were taken.

The remaining soil samples were subjected to systematic sieving to detect any paleobotanical remains or other very small items such as bones. Each sample was first placed into a clean container of water, swirled around and the suspended material put through a 250 micron sieve. The remaining sample was then sieved through a 500 micron sieve. This material was then put through 2mm and 4mm sieves. The result (for each soil sample) was material sorted into the following particle sizes:

1. 250 micron (wash over)
2. 0.5-2mm
3. 2-4mm
4. >4mm

These were desalinated, dried and bagged before being sent to Polydora Baker at English Heritage for appraisal.

Results

The excavation took place between 29th September and 11th October 2013, a total of twelve days' diving in all. The site is relatively sheltered, so despite strong winds no time was lost to bad weather.

A total of four trenches were excavated. The trenches were situated adjacent to the mooring blocks 5 and 6 (see fig 9). Each trench was within the area of seabed scoured by the mooring chains of the mooring riser (see fig 6). Within each trench the sediment was removed one layer at a time, each layer being recorded on a CISMAS context record form. Finds were only recovered after their position, depth and context had been recorded; this was facilitated by the use of offset measurements as discussed above (page 16).

Trench 1

This trench was 5.7m long and 1.8m wide and was situated 0.65m to the north-east of mooring block 5 (fig 21 below).

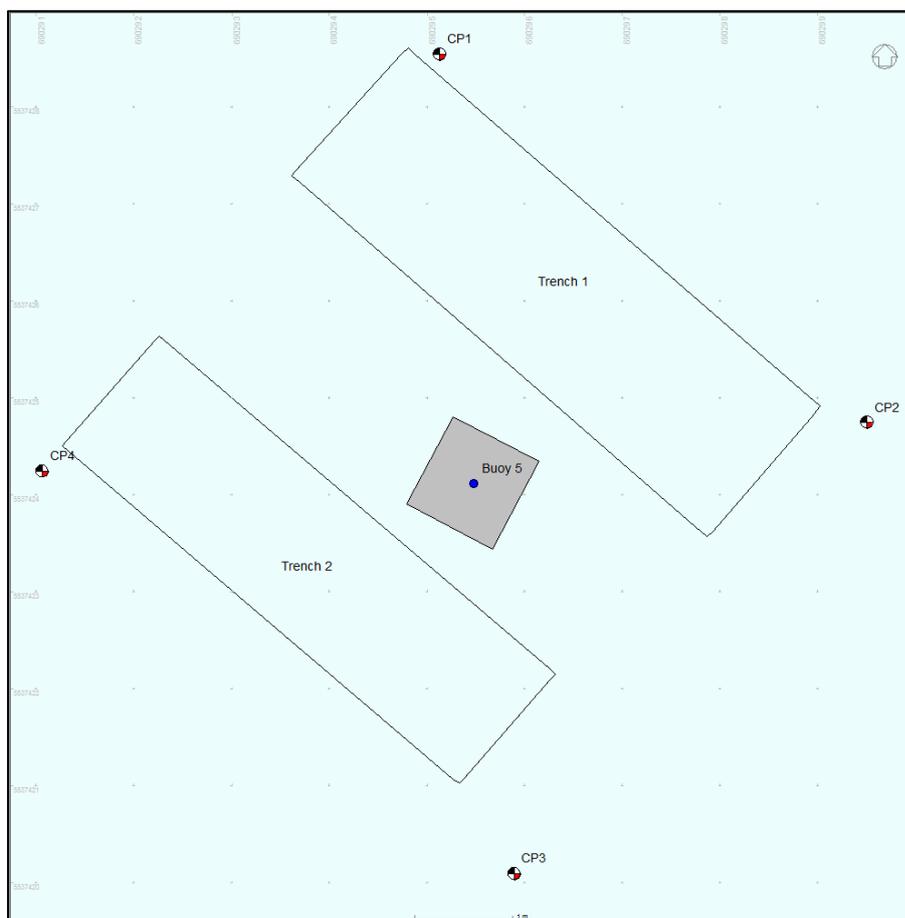


Fig 21
Layout of trenches 1 and 2 relative to mooring block 5.

Five layers were excavated within trench 1. A schematic section of the layers encountered in trench 1 is shown in fig 22, while a description of each layer is given in fig 24.

The uppermost layer (L1) was 0.06m thick and forms the current seabed surface. This layer is probably mobile and subject to storm movement as well as the scouring action of the mooring chain attached to the mooring block. Layer L1 covered the whole of the area of trench 1. No artefacts were found in this layer.

The next layer encountered was also a very thin layer (0.05m deep), covering the whole extent of the trench and producing only three objects (two pieces of pottery and a fragment of glass).

Layer L3 was of a similar thickness (0.06m) but a total of 62 artefacts were found in this layer; principally 12 pottery sherds, 37 pieces of bone and eight small wood fragments. A fragment of glass (F525) found in this layer appeared to be from a modern bottle.

Layer L4U had an undulating surface and was about 0.15m thick. It contained small pockets of the layer above it (L3), probably introduced into the layer by the action of boring organisms – evidenced by the presence of razor shells (a burrowing marine mollusc). The surface of this layer also seems to exhibit what appear to be old root holes, perhaps evidence that this was once the seabed surface with seaweed growing on it. A total of 78 objects were recovered from this layer (12 pot, 31 bone as well as fragments of wood and leather). One of the wood objects (F564) was a possible tool handle

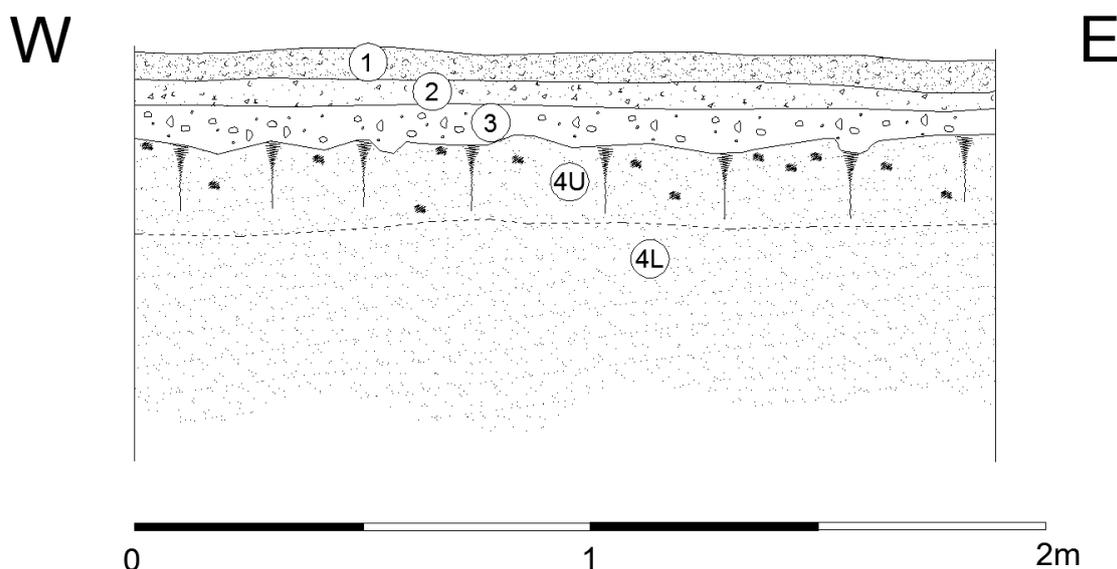


Fig 22 Schematic section of the stratigraphy encountered in trench 1

This layer also produced an iron concretion (F561) which on examination by x-ray proved to be the remains of an iron nail (See conservation assessment below).

One enigmatic feature found in this layer appeared to be a rectangular organic object, possibly a small box-shaped container associated with small wood fragments (F558a and F560) small animal bones (F558b) and fragments of leather (F558c and F560b). Parts of this object appeared to be made from woven fibrous material, but on investigation these disintegrated - fig 23 below.



Fig 23
*Enigmatic collection
of organic material –
possibly a container
F559, F559 and F560.
Scale 0.3m*

Layer L4L was composed of the same material as L4U, but was clean and not contaminated by intrusions of L3. This layer was at least 0.55m thick and was not bottomed. No artefacts were found in this layer, which is probably natural.

Trench 1 Stratigraphy				
Context	Description	Compaction	Depth	Finds
L1	Light yellowish-brown very coarse sand with shell and small stones. Current seabed	Loose	0.06m	No finds
L2	Light grey coarse sand with shell. Some small stones. Mobile sediment (one artefact with weed growth)	Loose	0.05m	Glass 1 Pottery 2 TOTAL = 3
L3	Dark grey coarse silty sand with shell and larger stones. Mobile sediment (two artefacts with weed growth). PM artefact (525) glass.	Moderate	0.06m	Bone 37 Glass 1 Other 2 Pottery 12 Walnut shell 2 Wood fragments 8 TOTAL = 62
L4U	Light brown fine sandy silt with pockets of dark grey coarse sand with shell. Surface of this layer undulates, possibly due to the action of the mooring chain. Appears to be an old seabed with intrusion of (L3) caused by the action of marine growth and burrowing organisms. Three artefacts with weed growth.	Firm	0.15m	Bone 31 Copper alloy 1 Iron 4 Leather 13 Other 2 Organic 1 Pottery 12 Wood frags 14 TOTAL = 78
L4L	Light brown fine sandy silt – no inclusions or artefacts – probably natural	Firm	>0.55m	No finds
Trench 1 total finds = 143				

Fig 24 Table of layers, sediment details and finds from trench 1

With the exception of L4L, the natural, all the layers excavated in this trench exhibited signs of being mobile. Layers L2, L3 and L4U all produced pottery with fairly fresh weed growth attached, demonstrating that they had recently been on the seabed surface. In addition layer L3 produced a fragment of modern glass (525). This was probably due to the action of the mooring chain being dragged back and forth across the seabed in the region of trench 1 (see fig 6) – but there may also be other forces acting to disturb these sediments.

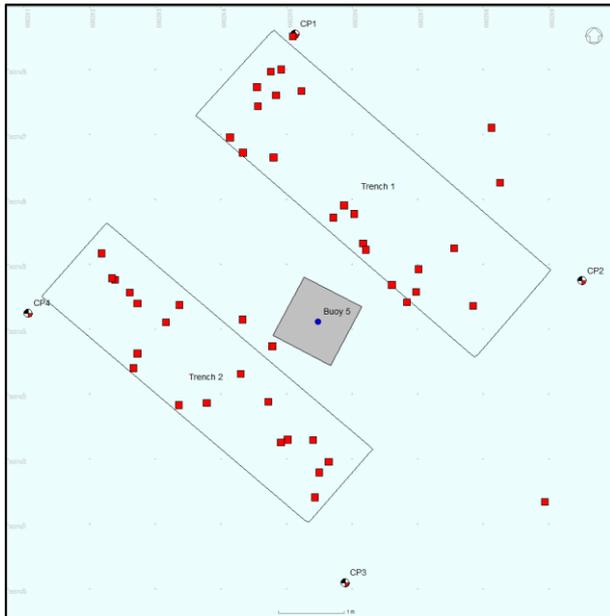


Fig 25 Pottery distribution in Trenches 1 and 2

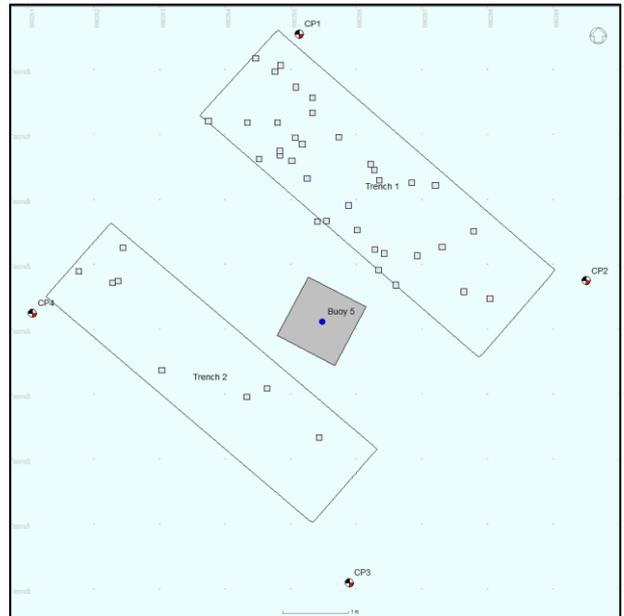


Fig 26 Bone distribution in Trenches 1 and 2

The distribution of finds within trench 1 is shown in figs 25 to 28. The finds are fairly evenly distributed within trench 1, although there is a tendency for a higher concentration of objects towards the north-west end of the trench. This is particularly noticeable in the pottery and wood distribution plots (figs 25 and 27).

26 pieces of pottery were found in this trench. These were mainly small fragments with the exception of F554 and F607 which were large body sherds which are from the same pot as the pieces join (figs 29 and 30). These are probably French and are of late 13th/early 14th century date.

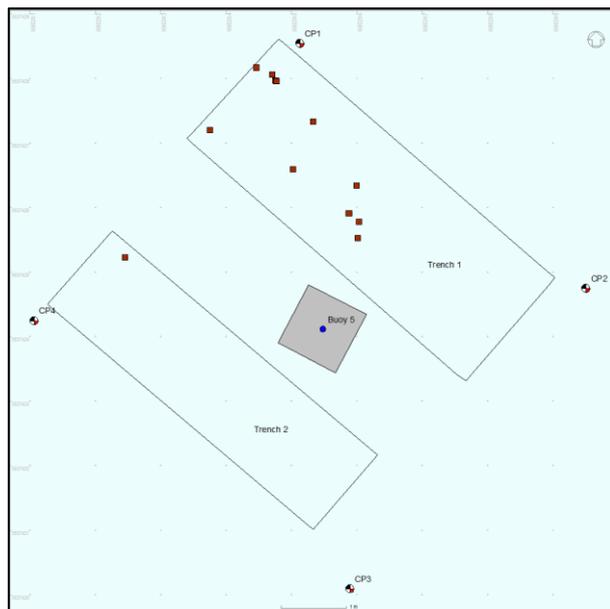


Fig 27 Wood distribution Trenches 1 and 2

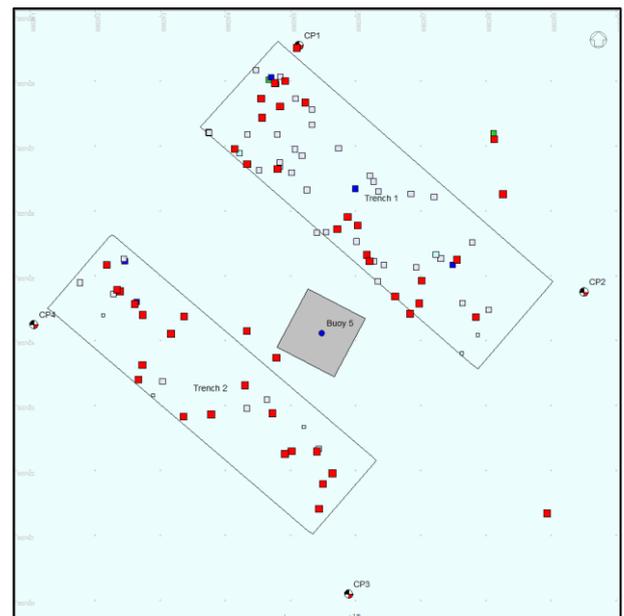


Fig 28 Distribution for all the objects recovered in Trenches 1 and 2



Fig 29 F554 pottery found in L4 trench 1. Note the body sherd joins with F607



Fig 30 F607 pottery found in L4 trench 1

Trench 2

This trench was 5.4m long and 1.5m wide and was situated 0.5m to the south-west of mooring block 5 (see fig 21 above). Trench 2 was parallel to trench 1, a distance of 2.1m separating the two trenches. A schematic section of the layers encountered in trench 2 is shown in fig 31 below, while a description of each layer is given in fig 33.

Four layers were excavated within trench 2. The uppermost layer (L5) forms the current seabed surface and was fairly thin at 0.04m thick. This layer is probably the same as L1 in trench 1. A total of 30 objects were recovered from this layer: 18 pieces of pottery, four bones, seven fragments of wood and a piece of clay tobacco pipe stem.

The next layer, L6, varied in thickness from 0.04m (at the south-west end of the trench) to 0.10m (at the north-east end). This appears to be the same layer as L3 in trench 1. This layer produced 16 objects: eight pieces of pottery, seven bone fragments and a copper alloy buckle (fig 32).

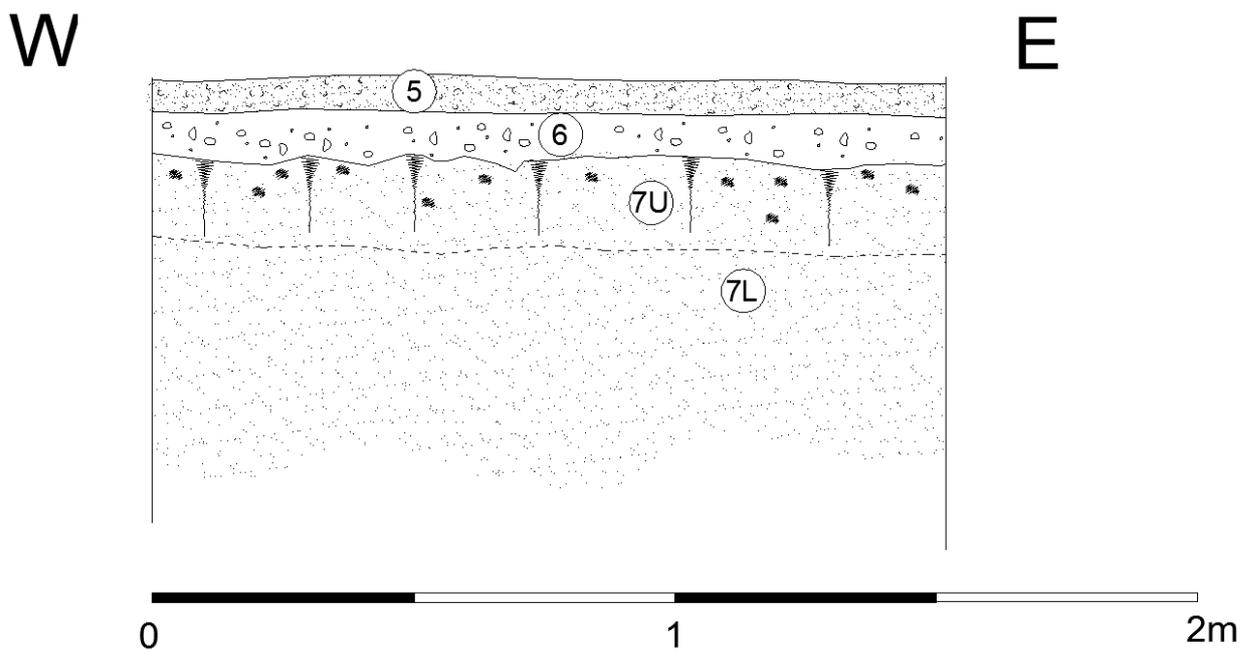


Fig 31 Schematic section of the layers encountered in trench 2

Layer L7U was approximately 0.15m thick, has an undulating surface and contains pockets of the layer above it (L6). These were probably introduced into the layer by the action of boring organisms – evidenced by the presence of razor shells (a burrowing marine mollusc). The surface of this layer also seems to exhibit what appear to be old root holes, perhaps evidence that this was once the seabed surface with seaweed growing on it. This is probably

the same layer as L4U in trench 1. Only four objects were recovered from this layer (one pot and three bone).

Layer L7L is composed of the same material as L7U, but is clean and not contaminated by intrusions of L6. This layer was at least 0.30m thick and was not bottomed. This is the same layer as L4L in trench 1. No artefacts were found in this layer, which is probably natural.

As trench 2 was situated so close to trench 1, it is perhaps surprising that the stratigraphy was not exactly the same. However, the layers encountered were broadly comparable with those in trench 1 with the exception of L2, which was absent from trench 2.



Fig 32 Copper alloy buckle F648, found in L6, trench

Trench 2 Stratigraphy				
Context	Description	Compaction	Depth	Finds
L5	Light yellowish-brown very coarse sand with shell and small stones. Current seabed Mobile sediment (9 artefacts with weed growth) PM artefact (727) tobacco pipe	Loose	0.04m	Bone 4 Pottery 18 Tobacco pipe 1 Wood fragments 7 TOTAL = 30
L6	Dark grey coarse silty sand with shell. Some small stones. No artefacts with weed growth	Moderate	0.03 – 0.10m	Bone 7 Pottery 8 Cu alloy 1 TOTAL = 16
L7U	Light yellowish-brown fine sandy silt with pockets of dark grey coarse sand with shell. Surface of this layer undulates, possibly due to the action of the mooring chain. Appears to be an old seabed with intrusion of (L6) caused by the action of marine growth and burrowing organisms. No artefacts with weed growth	Firm	0.15m	Bone 3 Pottery 1 TOTAL = 4
L7L	Light yellowish-brown fine sandy silt – no inclusions or artefacts – probably natural	Firm	>0.30m	No finds
Trench 2 total finds = 50				

Fig 33 Table of layers, sediment details and finds found in trench 2

Only the surface layer (L5) from this trench produced objects with fairly fresh weed growth attached, demonstrating that they had recently been on the seabed surface. This was recorded on nine of the 30 artefacts recovered from L5. This layer also had obvious post-medieval material in the form of a clay tobacco pipe stem (F727). These factors all indicate that this layer has been subject to mobility of the sediment, probably due to the action of the mooring chain. None of the other layers in this trench produced any objects with evidence of weed growth. It should be noted, however, that relatively few objects were recovered from these layers – only 16 objects from L6 and four objects from L7U.

The distribution of finds within trench 2 is shown in figs 24 to 27. The finds were fairly evenly distributed within trench 2. A total of 27 pieces of pottery were found in this trench. These were mainly small fragments with very few larger fragments in evidence. While the number of pieces of pottery recovered from this trench is similar to those recovered from trench 1, the total number of finds from this trench (50) is considerably less than the number recovered from any of the other trenches.

Trench 3

This trench was 6.2m long and 1.5m wide and was situated 0.6m to the south-west of mooring block 6 (see fig 33 below). Mooring block 6 lies some 33m to the north-east of mooring block 5, where trenches 1 and 2 were situated (see fig 9).

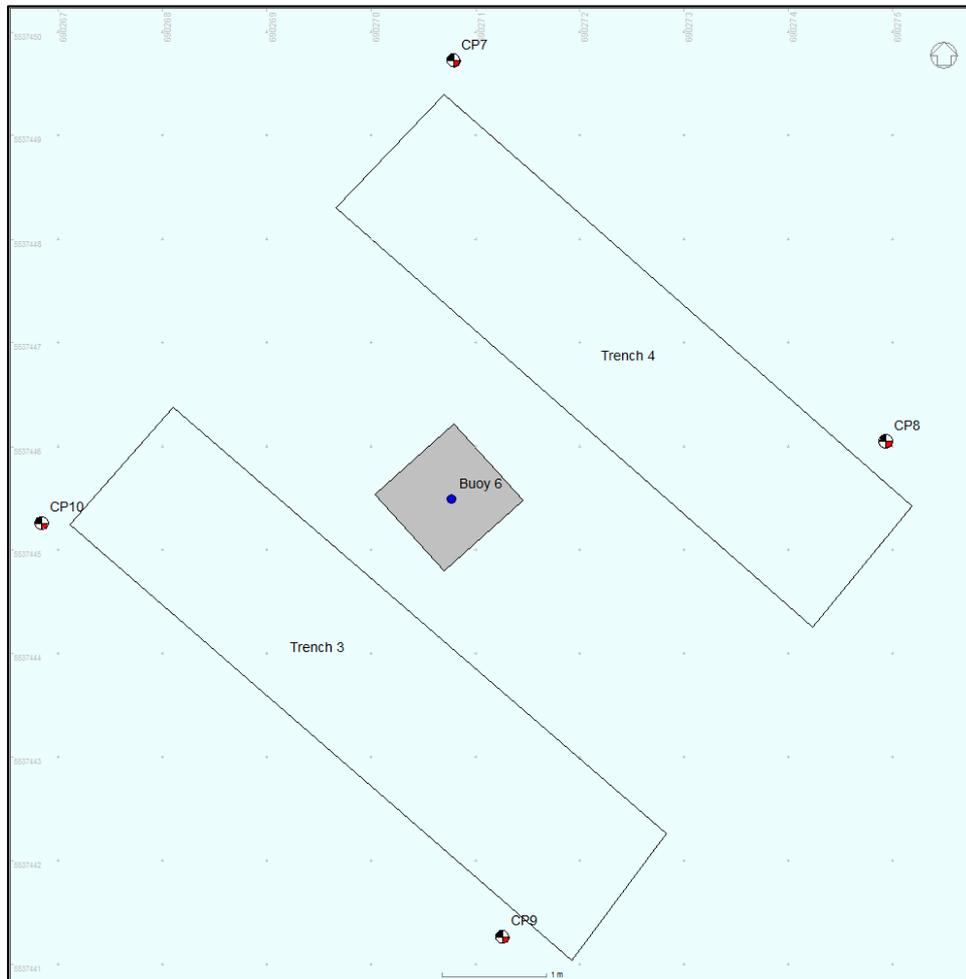


Fig 34
Layout of trenches 3 and 4 relative to mooring block 6.

Four layers were excavated within trench 3. A schematic section of the layers encountered in trench 3 is shown in fig 35 below, while a description of each layer is given in the table of stratigraphy (fig 37). The uppermost layer (L8) forms the current seabed surface and varied in thickness between 0.10m and 0.15m. This layer was different in composition from the surface layer encountered in trenches 1 and 2. 121 objects were recovered from this layer (principally 32 pot, 52 bone and 28 wood fragments). The wood fragments (with one exception) were all very small pieces, typically less than 50mm long, and some of them showed evidence of tool marks – possibly wood-working debris.

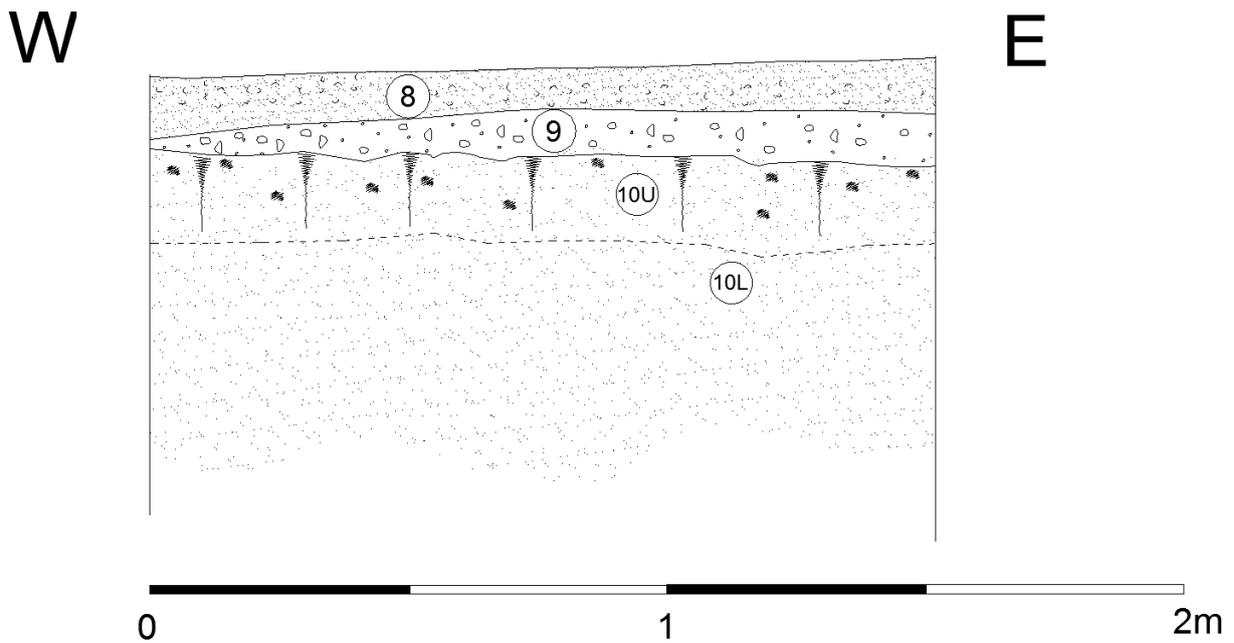


Fig 35 Schematic section of the layers encountered in trench 3

The only piece of timber which was not a small fragment from the whole excavation was found in this layer (F625). It was oak, 0.32m long and roughly square in section: 0.07 x 0.065m. The timber appeared to have been worked but it had been so badly attacked by marine wood-boring organisms that it was impossible to be certain (fig 36).

Of the seven fragments of iron recovered from this layer, four proved to be iron nails when examined by x-ray (F671, F688, F705 and F780). Two of these nails incorporated roves (F688 and F705), so the possibility that these were ship fastenings must be considered.



Fig 36
Timber F625, layer 8,
trench 3
Scale = 0.10m

This layer is probably mobile, as evidenced by 16 of the artefacts with fresh weed growth attached, showing they have been on the seabed surface in the recent past. A number of post-medieval objects were also recovered from this layer, including fragments of corroded iron 'tin' can (F723, F731 and F722) and a 0.45 calibre jacketed bullet (F662).

Trench 3 Stratigraphy				
Context	Description	Compaction	Depth	Finds
L8	Brownish grey coarse sand with small stones and shell. Current seabed Mobile sediment (16 artefacts with weed growth) PM artefacts (tin can 663, 664 & 666) and bullet (662).	Loose	0.10 – 0.15m	Bone 52 Composite 1 Iron 7 Lead 1 Pottery 32 Wood frags 28 TOTAL = 121
L9	Yellowish-brown silty sand with shell and very small stones. No artefacts with weed growth. PM artefacts (bullets 723, 731 & 722 and tobacco pipe 743)	Moderate	0.03 – 0.07m	Bone 82 Composite 4 Iron 2 Organic 2 Pottery 26 Tobacco pipe 1 Wood fragments 37 TOTAL = 154
L10U	Light yellowish-brown fine sandy silt with pockets of yellowish-brown and grey coarse sand with shell. Surface of this layer undulates, possibly due to the action of the mooring chain. Appears to be an old seabed with intrusion of (L8) & (L9) caused by the action of marine growth and burrowing organisms. Mobile sediment (9 artefacts with weed growth) PM artefact (tobacco pipe 825)	Firm	0.12m	Bone 53 Flint 1 Iron 4 Lead 3 Organic 10 Other 1 Pottery 61 Tobacco pipe 1 Wood 48 TOTAL = 182
L10L	Light yellowish-brown fine sandy silt – no inclusions or artefacts – probably natural	Firm	>0.35m	No finds
				Trench 3 total finds = 457

Fig 37 Table of layers, sediment details and finds from trench 3

The second layer encountered was L9 which varied in thickness between 0.03m and 0.07m. 154 objects were recovered from this layer (mainly pot 26, bone 82, wood fragments 37). The wood fragments were similar to those found in the layer above (L8). One of the wood fragments found in this layer was a small piece of roughly shaped dowel about 100mm long with a diameter of 8mm (F697). This was identified by Ian Panter as a possible bale pin. Similar pins were found in the excavations at Coppergate in York where they were found in deposits dating to the 12th/13th centuries. 'Bale pins or pack prick as they were known... would have been used to fasten the outer wrapper of a bale of wool' (Rogers, 1997).



Fig 38
*Two jacketed 0.45 calibre
bullets F722 found in layer 9
trench 3*

Layer 9 also contained another organic container, similar to that found in trench 1 (F558, F559 & F560). This again appeared to be a small rectangular container, about 0.15m long and 0.08m wide whose sides were formed from organic material which appeared to be woven (F783). Associated with this organic object were 23 small animal bones (F692) and 15 small fragments of wood (F697). This feature was extremely delicate, so was removed from the seabed on a column of sediment and placed into a small plastic container on the seabed. Ian Panter examined the raised material and extracted from it F783a a fragment of oak and F783b a collection of woven fibres. These have been taken to the conservation laboratory at York for further analysis. Fig 39 below shows the feature underwater, while fig 40 shows it as raised in the plastic container.



Fig 39 Feature F783, a possible woven fibre container found in layer 9, trench 3. Scale = 0.20m



Fig 40
Organic feature F783 in the container used to recover it from the seabed.

None of the objects recovered from L9 exhibited any signs of attached weed growth, indicating that they had not spent time on the seabed surface in the recent past. However, a number of post-medieval objects were recovered, including a fragment of clay tobacco pipe (F743) and four more jacketed 0.45 calibre bullets (F722, F723 and F731). This layer has clearly been subject to a degree of mobility, probably caused by the action of the nearby mooring chain.

Layer L10U was approximately 0.12m thick, has an undulating surface and contains pockets of the layer above it (L9). These were probably introduced into the layer by the action of boring organisms. This layer appears to be the same layer as L4U (trench 1) and L7U (trench 2). A total of 182 objects were recovered from this layer (principally pot 61, bone 53, wood fragments 48). Some large fragments of pottery were recovered from this layer including two jugs of French origin dated to the late 13th/early 14th century (figs 44 and 45). Three more possible bale pins were found in this layer (F773, F793 and F799). The wood of these pins is extremely soft and very careful handling was required to recover them without breakage. Bale pins were used to fasten the outer covering of wool bales and as such are indicative of trade in wool – an important English medieval export.



Fig 41 Possible bale pin fragments F773 from layer 10, trench 3

The other wood artefacts discovered in this layer were all very small fragments or chips of wood, some of which showed tool marks (fig 43). The pottery again mostly consisted of fairly small sherds of mainly green glazed medieval pottery. However, two fairly substantial pottery finds were also made in this layer. The first, F613, consisted of the broken bottom half of a vessel with eight joining pieces (fig 44) The second, F623, was comprised of two large joining fragments from the rim area of a vessel (fig 45).

A small number of iron objects – four - were found in this layer, all heavily concreted with corrosion products. One of these, F806, was the remains of a small knife. Only the ghost of the triangular cross-sectioned blade was visible and part of a copper alloy bolster (the part between the blade and the handle) – see fig 42. Examination of this object at the conservation lab in York resulted in the conclusion that the knife was probably post-medieval. In total 13 fragments of iron were recovered from this trench. There were also two iron nails from this layer (F822 and F838). F822 had evidence of a square rove visible on

the x-ray. All the major iron fragments were examined by x-ray at York to help determine their function.

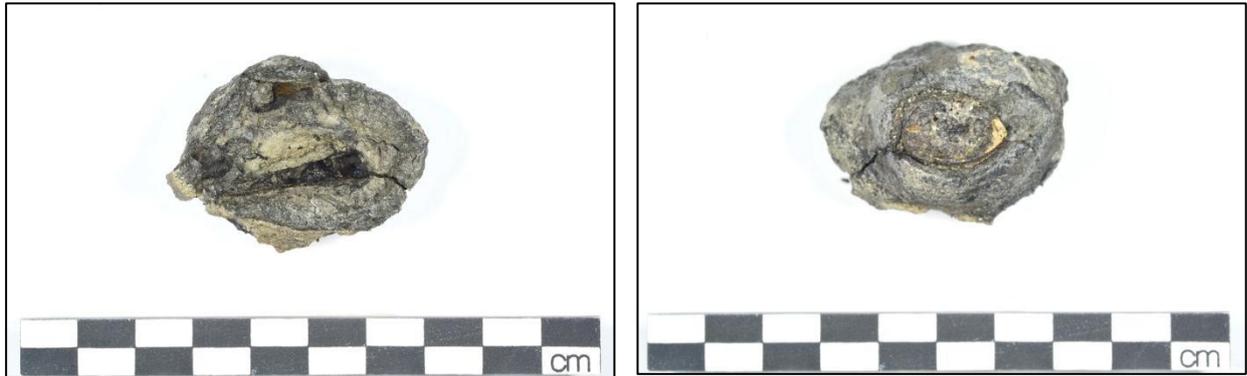


Fig 42 Iron object F806 The shape of the blade is visible (left) and the copper alloy bolster (right)

Layer L10L is composed of the same material as L10U, but is clean and not contaminated by intrusions of L9. This layer is at least 0.35m thick and was not bottomed. This is the same layer as L4L in trench 1 and L7L in trench 2. No artefacts were found in this layer, which is probably natural.

With the exception of the natural (L10L), all the layers excavated in this trench were probably mobile or subject to disturbance by the adjacent mooring chain. L8 and L10U both produced artefacts exhibiting fairly fresh weed growth, demonstrating that these objects had been on the seabed surface in the recent past. L8, L9 and L10U all contained some post-medieval objects (tin can parts, tobacco pipes and bullets).

All the layers in this trench (except the natural L10L) had large numbers of artefacts. In total 457 objects were recovered from trench 3, considerably more than the total number recovered from the other three trenches combined.



Fig 43
F776 an example of the wood fragments found in layer 10, trench 3



Fig 44 Jug fragments F613 from layer 10U, Trench 3 as found (left) and after recovery (right). Probably French, late 13th/early 14th century.



Fig 45 Collared jug rim and body sherd F623 layer 10U, Trench 3. Probably French late 13th/early 14th century

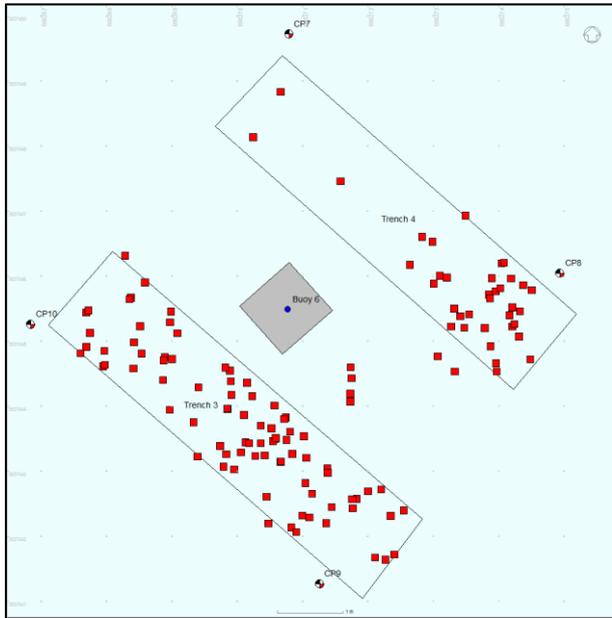


Fig 46 Pottery distribution in Trenches 3 and 4

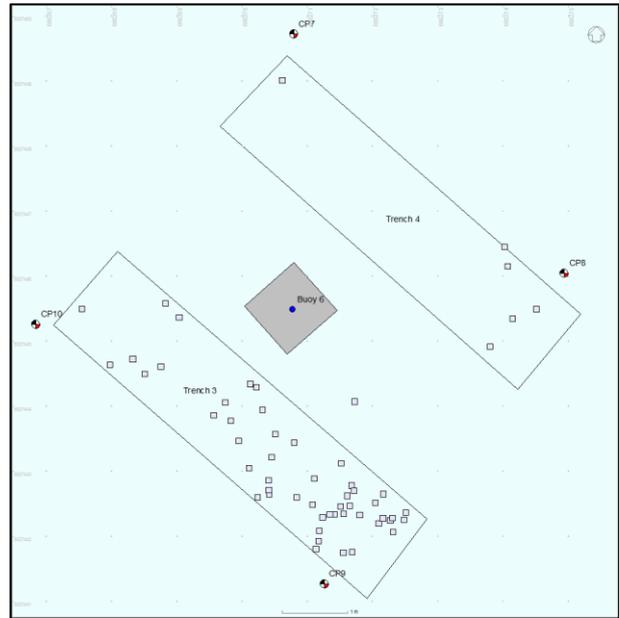


Fig 47 Bone distribution in Trenches 3 and 4

The distribution of finds within trench 3 is shown in figs 46 to 49. The finds are fairly evenly distributed within trench 3. There is, however, a slight clustering of objects toward the south-east end of the trench, particularly noticeable in the distribution plots for the wood fragments and the bone. Compare the distribution of all objects for trenches 3 and 4 shown in fig 49, which graphically illustrates the greater number of objects found in trench 3.

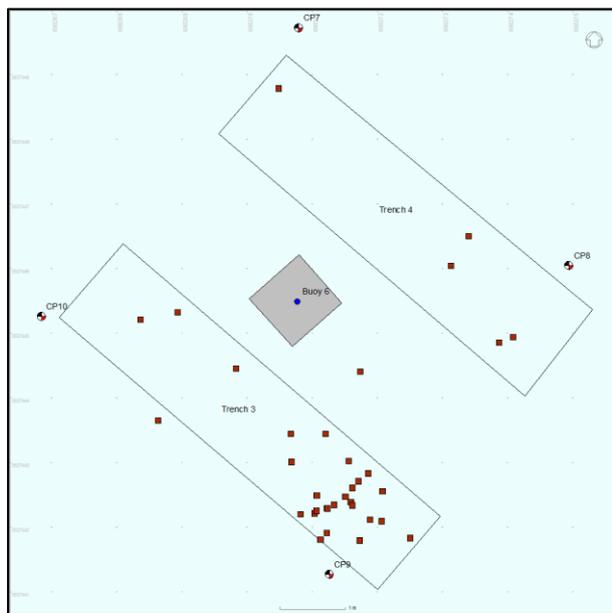


Fig 48 Wood distribution in Trenches 3 and 4

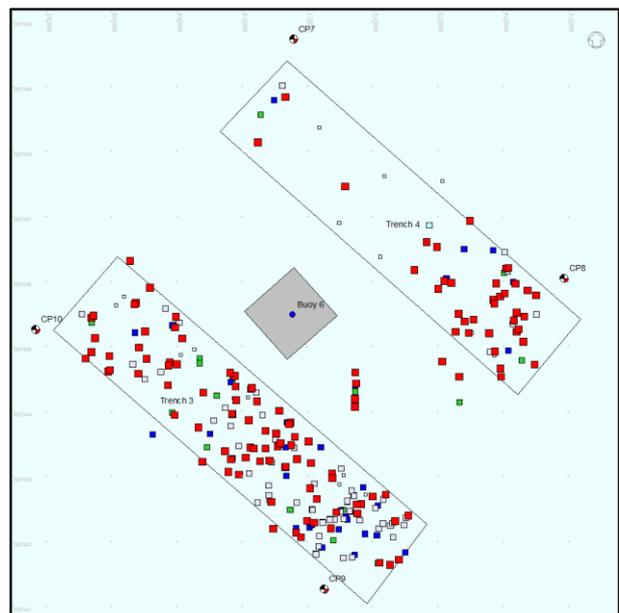


Fig 49 All objects distribution in Trenches 3 and 4

Trench 4

This trench was 5.9m long and 1.5m wide and was situated 0.85m to the north-east of mooring block 6 (see fig 33). Trench 4 was parallel to trench 3, a distance of 2.4m separating the two trenches.

Four layers were excavated within trench 3. A schematic section of the layers encountered in trench 3 is shown in fig 50 below, while a description of each layer is given in the table of stratigraphy fig 51.

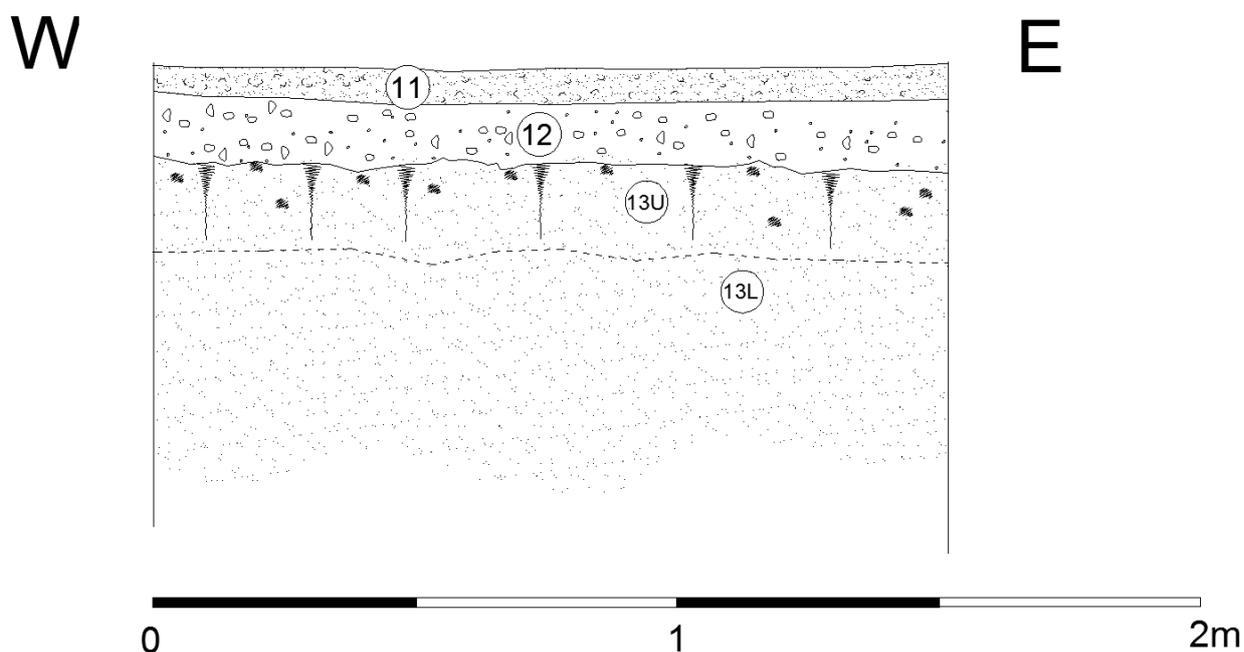


Fig 50 Schematic section of the layers encountered in trench 4

The uppermost layer (L11) forms the current seabed surface and was 0.05m thick. This layer extended throughout the area covered by trench 4. No artefacts were found in this layer. This layer was different in appearance from the surface layer encountered in the adjacent trench 3, a difference probably due to the action of the mooring chain, which moves sediment around as the mooring buoy is moved by the wind and tide (fig 6).

The second layer encountered was L12 which varied in thickness between 0.05m and 0.12m. 14 objects were recovered from this layer (mainly pot 8, bone 3, wood fragments 1). Six of the objects recovered from this layer had fresh weed growth attached, indicating that they had recently been on the seabed surface; this demonstrates that this layer has been subject to recent mobility. A piece of clinker found in this layer appears to be fairly modern – probably from a steamship.

Trench 4 Stratigraphy				
Context	Description	Compaction	Depth	Finds
L11	Light yellowish-brown coarse sand with small stones and shell. Current seabed	Loose	0.05m	No finds
L12	Very dark grey coarse silty sand with small stones and shells Mobile sediment (6 artefacts with weed growth) PM artefact (clinker 627)	Moderate	0.05 – 0.12m	Bone 3 Clinker 1 Iron 1 Pottery 8 Wood fragments 1 TOTAL = 14
L13U	Light yellowish-brown fine sandy silt with pockets of grey coarse sand with shell. Surface of this layer undulates, possibly due to the action of the mooring chain. Appears to be an old seabed with intrusion of (L12) caused by the action of marine growth and burrowing organisms. One artefact with weed growth PM artefacts (bullet 919, clinker 927 and tobacco pipe 845, 868)	Firm	0.15m	Bone 6 Clinker 1 Composite 1 Cu alloy 1 Glass 1 Iron 2 Lead 1 Leather 4 Organic 2 Pottery 49 Tobacco pipe 2 Wood 13 TOTAL = 83
L13L	Light yellowish-brown fine sandy silt – no inclusions or artefacts – probably natural	Firm	>0.65m	No finds
				Trench 4 total finds = 97

Fig 51 Table of layers, sediment details and finds from trench 3

Layer L13U was approximately 0.15m thick, has an undulating surface and contains pockets of the layer above it (L12). These were probably introduced into the layer by the action of boring organisms, evidenced by the presence of razor shells. This layer appears to be the same layer as L4U (trench 1), L7U (trench 2) and L10U (trench 3). A total of 83 objects were recovered from this layer (principally pot 49, bone 6, wood fragments 13). Only one of these objects exhibited signs of recent weed growth, suggesting some mobility of this deposit. A number of post-medieval objects were found, including clinker (F927), a jacketed 0.45 calibre bullet (F919) and clay tobacco pipe fragments (F845 and F868).

A number of interesting objects were recovered from this layer including another wooden bale pin (F921), parts of a leather shoe (F923) and a lead alloy spoon (F920). A small fragment of very dark glass (F844) in a poor state of preservation was also found in this layer. One of the pottery objects (F624) comprised the lower half (base) of a baluster jug possibly originating from south-west England and dating to the late 13th/early 14th century (fig 52). Most of the wood objects were the small fragments of timber seen elsewhere on this site. However, one of the wood objects appears to be a wooden handle (F924), possibly a tool handle. These objects were all found at the south-east end of the trench.



Fig 52
F624 the base of a pot found in layer L13U, trench 4. Late 13th/early 14th century baluster jug, possibly English from the south-west.



Fig 53 *F920 a lead alloy spoon layer L13U, trench 4*



Fig 54 *F921 wooden bale pin, layer L13U, trench 4*



Fig 55 F923 two pieces of a leather 'turn shoe' found in layer L13U, trench 4



Fig 56
F844 a fragment of glass found in layer L13U, trench 4.

Layer L13L is composed of the same material as L13U, but is clean and not contaminated by intrusions of L9. This layer is at least 0.35m thick and was not bottomed. This is the same layer as L4L in trench 1, L7L in trench 2 and L10L in trench 3. No artefacts were found in this layer, which is probably natural.

The total number of objects recovered from this trench was 97. This is broadly comparable with the number recovered from trenches 1 and 2, but is considerably less than the 457 objects recovered from the adjacent trench 3. It should be pointed out that this was the last trench excavated and in order to be certain of completing the trench within the time available, collection of small bones and wood fragments was not as thorough as for the other trenches. However, all pottery and other objects were recovered as normal from this trench.

The distribution of finds within trench 4 is shown in figs 46 to 49. This shows that the majority of the objects recovered from trench 4 were found at the south-east end of the trench. This is particularly noticeable in the pottery distribution (fig 46).



Fig 57
F924 fragments of wood found in layer L13U, trench 4. Note the dowel-like piece on the right – possibly a tool handle.

Surface Finds

A summary of the unstratified objects found appears in the table below (fig 58). 167 unstratified artefacts were recovered, the majority of these (156) being pieces of pottery.

While the excavation was in progress, the surrounding area was systematically searched to confirm that the pottery lying on the seabed was concentrated in the area around buoys 5 and 6 where the exploratory trenches were situated. Searches were undertaken around buoys 7, 8 and 9 (fig 60 below). Only three small pieces of pot were found in the search around buoy 7, two pieces around buoy 8 and none around buoy 9. In contrast 97 pieces of pot were found in the area between buoys 5 and 6. This confirms the finding from the survey carried out in 2011, that the pottery scatter is concentrated around the area of mooring blocks 5 and 6.

Unstratified				
Context	Description	Compaction	Depth	Finds
+	Artefacts found on the seabed – mainly in the area between mooring buoys 05 and 06. The approximate position found has been recorded			Bone 2 Bullet case 1 Iron 6 Pottery 156 Tobacco pipe 1 Wood 1 TOTAL = 167
Unstratified total finds = 167				

Fig 58 Table showing unstratified finds from around the site.



Fig 59
F852 fragment of a Saintonge costrel found on the seabed close to trench 2

A large body sherd (F852) found lying on the seabed about 0.5m to the north of trench 2 is of some interest. Initial examination by Duncan Brown shows this to be a fragment of a Saintonge ware costrel of the late 13th/early 14th century (a costrel is a flask with lugs or small handles for suspension). These are rare in Britain, but a similar example is known from the seabed assemblage recovered from St Peter Port, Guernsey.

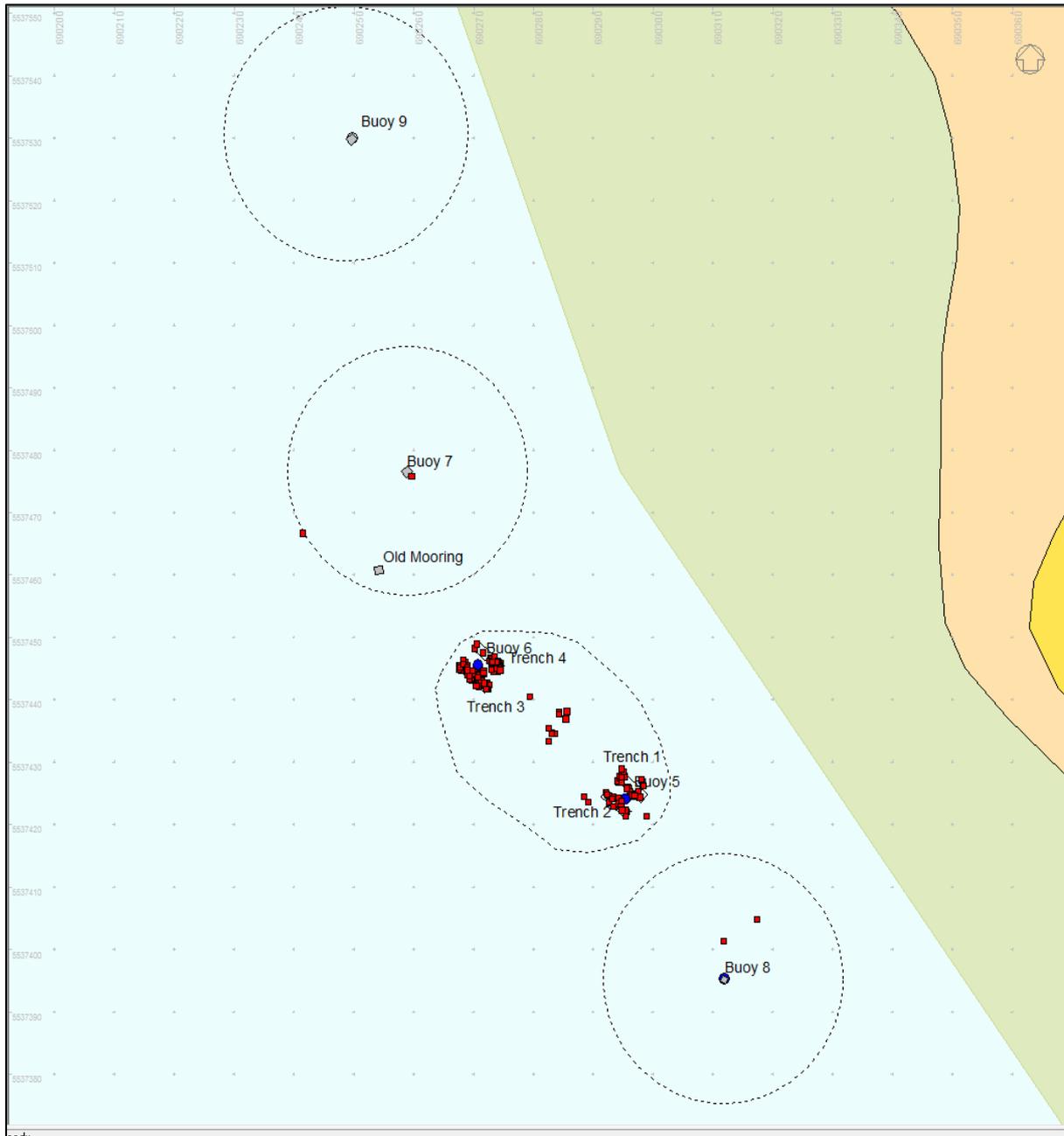


Fig 60 Plan of the areas searched around buoys 5-9 in 2013. The search areas are outlined with dotted lines. Pottery finds are indicated by green squares.

Six fragments of iron were recovered from the seabed surface (F615, F697, F873, F932 [2x] and F981), all found in the vicinity of trench 3. When examined by x-ray these all proved to be iron nails, two of which (F873 and F981) included iron roves. These should be viewed as potential ship fastenings. A more detailed description of the iron concretions appears in the *Conservation and Timber Technology Assessment Report* below.

One of the surface finds (F729) was a copper alloy bullet case, found to the south-east of trench 3 on the seabed surface. This appears to be of the same calibre as the jacketed .45 calibre bullets (F662, F722, F731 and F919) found in trenches 3 and 4. The cartridge case was marked 'WRA Co .45 A C', which probably denotes manufacture by the Winchester Repeating Arms Company of America.

Excavation Summary

No articulated ship structure was found in the excavated trenches. Furthermore, none of the objects recovered could be positively identified as originating from a vessel (there were no items such as sheaves, blocks etc). However a number of iron nails (13) were found, some of them with attached roves. These are likely to have been used as ship fastenings.

The table below (fig 61) summarises the objects recovered during this project. It is clear that the most numerous group of objects recovered was the pottery. A total of 385 sherds of pottery were recovered this year. An initial appraisal of the pottery undertaken by Duncan Brown has shown that the pottery recovered this year is very similar to the pottery recovered in the 2011 survey (Camidge, 2011). In summary, the pottery is predominantly of Saintonge wares with some other French and south-west England wares. The pottery is almost entirely of late 13th century/early 14th century in date. Only about six pieces of post-medieval pottery were present in the collection. Duncan Brown will undertake an analysis of the pottery in collaboration with John Allan, and this is likely to take about six months.

Finds Summary						
	Pottery	Bone	Wood	Iron	Other	TOTAL
Trench 1	26	68	22	4	23	143
Trench 2	27	14	7	0	2	50
Trench 3	119	187	113	13	25	457
Trench 4	57	9	14	3	14	97
Unstratified	156	2	1	6	2	167
TOTAL	385	280	157	26	66	914

Fig 61 Summary of the artefacts recovered in 2013

A significant amount of animal bone was found, and 280 pieces were recovered. An initial appraisal of the bone by Polydora Baker indicates that the most numerous type found are fish bones, mostly vertebrae. No butchery marks were observed on the fish bone. Given the location of the site many of these bones could be derived from natural deaths. A significant proportion of the bone was of lagomorphs (rabbit or hare). Also present were domestic mammals (cattle, sheep/goat and pig). Butchery marks were noted on many of the cattle bones. Also found were bird bones (domestic fowl and seabirds). A formal assessment of the animal bone will be undertaken by Polydora Baker in the new year. For further details see *Initial Appraisal of the Animal Bones* below.

The majority of the wood encountered consisted of small fragments which often resembled chippings or wood working waste (see figs 43 & 57). The presence of tool marks on some of these fragments was noted. A total of 156 fragments of wood were recovered, the majority of which (113) were found in trench 3. Well over half of the wood recovered (89 fragments) exhibited signs of working or tool marks, and 36 of the fragments were identified as oak (see fig 62).

Wood Fragments				
Trench	Context	Number	Oak	Worked
T1	L3	8	5	5
	L4U	14	8	13
T1 Total		22	13	18
T2	L5	7	7	7
T2 Total		7	7	7
T3	L8	28	9	10
	L9	37	6	7
	L10U	48	1	33
T3 Total		113	16	50
T4	L12	1	0	0
	L13U	13	0	13
T4 Total		14	0	13
TOTAL		156	36	89

Fig 62

Table of wood fragments recovered, showing the numbers which were worked (or had evidence of tool marks) and the numbers identified as oak.

The only substantial piece of wood found was the heavily gribbled piece of oak (F625) found in trench 3, and this was only 0.32m long. If there were any wreck remains in the areas excavated, more substantial pieces of wood should have been found. The eight small wood dowel fragments (F697, F773, F793, F799 and F921) recovered are of particular interest as they have been identified as possible bale pins (wood dowels used in the medieval period to fasten wool bales). One of these (F697) has been identified as *Pomoideae* spp. (apple, pear or hawthorn) while the other bale pins were made of *Carylus avellana* L. (hazel). For more details see the wood section of the *Conservation and Timber Technology Assessment Report* below. If these are indeed bale pins they are evidence of trade in wool, one of the most important exports in medieval England.

Other possible medieval objects recovered include the copper alloy buckle (F648), the lead alloy spoon (F920) and the fragments of leather shoe (F923).

The distribution of finds in the four excavated trenches is of some interest. As already noted the number of objects recovered from trench 3 (457) exceeds the number recovered from the other three trenches combined (330). Considering the pottery from trench 3 and the adjacent trench 4, the number of pieces found in trench 3 (119) was more than double the number found in trench 4 (57). Why there should be such a concentration of objects in trench 3 is not clear, and in particular why it should be so different to the adjacent trench 4,

which lay only 2.4m away. One possible explanation for this uneven distribution may lie in the action of the mooring chain on this particular mooring. It is possible that the mooring chain here is tending to sweep objects to the south-west, which would account for the extraordinary number of objects recovered from trench 3. However, this would only tend to redistribute artefacts from the area of trench 4 to the area of trench 3; the total number around mooring buoy 6 would remain fairly constant. With this in mind it is worth comparing the number of objects recovered from around mooring buoy 5 (trenches 1 and 2) at 193 to the total number around buoy 6 which was 554. This difference is significant, perhaps suggesting that the source of this material (if indeed there is a single source) lies considerably closer to mooring buoy 6 than to buoy 5.

Looking at the distribution of the recovered objects within the trenches themselves (figs 25-28 and 46-49), it is also clear that there is a slight concentration of objects towards the north-west in trenches 1 and 2. There was a more pronounced concentration of artefacts towards the south-east in trenches 3 and 4. If there is a single source for this material (in particular the pottery) then it could be expected to lie somewhere between mooring buoys 5 and 6. The searches undertaken in 2011 and 2013 in the areas around the mooring buoys have confirmed that the pottery is concentrated in the area around mooring buoys 5 and 6. Given the much greater number of objects recovered from around buoy 6 it would seem likely that the source lies closer to buoy 6 than to buoy 5.

Discussion

The reason this project was undertaken is the presence of medieval pottery on the seabed in Tresco Channel. The survey of the area undertaken in 2011 by CISMAS and Promare established that the scatter of pottery was confined to a fairly small area. All the pottery located was within a 60m radius of mooring buoy 6 (95% of the pottery was within a 40m radius). This was based on the recovery of 333 sherds of pottery. The work this year has added a further 385 pieces of pot, making a total of 718 recovered to date. The work this year also suggests that the focus of this distribution is situated between mooring buoys 5 and 6, somewhat nearer to buoy 6 than buoy 5. The distance between buoys 5 and 6 is only 33m.

Saintonge pottery has also been recovered from the seabed in the Channel Islands. At St Peter Port in Guernsey, sections of medieval ship structure representing at least five separate vessels have been found. From the seabed around these remains a considerable quantity of pottery has been recovered. This pottery ranges in date from the Roman period to modern times; but the most numerous type of pottery found was medieval wares from Saintonge. 'Of the various medieval wares, the most numerous are large quantities of French pottery from the Saintonge region' (Adams & Black, 2004, p.244). The Saintonge pottery was not stratified – so there is no direct link between the pottery and any of the vessels found. Some of this pottery has been the subject of study (Thomson & Brown, D, 1991). There are clearly some parallels between this find and Tresco Channel. However no vessel parts have been located to date in Tresco Channel and the Saintonge pottery from St Peter Port was part of a larger collection spanning a long period of time whereas that from Tresco is all of a similar date.

The pottery recovered in 2011 has been analysed by John Allan and Duncan Brown. The results of this study showed that 73% of the pottery found was French in origin, the majority of which (60% of the total) was from the Saintonge region. All but a tiny percentage of the pottery has been dated to the late 13th/early 14th century. The presence of English pottery of a similar date, amounting to 14% of the total, is of interest. The fact that this English pottery is from south-west and south-central England is probably also significant. A small number of the sherds (14) collected in 2011 were from the Bristol area and were probably of late 12th century date – about a century earlier than the rest of the pottery. This material is probably indicative of earlier shipping activity in Tresco channel.

Imported French pottery is often seen as a by-cargo of the wine trade 'pottery was generally only a small part of a cargo and was perhaps a commodity which would be packed in among other goods. Large quantities of Saintonge pottery was included with cargoes of wine from south-west France' (Hutchinson, 1998, p.96). And 'As was often the case with ceramics,

Saintonge wares seem to have piggy-backed on cargoes of wine from Gascony' (Adams & Black, 2004, p.244). No evidence for these assertions is offered, but it seems to be a widely held belief amongst writers on medieval shipping.

The large number of sherds originating from Saintonge in France leads to the speculation that these pots arrived in Scilly as part of the wine trade, the obvious candidate for such trade in Scilly being the nearby priory of St Nicholas on Tresco. This may even have been a trade undertaken by the priory on Tresco, as we know that the 'monks of Scilly' owned their own ship in the early 12th century (Orme, 2010). This insight into medieval trade in Scilly is perhaps augmented by the possible bale pins found in this year's excavation. If these are in fact bale pins then we also have evidence of the wool trade on the site. Wool was an important English export 'For a great part of the Middle Ages England was the largest and most important source of fine wool...In the mid-fourteenth century England was exporting about 30,000 sacks of wool a year' (Hutchinson, 1998, p.89). It is tempting to speculate that we are looking at a trade where wine is imported and wool exported from Scilly, possibly even in the same vessel. This was perhaps not unusual as a trading practice 'Wine was shipped to England, Normandy and Flanders with pottery as a regular subsidiary cargo. Ships trading south were laden with wool, grain and metal from the south of England' (Adams & Black, 2004, pp.247-8).

The obvious question to ask is how did such a closely dated group of pottery, much of it French, come to be located in such a tightly-focused scatter in Tresco Channel? The spatial distribution and the fact that most of the pottery is of small temporal span tends to suggest a single event as the origin. Perhaps the most obvious such event is a medieval shipwreck, but other scenarios are possible. This could for instance represent a cargo (or part cargo) of pottery damaged in transit and jettisoned on the mooring in Tresco Channel. Another possibility is that a cargo of pottery was being lightered ashore when the lighter sank or capsized, in which case we have the possibility of a medieval lighter along with the pottery.

It seems likely that any medieval shipping trade undertaken in Tresco Channel would have involved the vessel anchoring in the channel and transferring goods ashore by lighter. 'Large ships anchored off and smaller vessels, called lighters, made the intermediate journeys to the quays' (Hutchinson, 1998, p.111).

The site is located in a depth of water currently about 4m below chart datum (fig 63). In 1300 BCE the mean sea level would have been about 0.55m lower than it is now in Scilly (Johns et al., 2012) . In practice this would have resulted in a depth of water which was between 4.5 and 11 metres for all but exceptional spring tides. The water depth increases to the north-west of the site and decreases to the south-east. There is very little known about the draft of medieval ships, but it seems possible that the site is located at the furthest point into the channel that a ship could anchor. There is some information on the size of vessels

engaged in the medieval wine trade from the Bordeaux wine export accounts ‘they show that already in the 1300s AD Bayone and several English and French ports, could send ships capable of loading 200 tons and sometimes over 300 tons’ (Ransley et al., 2011). This simply gives us a maximum likely capacity for a vessel engaged in the wine trade of the period. The actual ship or ships involved may well have been considerably smaller. Given a maximum capacity of 200 tuns a ship of the period probably had a draft of less than 4m. Having established that a suitable ship could physically anchor at the site, is this the most likely site of anchorage? It has been suggested that the site is situated too close to the shore (about 70m) to make a comfortable anchorage. It would also perhaps seem more likely that ships would anchor further to the north-west where the water is deeper. It is impossible to say with any certainty whether this is a likely medieval anchorage. Be that as it may, this is the where the pottery is located whether or not it is the site of the anchorage.

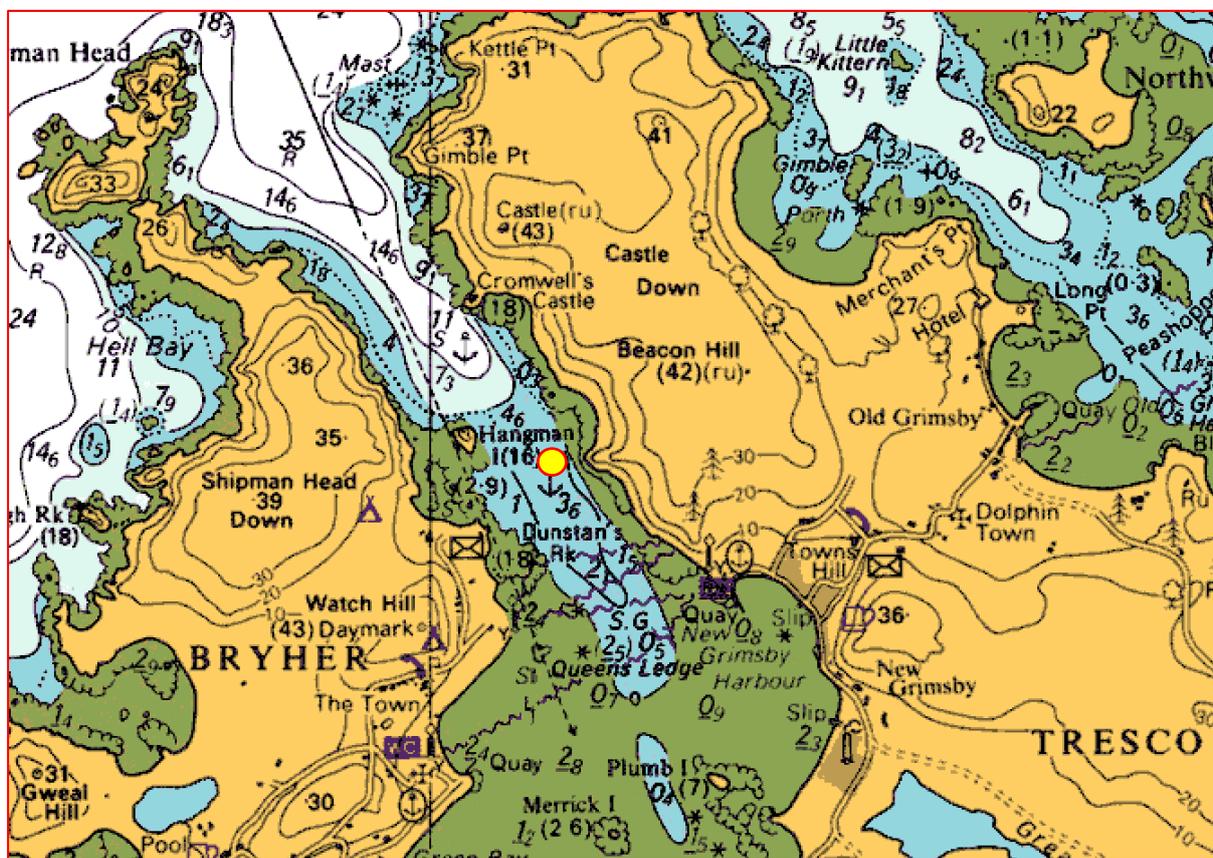


Fig 63 The location of the site in Treasco Channel (yellow dot); water depths are in metres below chart datum.

So far very little which could be indicative of a wrecked vessel has been recovered. One possible exception is the iron nails, some with roves, which were found in and around trench 3. These could well have been ship fastenings, as this type of fastening is used in clinker planking common in the 13th century.

The absence of substantial timbers could be viewed as evidence that the deposition of the medieval pottery and other finds was not the result of a shipwreck. However, the relatively shallow depth of water and the sheltered nature of the site would mean that any wreck would have been heavily salvaged. This is especially true given the relative poverty of the Scillies at that time. One possible source of the numerous wood fragments recovered in the excavation could have been the cutting up of any wrecked vessel.

The condition of the objects recovered from the excavation suggests that - should there be any vessel remains - they are likely to survive well in the sediments of Tresco Channel. The conservation assessment (see below) states that iron objects are completely corroded, but that organic material has been fairly well preserved. The wood survives well, while the fibres recovered vary from fair to good. The small amount of leather recovered was generally in poor condition.

Other than the pottery, the largest group of objects recovered was the animal bone (280 fragments). Unlike the pottery we cannot be sure when the bone was deposited on the seabed or how it got there. Indeed many of the small fish bones could be from the natural death of fish or be discarded material from fishing vessels, both historic and recent. Even animal bone with obvious signs of butchery could either originate from ship's stores or be discarded from the shore – given the close proximity of the island of Tresco; the shore is only about 70m from the site.

Other than the wooden bale pins found on site, the number of recovered medieval objects is fairly small. Notable among them are the fragments of a leather turn shoe, a lead alloy spoon and buckle which are indicative of activity on or near the site in the medieval period.

A plaque on the shore of Tresco, not far from the site (fig 64), commemorates the use of Tresco Channel as a base by the Special Operations Executive (SOE) in 1942-3. They apparently used vessels disguised as French fishing boats to operate off the coast of Brittany. The .45 calibre bullets and cartridge case found on the site may well originate from the SOE activities in Tresco Channel.



Fig 64

A plaque located on the shore of Tresco, not far from the site, commemorating the use of New Gimsby Sound/Tresco Channel by the SOE in 1942-3.

Finally we should turn our attention to what can be done to resolve the outstanding enigma of how this large collection of French pottery came to be present in Tresco Channel. We have established that the distribution of pottery and other objects removed indicates that the centre of this distribution lies between mooring buoys 5 and 6, and probably somewhat nearer to buoy 6 than buoy 5. The distance between mooring buoys 5 and 6 is only 33m so one obvious strategy would be to excavate a series of small test pits along the line between the buoys. Five, one-metre square test pits along this line would cover the distance between the buoys at a spacing of just under 5m. This could establish exactly where the centre of the distribution was and determine whether any remains other than pottery exist.

Conservation and Timber Technology Assessment Report by Ian Panter

For: Kevin Camidge

By: Ian Panter (Principal Conservator) and Steve Allen (Timber Technologist).

16th December 2013

York Archaeological Trust Conservation Report Number 2013/59

Introduction

This report aims to meet the requirements of MAP2 (English Heritage, 1991), MoRPHE (English Heritage, 2006) and the IfA Standard and Guidance for the Collection, Documentation, Conservation and Research of Archaeological Materials (IfA, 2008) to produce a stable site archive.

An initial assessment was conducted at the dive HQ on St Martin's, Isles of Scilly during October 2013 where a decision was taken regarding artefacts to be sent to York for assessment, and those to be reburied on site. The items going to York were re-packed into two re-sealable polythene bags with sufficient water to prevent desiccation during transit. Where necessary, fragile items were afforded additional protection using thin plastic sheet and wrapped in cling-film.

The assessment in York has involved X-radiography and an assessment of the condition, stability, technology and conservation potential of the finds. The condition of the various classes of material is summarised and indicators of unusual preservation noted, where applicable. The potential of the assemblage for further analysis and research is noted, and recommendations made for further investigative conservation and long term storage.

Finds Quantification

Material	Numbers
Iron concretions	18
Copper alloy	1
Lead alloy	2
Wood	10
Leather	5
Glass	1
Other	4

Procedures

Ten concretions, one copper alloy and two lead alloy objects were X-rayed using standard Y.A.T. procedures and equipment. Four plates were used, and each plate was given a reference number in the YAT conservation laboratory series (X8319 - X8322). The concretions were exposed to 125Kv for 90 seconds, whilst the copper alloy and lead alloy objects 120Kv for 15 seconds. The X-ray number was written on each small find bag. Each image on the radiograph was labelled with its small find number. The plates were packaged in archival paper pockets.

All finds were examined under a binocular microscope at X20 magnification. The material identifications were checked and observations made about the condition and stability of the finds, and recorded below. An assessment of each find is presented in the tables in the Appendix.

Species identification of the wood was done via a transmitted light microscope at x40, x100 and x200 magnification as appropriate. All species identifications follow Schweingruber (Schweingruber, 1982).

The leather was examined at X10 magnification and species identified with reference to published standards (Leather Conservation Centre, 1981)

Condition Assessment Summary

Metals:

Concretions

The X-ray images suggest that all of the iron objects are completely corroded with no metallic iron surviving, and each object survives purely as a void within its concretion. The concretions themselves are very robust and intact. One concretion, F806, is a possible knife handle constructed from non-ferrous fittings, and no survival of any iron.

Copper alloy

The one copper alloy artefact, a buckle, is very well preserved although missing its four glass/stone sets. The patinated surface is typical of a copper alloy from an anoxic marine environment.

Lead Alloy

The two lead alloy objects appear stable, although the spoon is covered with a thin ?carbonate crust and corrosion-filled pustules.

Inorganics:

Glass

The one vessel fragment is poorly preserved and unstable, with the surface of the glass exhibiting the typical iridescent deteriorated layers which are spalling away from the body of the glass.

Organics:

Wood

The material is waterlogged but appears to be in good condition with little evidence for wear or abrasion from the burial environment or of damage suffered during recovery.

Leather

All pieces are waterlogged but in a poor condition. The leather has become brittle and disintegrates readily when handled. The shoe upper fragment exhibits delamination between the grain and flesh surfaces.

Fibres

Preservation of the fibrous material varies from fair to good.

Statement of Potential

Metals

The style (the four glass/stone sets, and the thin central bar) of the copper alloy buckle suggests a possible 15th or 16th Century date, although an earlier date cannot be ruled out without further research into earlier buckles. Further work on the lead alloy spoon may also provide a tighter date range too.

The majority of the concretions are of nails/fasteners, several with square/lozenge-shaped roves attached. One item of interest, F806, preserves the non-ferrous handle of a possible knife or tool. The iron has corroded away entirely, leaving a wedge-shaped void. However such an item is not currently considered to be medieval, and likely to be later in date.

Wood

The assemblage consists of small material likely to have been carried aboard a vessel rather than forming part of the structure. It is not possible to further define functions for the fragments of board and bark. The two rods may have formed part of a light structure such as a cage and the peg likewise is part of a composite object. The bale pins are roughly cut slivers of heartwood used to fasten coarse sacking type material. On land they are usually associated with the transportation or transshipment of bales of raw wool. On a seagoing

vessel, there are however any number of materials which might be wrapped up in sacks, including ships stores and indeed other cargoes.

All of the wood species are native to north-west Europe and might have been obtained at any landfall. As such they do not cast any light on the origins of the ship or its cargo.

There is little intrinsic dating evidence from this assemblage. The working marks are undiagnostic, other than indicating the use of metal tools. In the British Isles, bale pins are typically found in waterfront or quayside related contexts of medieval or early post-medieval date. There is no evidence from this assemblage that would dispute the date range suggested by the ceramics from the site.

Leather

The two shoe fragments are typical of a turnshoe construction, where the shoe is made "inside out" before being turned the correct way before all stitches are tightened. The fragment of shoe upper is also of a type associated with turnshoes, although it is not known whether this is a one piece or multi-piece upper due to the lack of survival. The shape of the sole can be diagnostic and assist with dating. However, as most of the sole is missing, a broad date range only of between the 14th and 16th centuries can be assigned to this item.

Recommendations

Given the paucity of survival of shipwreck finds from the medieval period (and especially if the wreck is 13th or 14th century) the following items warrant conservation to ensure their long-term preservation:

- F648 - copper alloy buckle
- F806 - possible handle
- F920 - lead alloy spoon
- F555 - wood peg
- F564 - wood rod
- F697 - wood bale pin
- F773 - wood bale pin
- F783A - wood board, possibly part of a container
- F783B - Fibre/straw component of container
- F793 - wood bale pin
- F799 - wood bale pin
- F844 - glass vessel sherd
- F921 - wood bale pin
- F923 - leather shoe fragments
- F924 - wood rod

All other items can be discarded or reburied on the site if further excavations are planned.

Those items requiring conservation will undergo an initial desalination treatment using deionised and tap water to reduce the level of harmful chlorides. The wood artefacts will undergo consolidation with PEG waxes and the leather will be consolidated using glycerol pre-treatment. Both wood and leather will be freeze-dried to dry them. The metal artefacts will be solvent dried and mechanically cleaned, whilst the glass sherd will also undergo solvent drying and consolidation with Paraloid B72, an acrylic co-polymer.

Resource Requirements

The conservation work will be carried out by Kate Kenward (KK) and supervised by Ian Panter (IP)

Labour	
KK 14hrs @ £20/hr	£280.00
IP 2hrs @ £35/hr	£70.00
Materials	£75.00
Freeze-drier costs	<u>£75.00</u>
TOTAL	£500

Disclaimer

This Report has been prepared solely for the person/party which commissioned it and for the specifically titled project or named part thereof referred to in the Report. The Report should not be relied upon or used for any other project by the commissioning person/party without first obtaining independent verification as to its suitability for such other project, and obtaining the prior written approval of York Archaeological Trust for Excavation and Research Limited ("YAT"). YAT accepts no responsibility or liability for the consequences of this Report being relied upon or used for any purpose other than the purpose for which it was specifically commissioned. Nobody is entitled to rely upon this Report other than the person/party which commissioned it. YAT accepts no responsibility or liability for any use of or reliance upon this Report by anybody other than the commissioning person/party.

Assessment Tables

1. Concretions

X-ray No	Recorded Find Number	Assessment
8319	F615	X-ray shows large flat headed nail, incomplete, no metal surviving, totally voided. Minimum length, from X-ray is 100mm Recommendation: no further work required. Discard, or rebury on site
8319	F688	X-ray reveals incomplete nail with dome-shaped head (or attached rove). Totally voided, no metal surviving. Minimum length, from X-ray is 50mm. Recommendation: no further work required. Discard, or rebury on site.
8319	F822	X-ray suggests a very mineralized nail with square rove attached, maximum length of rove, from the X-ray, is 30mm. Totally voided, no metal survives. Recommendation: no further work required, discard or rebury on site.
8319	F981	X-ray shows incomplete nail with square rove. Minimum length of shank, from X-ray is 60mm, maximum length of rove c. 30mm. Recommendation: no further work required. Discard, or rebury on site.
8320	F619	X-ray reveals an amorphous undiagnostic object, possibly sheet fragment. Totally voided no metal survives. Recommendation: no further work required. Discard, or rebury on site.
8320	F931	X-ray image very feint. This is probably a clinker. Recommendation: no further work required. Discard, or rebury on site.
8320	F932	Two incomplete nails, both flat-headed. Minimum length, from X-ray is 66mm. Totally voided, no metal survives. Recommendation: no further work required. Discard, or rebury on site.
8321	F561	X-ray reveals a nail shank, incomplete, head and tip missing. Totally voided, no metal survives. Recommendation: no further work required. Discard, or rebury on site.
8321	F597	X-ray reveals a rectangular void, no metal surviving. Possible shank of a nail./fastener. Recommendation: no further work required. Discard, or rebury on site
8321	F671	X-ray shows flat-head nail, incomplete. Minimum length, from X-ray is 45mm. Totally voided, no metal remaining. Recommendation: no further work required. Discard or rebury on site.
8321	F705	X-ray reveals small nail with square rove attached. Minimum length, from X-ray is 25mm. Totally voided, no metal remaining. Recommendation: no further work required. Discard, or rebury on site.
8321	F716	Two fragment, both voids, no metal survives. Undiagnostic.

X-ray No	Recorded Find Number	Assessment
		Recommendation: no further work required. Discard, or rebury on site.
8321	F780	X-ray suggests an incomplete shank, totally voided with no metal surviving. There is a small area where the X-ray image is more intense suggesting a non-ferrous component, or an intrusion in the concretion. Recommendation: Re-Xray from another plane to assess significance of non-ferrous metal.
8321	F806	Concretion has a wedge-shaped void, suggesting a knife blade which has totally corroded. The X-ray shows bright metal fittings attached to a voided iron shank. Modern/Post-Medieval? Recommendation: investigate further
8321	F821	X-ray suggests clinker. Recommendation: no further work required. Discard, or rebury on site.
8321	F838	X-ray suggests incomplete nail/fastener, head and tip missing. Totally voided, no metal survives. Recommendation: no further work required. Discard, or rebury on site.
8321	F873	X-ray shows complete nail with square rove attached. Distance between nail head and rove, from X-ray, is 30mm. Totally voided, no metal survives. Recommendation: no further work required. Discard, or rebury on site.
8321	F886	X-ray reveals an amorphous undiagnostic object. Recommendation: no further work required. Discard, or rebury on site.

2. Metal Artefacts

X-ray No	Recorded Find Number	Assessment
8322	F648	Complete copper alloy buckle, good condition, buckle pin still rotates. Overall gold/brown patina, with patches of green corrosion occurring within bases of the four empty settings (at each corner) . These may have contained stone or glass sets, no longer present. X-ray shows a sound core of metal surviving. Stylistically dated to 15th and 16th centuries. Recommendation: conserve for long-storage/display
8322	F795	Unidentified lead alloy object, with two perforations, function unknown. Good condition. Has a dull grey metallic lead appearance, with tiny spots of white carbonate corrosion developing. Probably modern. Recommendation: no further work required. Discard, or rebury on site.
8322	F920	Lead alloy spoon, bowl broken and incomplete. Covered in a dull grey layer and corrosion pustules. X-ray reveals a hairline fracture across the bowl, and confirms a substantial lead component in the alloy. Recommendation: conserve for long-storage/display

3. Wood

Recorded Find no.	Assessment	Species Id.
F533	Nine non refitting fragments of bark. No working marks. Largest piece 23 l, 23 w, 02 th. Recommendation: no further work required. Discard, or rebury on site.	<i>Not identifiable to species</i>
F555	Small peg cut from roundwood, worked to a cylindrical cross section with tip cut neatly square to axis of object and butt end more roughly hewn, in two refitting sections, some surface damage. 102 l, 22 w, 19 th. Recommendation: conserve for long-term storage/display	<i>Pomoideae spp.</i>
F564	End of rod, cut from halved roundwood. Single hewn facet cut to start chisel tip, other surfaces whittled to form half round cross section. End of tip and butt end broken away and missing. 63 l, 21 w, 14 th. Recommendation: conserve for long-term storage/display	<i>Salix spp.</i>
F697	Bale pin, whittled to cylindrical cross section, tapering towards tip. Both ends broken away and missing. In two refitting sections. 98 l, 08 w, 07 th. Recommendation: conserve for long-term storage/display	<i>Pomoideae spp.</i>
F773	Bale pin, whittled to cylindrical cross section, tapering towards tip. End of tip broken away and missing. In two refitting sections. 103 l, 08 w, 06 th. Recommendation: conserve for long-term storage/display	<i>Corylus avellana L.</i>
F783A	Fragment of tangentially faced board. No working marks or distinguishing features. Both ends and both edges broken away and missing. 54 l, 58 w, 08 th. Recommendation: conserve for long-term storage/display	<i>Quercus spp.</i>
F793	Bale pin, whittled to cylindrical cross section, tapering towards tip. Both ends broken away and missing. In three refitting sections. 87 l, 07 w, 06 th. Recommendation: conserve for long-term storage/display	<i>Corylus avellana L.</i>
F799	Bale pin, whittled to cylindrical cross section, tapering towards tip. Butt end broken away and missing. In four refitting sections. 234 l, 09 w, 07 th. Recommendation: conserve for long-term storage/display	<i>Corylus avellana L.</i>
F921	Bale pin, whittled to cylindrical cross section, tapering towards tip. Both ends broken away and missing. In two refitting sections. 68 l, 07 w, 06 th. Recommendation: conserve for long-term storage/display	<i>Corylus avellana L.</i>
F924	End of rod, cut from roundwood. Two opposing hewn facets cut to create bifaced tip, other surfaces whittled to form cylindrical cross section. Butt end roughly hewn to length. 62 l, 17 w, 14 th. Recommendation: conserve for long-term storage/display	<i>Salix spp.</i>

Botanical identification

Corylus avellana L.

Pomoideae spp.

Salix spp.

Common English name

Hazel.

Apples, Pears, Hawthorn, exact species not determinable. *Quercus spp.*

Oaks, exact species not determinable.

Willow, exact species not determinable.

4. Leather

Recorded Find no.	Assessment	Species Id.
F558	Several fragments of undiagnostic leather. Largest piece has cut edge, all others torn. Grain surface survives, but very eroded. Very poor condition. Recommendation: no further work required. Discard, or rebury on site.	Cattle
F560B	Leather fragments, all torn edges, undiagnostic. Grain surface completely eroded , not possible to identify animal species. Very poor condition Recommendation: no further work required. Discard, or rebury on site.	Not possible
F719B	Leather fragments, all torn edges, undiagnostic. Grain surface completely eroded , not possible to identify animal species. Very poor condition Recommendation: no further work required. Discard, or rebury on site.	Not possible
F923	One shoe sole fragment and one shoe upper fragment, poor condition, grain surface eroded, hence not possible to identify animal species. Sole has edge/flesh seam, and oval shaped toe. Upper fragment has traces of an edge./flesh side seam and remains of a whipped seam for a possible top band. Leather is delaminating and brittle. Typical turn-shoe construction. Recommendation: conserve for long-term storage/display	Not possible
F924A	Two fragments of poorly preserved leather, all torn edges, no grain surface surviving. Undiagnostic. Recommendation: no further work required. Discard, or rebury on site.	Not possible

5. Other materials

Recorded Find no.	Assessment
559	Sediment sample containing possible fibres. Several poorly preserved fibres were recovered following sieving and referred to environmental archaeologist for identification Recommendation: no further work required, discard once identified
621	Two lumps of fibrous material, possibly natural accumulation. Referred to environmental archaeologist for identification. Recommendation: no further work required, discard if natural
768	Tiny strands of fibres. Referred to environmental archaeologist for identification Recommendation: no further work required, discard
783b	Fibres and ?straw from a possible container. Referred to environmental archaeologist for identification Recommendation: conserve for long-term storage.
844	Sherd of vessel glass, poor condition, opaque with a weathered surface which is spalling away from the body. Recommendation: conserve for long-term storage

Geochemical Assessment of Sediment Samples by Ian Panter

Ian Panter (Principal Conservator)

16th December 2013

York Archaeological Trust Conservation Report Number 2013/60

Methodology

Four sediment samples, of approximately 500g, were collected from two trenches to assess the geochemical characteristics of the seabed. Each sample was double bagged and stored in cool and dark conditions before despatch to Derwentside Environmental Testing Services (UKAS Accredited, the certificate of analysis is included in the Appendix below).

The redox sensitive chemical species and other parameters measured were:

- Moisture Content
- Loss on Ignition
- Sulphide
- Total Sulphate
- Total Sulphur
- Ammoniacal Nitrogen
- pH
- Phosphate
- Carbonate

Results

			Lab No.	567917	567918	567919	567920
			Sample ID	603	609	915	626
			Depth				
			Sample Ref				
			Sample Type				
			Sampling Date	11/10/2013	11/10/2013	11/10/2013	11/10/2013
			Sampling Time				
Test	Units	DETSxx	LOD				
Moisture Content	%	DETS 046*	0.1	40	42	40	48
Carbonate (as CO ₂)	%	DETS 005*	1	24	26	27	32
Loss on ignition	%	DETSC 2003#	0.01	2.7	2.9	2.7	4.7
Ammoniacal Nitrogen as N	mg/kg	DETSC 2119#	0.5	5.6	6.7	8.0	5.0
Sulphide	mg/kg	DETSC 2024#	10	30	28	40	28
Total Sulphate as SO ₄	%	DETSC 2321#	0.01	0.29	0.35	0.33	0.42
Total Sulphur as S	%	DETSC 2320	0.01	0.22	0.24	0.23	0.30
pH		DETSC 2008#		8.7	8.7	8.8	8.8
Ortho Phosphate as P	mg/kg	DETSC 2205*	0.1	5.1	1.6	0.78	0.30

Conclusions

These sediments can be characterised as being slightly alkaline (pH ranges between 8.7 and 8.8), low in organic matter (the loss in ignition values were between 2.7% and 4.7%) and broadly reducing, defined by the preponderance of sulphur and low concentrations of ammoniacal nitrogen. Phosphate values are low whilst carbonate concentrations are moderate (between 24% and 32%), values of which are to be anticipated in a marine context.

Within the deposits sulphur exists in both its oxidised (sulphate) and reduced (sulphide) states, with a greater concentration of sulphate to sulphide. This means that either the sediment samples have undergone oxidation between the time of sampling and processing at the laboratory (resulting in the conversion of sulphide to sulphate) or that the deposits are dynamic due to the ingress of oxygenated seawater producing less reducing conditions. The level of preservation of the artefactual material suggests reducing conditions dominate for much of the time, although some of the wood debris recovered (and now reburied) was poorly preserved. However, the patina on the copper alloy buckle (F648), and its lack of active corrosion, coupled with the high degree of preservation of the wooden bale pins implies a highly reducing environment.

Further conclusions about the environmental conditions cannot be drawn without the benefit of long-term in situ monitoring. However, this snapshot suggests conditions are conducive to the preservation of both artefacts and ship's structures, if present.

Disclaimer

This Report has been prepared solely for the person/party which commissioned it and for the specifically titled project or named part thereof referred to in the Report. The Report should not be relied upon or used for any other project by the commissioning person/party without first obtaining independent verification as to its suitability for such other project, and obtaining the prior written approval of York Archaeological Trust for Excavation and Research Limited ("YAT"). YAT accepts no responsibility or liability for the consequences of this Report being relied upon or used for any purpose other than the purpose for which it was specifically commissioned. Nobody is entitled to rely upon this Report other than the person/party which commissioned it. YAT accepts no responsibility or liability for any use of or reliance upon this Report by anybody other than the commissioning person/party.

Initial Appraisal of the Animal Bones by Polydora Baker

An assemblage of c. 280 animal bones was recovered during the Tresco excavations. Preservation varies from poor to good, with many specimens showing erosion of the cortical bone probably due to being rolled on the seabed or moved within the sediment. A few bones are associated (bone shafts and epiphyses), indicating that they were not heavily disturbed once deposited; these occur in contexts L3 (F535) and L10 (F756, F762)

The assemblage includes c.183 identifiable specimens (NISP), most of which are from fish (NISP 81), followed by lagomorphs (rabbit or hare, NISP c. 35 bones), some of which are most similar to rabbit in size. The fish bones are primarily vertebrae of large species, but cranial elements are present also, which may indicate that the fish bones derive from natural death assemblages or were caught and consumed locally (rather than deriving from preserved fish). No butchery marks have been observed on the fish bones. In one context (F742, L9), a few bones of a small/medium size fish have a different, fresher appearance to those of the large fish remains, perhaps indicating a different source.

Bones/teeth of domestic mammals include 25 cattle, 16 sheep or goat and 14 pig remains. Some of the cattle and sheep/goat bones are from very small types. Ten bird bones were recovered including medium galliformes, probably domestic fowl and seabirds. Other species include a possible cat size animal and a shed and worked antler of red deer (based on surface morphology and size). The notable aspects of the assemblage include the relative abundance of distal radii of cattle, including subadult bones, and lagomorph femurs (8). Butchery marks were noted on many cattle bones, large mammal vertebrae and ribs and one rabbit jaw.

A formal assessment will be undertaken of the animal bones, in order to determine the information potential of the remains, and whether they can inform on their origin, for example cargo from a shipwreck, local food/butchery waste, or natural death assemblages (lagomorphs, fish and possible seabirds). Numbers of identifiable, ageable and measurable specimens, and preservation (including butchery traces and technology) will be reported by context, and recommendations will be made for further analysis if merited. The assessment will require 2 days.

Samples

Gill Campbell examined the washovers of all samples. Some of these included small fragments of charcoal, burnt herbaceous stems, and unburnt bracken, all of which may have been washed in. No bones were observed in the washovers. Examination of the residues is pending.

DVD Contents

Data collection forms

- Context sheets

- Finds recording sheets

Drawings

- Site plans

- Section drawings

Finds

- Finds photographs

- Finds record

- Conservation notes

Photographs

- Finds processing

- General underwater

- Trench 1

- Trench 2

- Trench 3

- Trench 4

Report

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