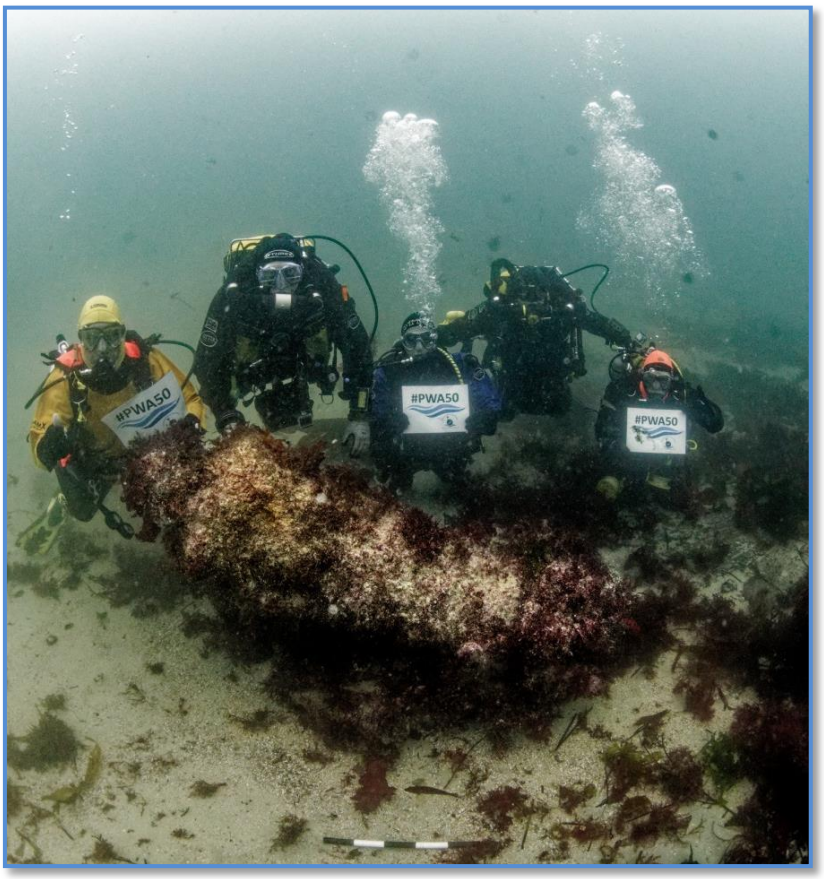
HMS Colossus

Recording Project 2023



Project Report

CISMAS

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Andrew Earle & Nick Sodergren

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The committee of CISMAS, Sharon Austin, Brendon Rowe and Nick Sodergren have given enormous support to this project for which I am extremely grateful.

A number of organisations have given valuable assistance to the project. Ambient Pressure Diving donated consumables for use in the AP rebreathers used by some members of the team. Weezle provided discounted under suits to some members of the dive team and Otter Watersports provided discounted drysuits for several of them; a dry diver is a happy diver.

Historic England

Weezle

Weezle Undersuits

Ambient Pressure Diving

OTTER WATERSPORTS

Otter Watersports

The Team

Sharon Austin

Kevin Camidge

Jezz Davies

Andrew Earle

Bren Rowe

Nick Sodergren

Izzy Allsop
Boat Skipper

Contents

Cover Photograph: CISMAS divers pose by Gun 5 as part of the PWA 50th anniversary.

Colossus Recording Project 2023

Project Summary

In 2022 CISMAS discovered a scatter of newly exposed wreck material on the seabed to the north of the site. The main object of this 2023 project, to record and accurately position these items, was successfully achieved and the records have all been added to the electronic site plan. The field work took place 3-8 September 2023, although one day (4 September) was lost through poor weather conditions which prevented diving. A number of additional tasks were also undertaken including inspection of the dive trail, measuring the site sediment levels and investigation of the area where Roland Morris recovered 30,000 sherds of ancient Greek pottery in the 1970s. Finally a 360 degree virtual reality video was made of parts of the underwater dive trail (in collaboration with MSDS Marine as part of HE9134).

Dead archaeology is the driest dust that blows (Wheeler, 1956)

Background

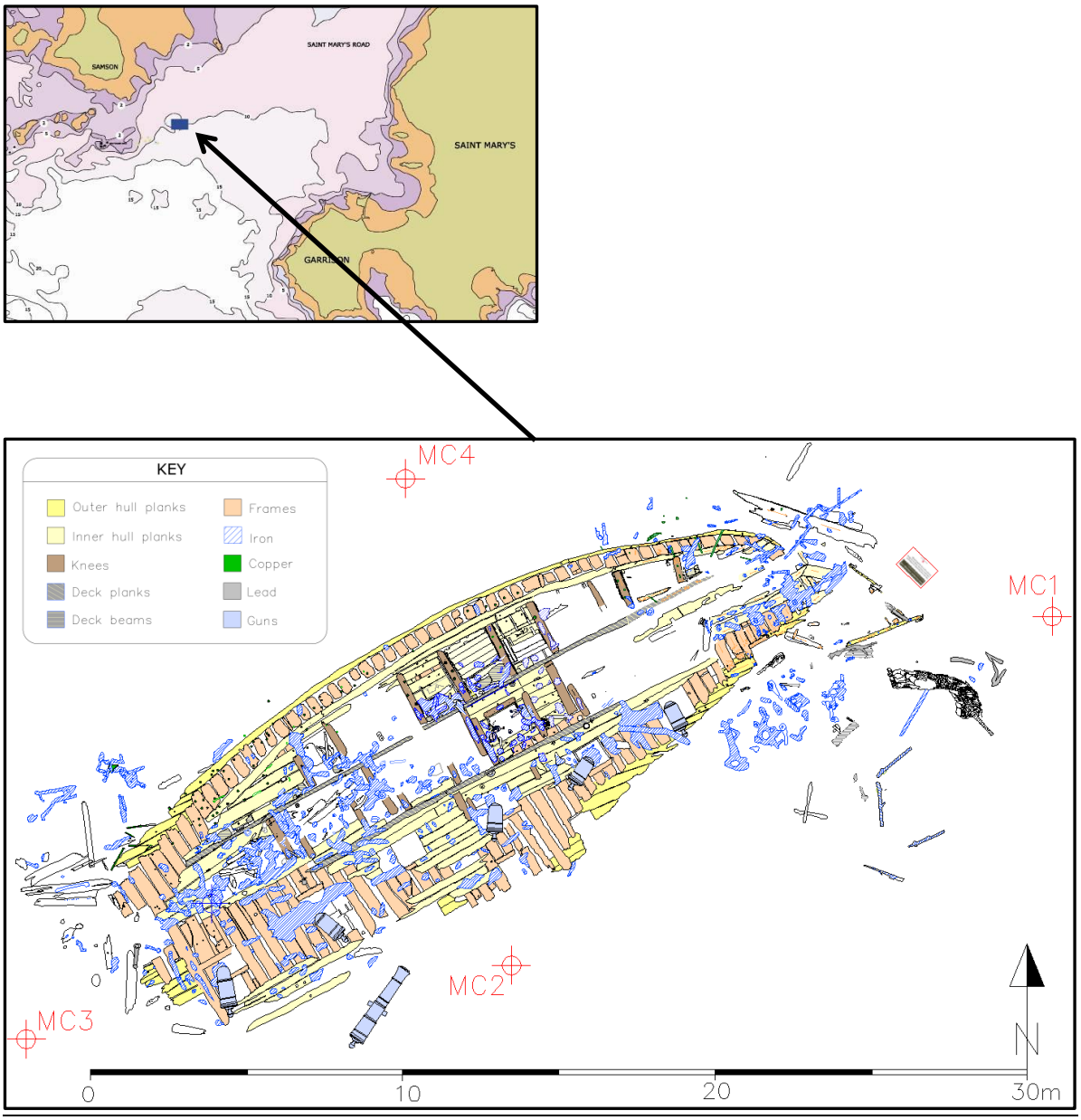


Fig 1
The stern of *Colossus*. The inset shows the location of the wreck in St Mary's Roads, Scilly.

The Ship

Length (gun deck)	172’ 3” (52.5m)	Guns	28 x 32lb gun deck
Length (keel)	140’ 1” (42.7m)		28 x 18lb upper deck
Breadth	48’ 0” (14.6m)		14 x 9lb quarterdeck
Tonnage	1717 tons		4 x 9lb forecastle
Draught (hold)	20’ 9½” (6.3m)	Carronades	6 x 18lb poop deck
Draught (aft)	23’ 2” (7.1m)		2 x 32lb forecastle
Cost	£40,561		
Ordered	13th December 1781	Ballast	110 tons of iron
Laid down	October 1782		250 tons of shingle
Due date	February 1786		
Launched	4th April 1787	Crew	640 complement
			562 actual
Builder	William Cleverly	Wrecked	12th December 1798

HMS *Colossus* was a 74-gun warship built in 1787 and wrecked eleven years later on the Isles of Scilly. She was the first warship to bear the name; five others were built over the years culminating in an aircraft carrier launched in 1943.

In December 1798 *Colossus* was on her way home to England with wounded from the Battle of the Nile and with cargo, including part of Sir William Hamilton’s second collection of Greek pottery

Loss

Colossus reached Scilly in December 1798 in charge of a convoy of merchant vessels. The ship was at anchor in St Mary’s Roads sheltering from a storm when the anchor cable parted and she was driven onto shallow ground, losing her rudder and sustaining progressively worsening damage until she foundered with only the poop and quarterdeck above water. All but one of the 595 souls aboard (562 crew) were taken off safely in small boats. The ship soon turned onto its beam ends and began to break up, a process hastened the following month when the crew of HMS *Fearless* were employed *‘breaking up the wreck’*.

The Site

The wreck of HMS *Colossus* lies to the south of Samson in the Isles of Scilly. To date two main areas of wreckage have been identified, the bow site and the stern site. In 1975 part of the wreck (probably mostly the bow) was designated under the Protection of Wrecks Act. This designation was revoked in 1984. The current site, the stern, was designated in 2001, and is located at Latitude 49˚ 55’.471N, Longitude 006˚ 20’.505W (260154.906E 5535593.077N UTM zone 30, WGS84). The designated area was extended in August 2017 and is now defined by the following co-ordinates:

N: 49.92688286, -6.34111824 E: 49.92371411, -6.33617442 S: 49.91861193, -6.34401542 W: 49.92178068, -6.34895924

Previous work

Salvage work took place on *Colossus* from the time of her loss until the early part of last century. Work included Braithwaite and Tonkin 1803-1806, and the Dean Brothers in the 1830s.

Roland Morris, a marine salvor and proprietor of the Penzance Maritime Museum, began searching for the wreck of *Colossus* in 1967 using a small team of divers. In August 1974 they located material relating to *Colossus*. The site was designated in 1975 under the Protection of Wrecks Act 1973. A large quantity of pottery, remains of Hamilton's second collection, was recovered and deposited in the British Museum – where at least one of the reconstructed pots is now on public display. Once Morris' team had finished their work, the site was de-designated in 1984. The current whereabouts of the other material removed from the site by Morris is for the most part unknown.

Areas of exposed timber and iron guns were discovered by local divers in 2001. This material was some distance to the east of the area worked by Morris and turned out to be part of the stern of *Colossus*. This was designated in July 2001. Late in 2001 the Archaeological Diving Unit (ADU) excavated at the stern of *Colossus* as well as around a piece of carved timber, which turned out to be one of the stern quarter-pieces of the vessel.

In 2002 the quarter-piece, part of the stern decoration of the vessel, was recovered from the site. This was conserved at the Mary Rose Trust, and has now been returned to Scilly for display on Tresco. Later that year a small, limited excavation was undertaken on the site to establish the nature and extent of the structural remains.

Considerable survey and some limited excavation has been carried out on the site by CISMAS in the last twenty years – the reports for this work are all available to download at www.cismas.org.uk

A guided video tour of the site with commentary was recorded in 2017 and can be viewed at: https://youtu.be/FOJ0SUOV7QU

Recording

A number of previously unknown artefacts were observed during inspection of the site in September 2022.[1] The 2022 project had been seriously impacted by poor weather, which prevented diving on all but two of the days available that year and left no time to properly survey and record the objects. This recording and surveying was the primary objective of the 2023 project.

The newly exposed material was all found to the north of the exposed wreckage, an area which had previously been relatively free from recorded wreck material. In order to fix the positions of these artefacts a number of baselines were set out covering the area of newly exposed material. The positions of the baselines were fixed using trilateration from four new control points (F23, PP123, 23A & 23B); these were fixed from existing control points (MC1, MC3 & MC4).

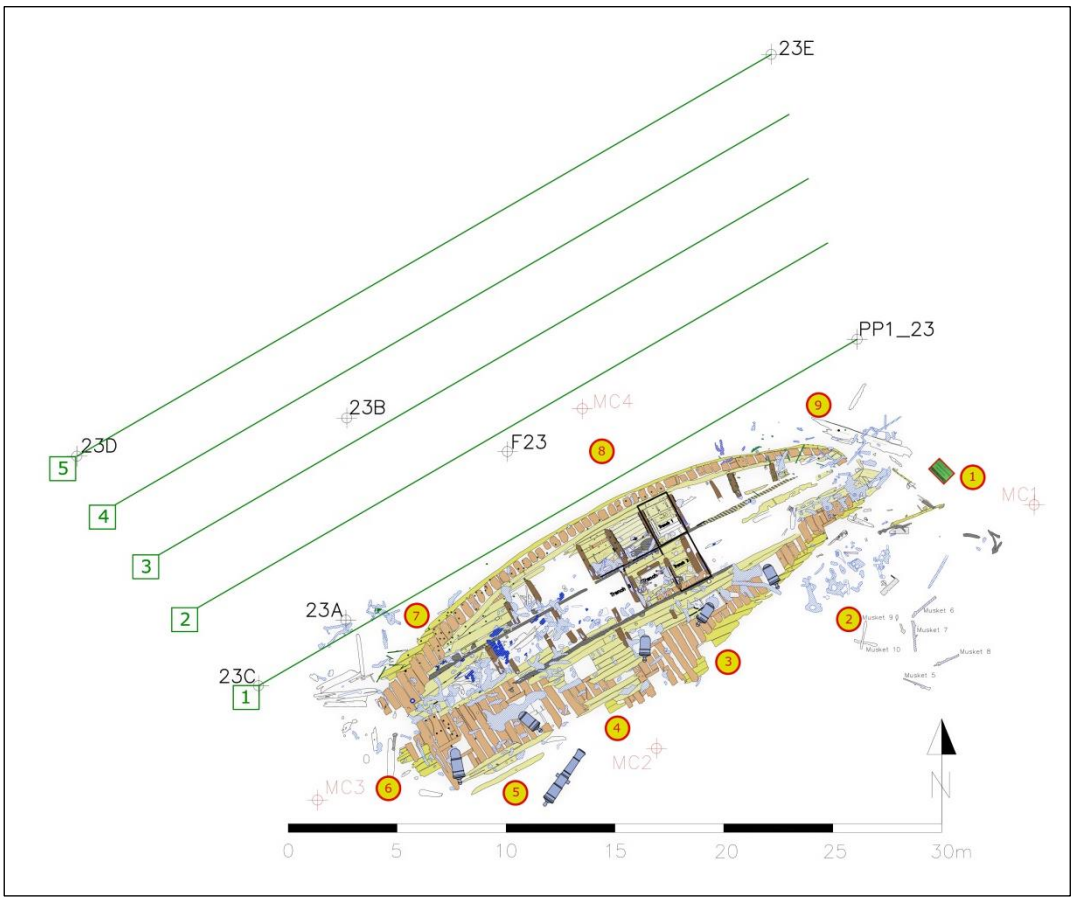


Fig 2. Plan showing the five base lines used to fix the position of the newly exposed wreck material. Base lines 1 and 2 are 4.5m apart, the others are all 3m apart. The yellow circles are the dive trail station markers. PP1_23, F23, 23A, 23B, 23C & 23D are the new control points.

[1] This inspection took place at the end of the *Colossus* Reburial Trial Retrieval project (8401)

The ‘lanes’ between each pair of base lines were carefully searched by a pair of divers, using a combination of visual searching and an underwater metal detector. The metal detector was useful for highlighting small objects lying on the surface but obscured by seaweed. Each object located was flagged with a numbered survey arrow.

A second team followed behind recording the flagged objects. Each object was sketched, measured and photographed. It was then positioned by recording the offset distance from the nearest baseline. This enabled a grid reference to be generated for each object after plotting on the electronic site plan.

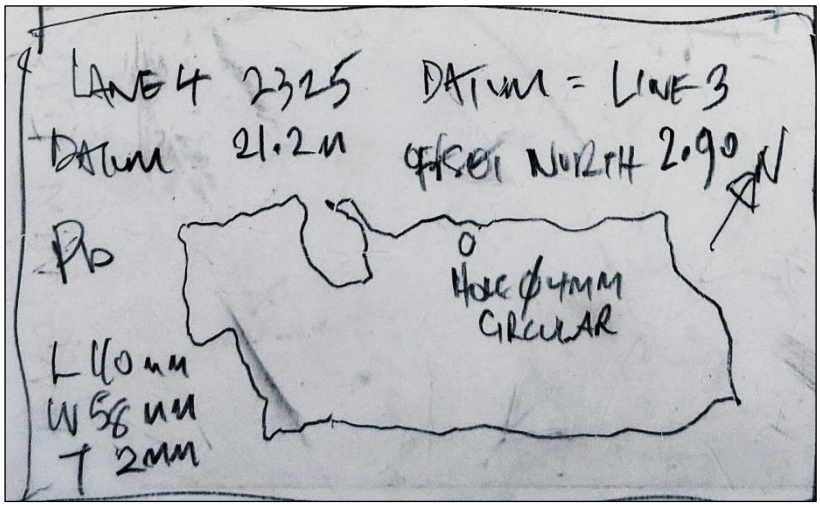


Fig 3. One of the underwater record sheets showing how each object was recorded on site (This record by Nick Sodergren)

What did we find?

In total 33 new items were located and recorded. The detailed record of all the objects can be found in appendix I. Appendix II contains photographs and drawings of each object ordered by context number.

Copper alloy objects (3)

2 dumps/nails (23001 & 23015),

These very similar copper fastenings are like the copper clench-bolts for which they are often mistaken, but have a chisel point on one end. Often used to fasten the ends of planking, they did not pass all the way through the hull timbers. They were driven into pre-drilled holes which had a slightly smaller diameter than the dump/nail. Copper fastenings like these were only used below the water line; above the water wrought iron fastenings which were lighter, stronger and cheaper were used.

1 small handle (23002).

This was probably part of small cabinet or trunk. This item was recovered as it would probably have been dispersed by the action of the sea. It will become part of the small collection of items in the Isles of Scilly museum.

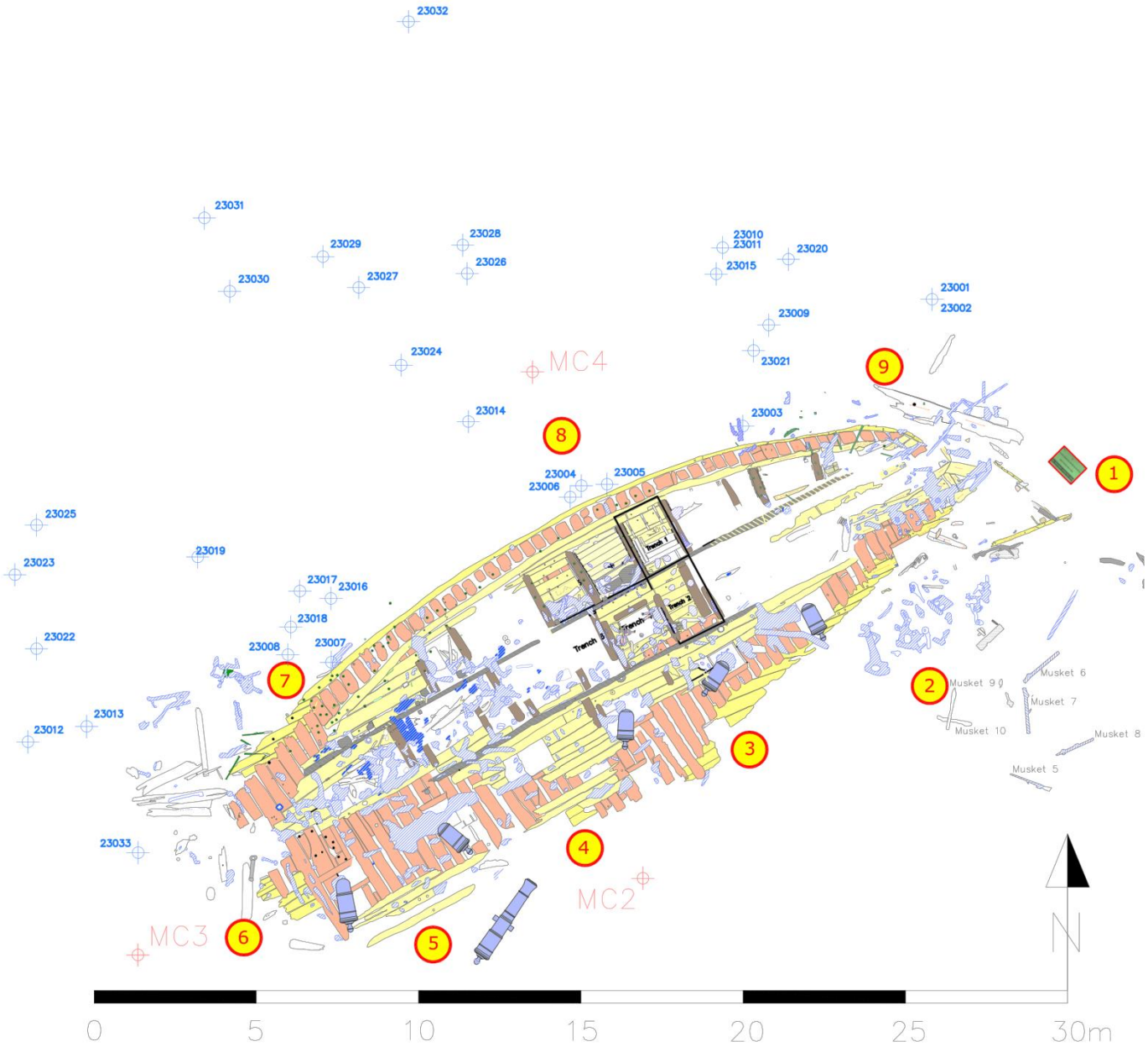


Fig 4
Location of the newly exposed objects to the north of the wreck (five figure numbers shown in blue)

Iron (14)

3 musket barrels (23011, 23016 & 23017)

The three muskets located bring the total found on site so far to 17. It is interesting that the muskets found to date nearly all lie on a line running north-west to south-east across the site.

4 indeterminate objects (23007, 23008, 23010 & 23028)

Once the iron has corroded and become misshapen due to a build-up of corrosion products and incorporated stones and gravel, it is very difficult to identify. This is unfortunate, as there is a great deal of corroded iron lying over much of the site.

2 fastenings (23005, 23019)

These are probably corroded iron bolts, used to fasten the hull timbers together above the waterline. There is a slight possibility that 23019 could be part of a musket barrel

2 ring bolts (23014, 23025)

These fastenings were used to secure ropes to the deck or sides of the ship, most usually as part of the tackle to secure and operate the guns.

2 chain links (23024 & 23027)

These two masses of concreted iron appeared to be composed of chain links. Chain was not common on ships of this period – but one of its uses was in the chain pumps which were used to remove water from the bilges. These would have been situated around the main mast.

1 deadeye band (23013)

These iron straps held the lower deadeyes in place. They were part of the system which tensioned the ropes (shrouds) which supported the masts of the ship. This item was previously recorded by Wessex Archaeology in 2007 (see appendix I)

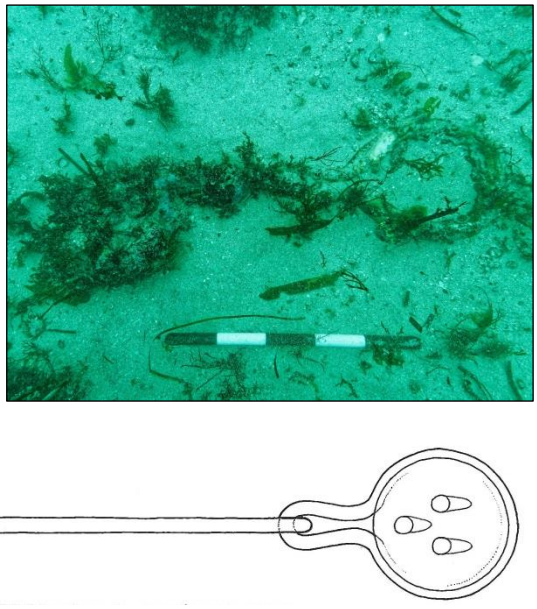


Fig 5. Top left: 23013 on the seabed. Bottom left: drawing of a deadeye and iron band from a 74-gun ship (Boudriot, 1986).
Right: model of a 74 gun ship showing deadeyes used to tension the topmast shrouds

Lead Objects (13)

3 lead scuppers (23012, 23022 & 23023)

The lead scupper pipes were used to drain water from the decks of the ship. These three scuppers were all found in the same area (see fig 4) to the north of the midline (mainmast area) of the wreck.

5 fragments of sheet lead (23018, 23029, 23030, 23031 & 23032)

Most of these thin sheets of lead exhibit nail holes around their edges, indicating that they were affixed to timber parts of the ship to protect it from water (particularly rain water, which is known to promote rot faster than sea water). One of the pieces, 23018, is a larger piece of lead which has been crumpled into a misshapen mass; it is not possible to determine its original shape or function.

3 sash weights (23009, 23020 & 23026)

These square and rectangular sectioned weights were originally used as counter weights for the sliding sash windows found at the stern of *Colossus* (forming the windows of the captain's cabin and the ward room). At least four others have been found on this wreck. Some are square sectioned while others are slightly heavier and rectangular in section.

1 gun apron (23021)

The touch holes of the guns were covered with a sheet of lead when not in use to protect them from damp and accidental firing. These have been found on a number of wrecks including *Invincible* and *Firebrand* (Bingeman, 2010, p.127). This lead gun apron has a soldered on 'pod' to enclose a flint lock firing mechanism (several copper alloy flintlocks have been recovered by others from this site). Gun aprons often have numbers and letters stamped into the lead, and have been known to have graffiti. Detailed inspection will be undertaken after desalination – but to date no lettering is apparent. This item was recovered and will be going to the Isles of Scilly museum once recorded.

Fig 6, The lead gun apron seen on the seabed. Note the pairs of small holes on each side which were used to tie the apron onto the cannon. Scales are 20cm long

Fig 7
A gun apron found on the wreck of the *Pomone* 1811
(Bingeman, 2010, p127)

1 chip log weight (23033)

This small crescent-shaped strip of lead with 4 copper sheathing tacks attached (circular countersunk heads, square sectioned shanks) was probably the weight attached to the lower (curved) edge of a chip log. The chip log was thrown overboard and allowed to pull thin rope off a reel for a timed interval (usually 28 seconds). The line was marked in fathoms and knots, and these indicated the approximate speed (in knots) of the vessel (Henderson, 1917, p.26).

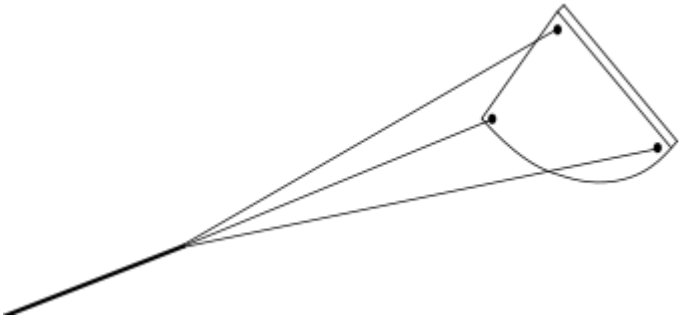


Fig 8
A chip log consists of a triangular piece of wood with a rounded bottom. The rounded edge is ballasted with lead to keep it partly submerged. The chip log is attached by cords to the log line.
Image from Wikimedia commons

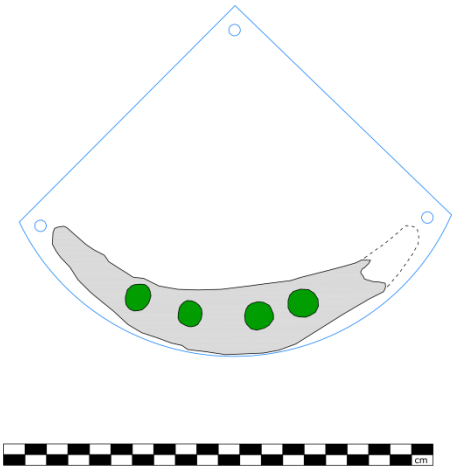


Fig 9
The small lead weight 23033 on the seabed (left) and a possible reconstruction of how it was attached to the wooden chip log by the copper tacks (right)

Wood (3)

3 block sheaves (23003, 23004 & 23006)

The three rigging-block sheaves were all found close together to the north east of the wreck (see fig 4). They are all wooden disks with grooves around the outer edge to accommodate the rope. They were all originally fitted with copper alloy coaks, which acted as bearings around the central spindle hole. Two of the sheaves are marked with the broad arrow, maker's initials ('WT' = Walter Taylor) and the date of manufacture (23003 'MY 96' = May 1796 and 23006 'MH 93' = March 1793). Similar sheaves have been recorded from *Colossus* by Roland Morris and others (Bingeman et al., 2021, p.38)

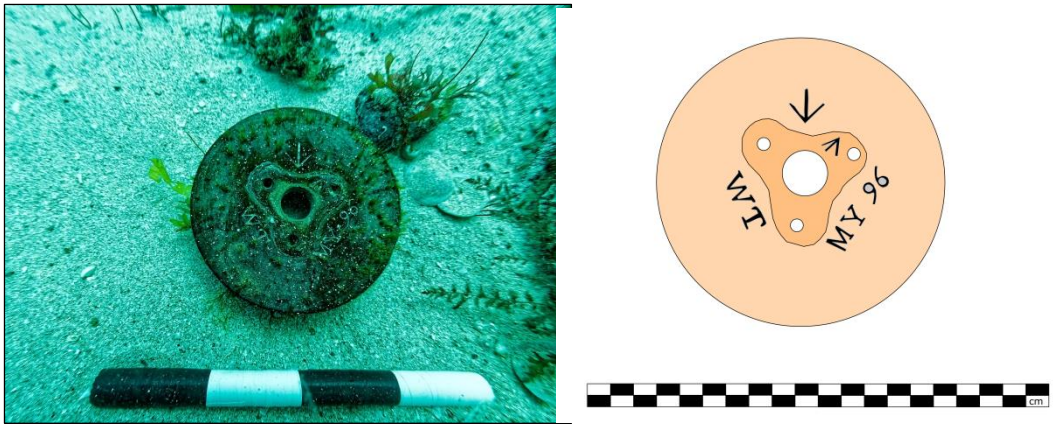


Fig 10
23003 a 5-inch sheave with missing three-lobed coak. Made in May 1796 by Walter Taylor

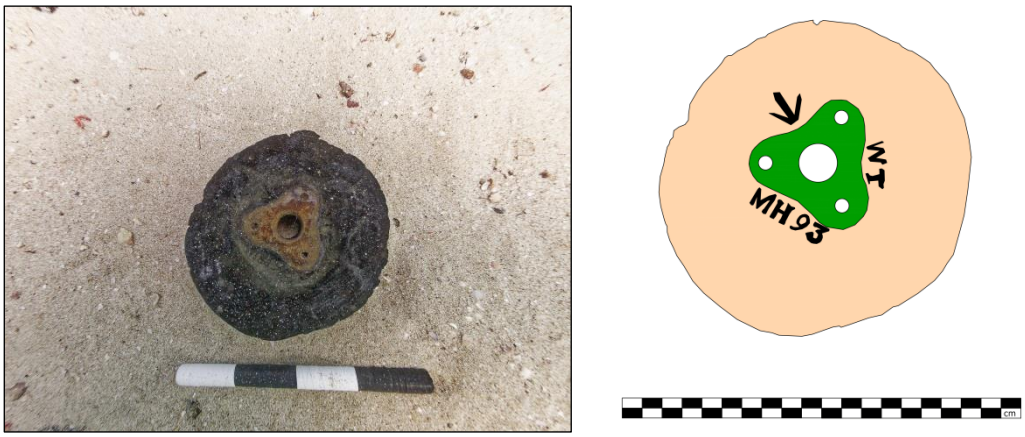


Fig 12
23006 a 6-inch sheave with three-lobed copper alloy coak. Made in March 1793 by Walter Taylor

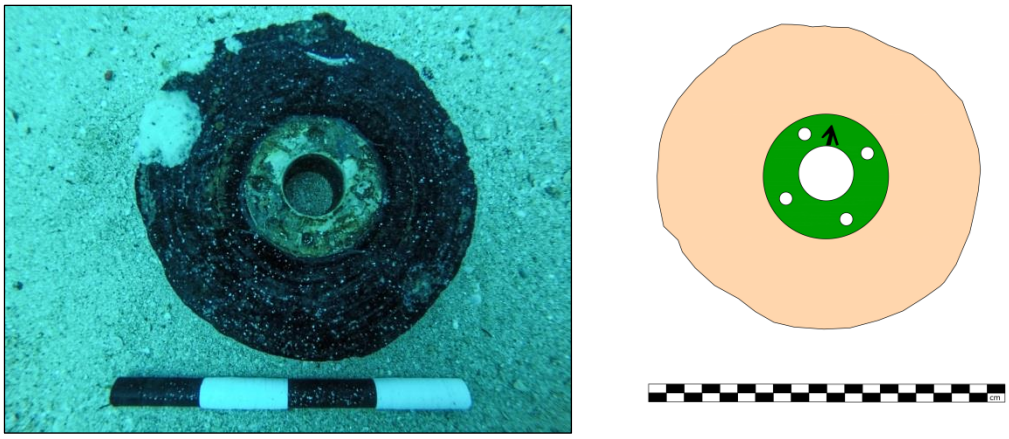


Fig 11
23004 a 7-inch sheave with circular copper alloy coak. There may be a maker's mark on the coak but this could not be read. There is a broad arrow on the coak

The Dive Trail

The mooring and buoy on the site were lost during winter storms at the end of 2022. One of the licensees, Tim Allsop has now replaced the seabed chain, riser and buoy, but this was only completed in late August 2023.

Fig 13

Detail of the new mooring riser and chain put in place by Tim Allsop in August 2023

The dive trail was inspected throughout its length. All the bottom lines and station markers are still in place. The station markers are now covered in weed and will probably need to be replaced in the not too distant future. This highlights one of the main problems with physical dive trails – ongoing maintenance.

Fig 14

The Dive Trail

Above: A diver visits the 9 pound Armstrong gun at dive station 11

Left: The start of the dive trail at Station 1 by the seabed sign – due to weed growth, neither the station marker number nor the sign is legible

The Sediment Levels

The sediment levels on the site have been monitored since 2003. This has been accomplished by means of 14 fixed survey pins driven into the seabed at various locations around the site. The results of the sediment monitoring have been reported every year in the annual licensees' report submitted to English Heritage (and now to Historic England). The sediment monitoring points were renewed in July 2014.

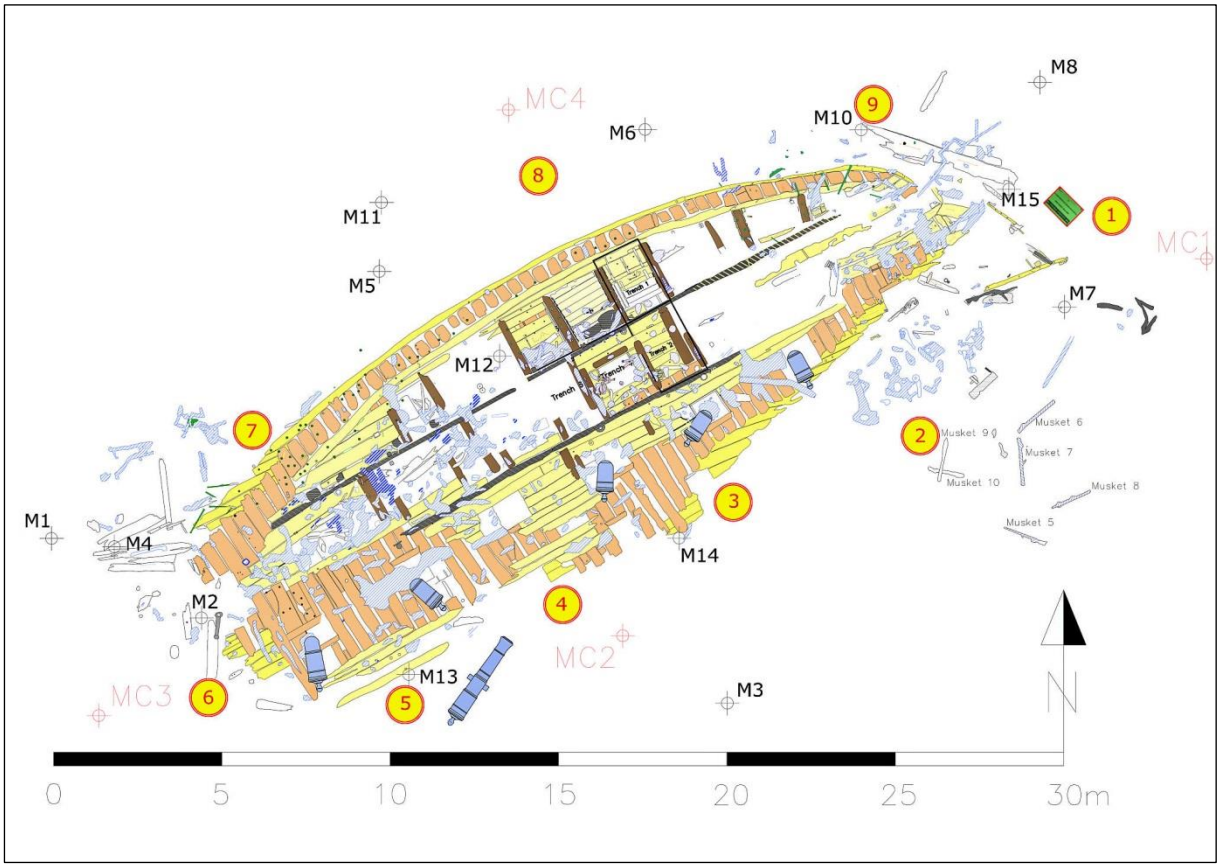


Fig 15
The location of the fourteen sediment monitoring points M1-M8 and M10=M15. Note there is no M9

The mean sediment levels on the site are 12.2mm lower than they were when last measured a year ago in September 2022. The trend of the mean level change can be seen in Fig 17 and appears to show a steady fall over the last two years. However, reference to Fig 16 below demonstrates that the levels have fallen most on the north side of the wreck. Which probably accounts for the newly-exposed material observed to the north of the wreck. This is best demonstrated by looking at the largest fall, monitor points M5 and M6, which are both on the north side of the wreck - while the largest increase of sediment level was at monitoring point M13, which is on the south west corner of the wreck.

Monitor Point	Sept 2022	Sept 2023	Position
M1	-40	-20	NW
M2	40	-25	W
M3	-	-	S
M4	0	-	NW
M5	60	-75	N
M6	-	-75	N
M7	-	-65	SE
M8	-50	30	E
M10	-35	15	N
M11	60	-	N
M12	-15	20	Central
M13	-45	80	SW
M14	10	-10	S
M15	-15	-10	E
Mean	**-2.73**	**-12.27**	

Fig 16
The recorded change of sediment level at the various sediment monitoring points in 2022 and in 2023. A dash indicates that the monitoring point could not be found

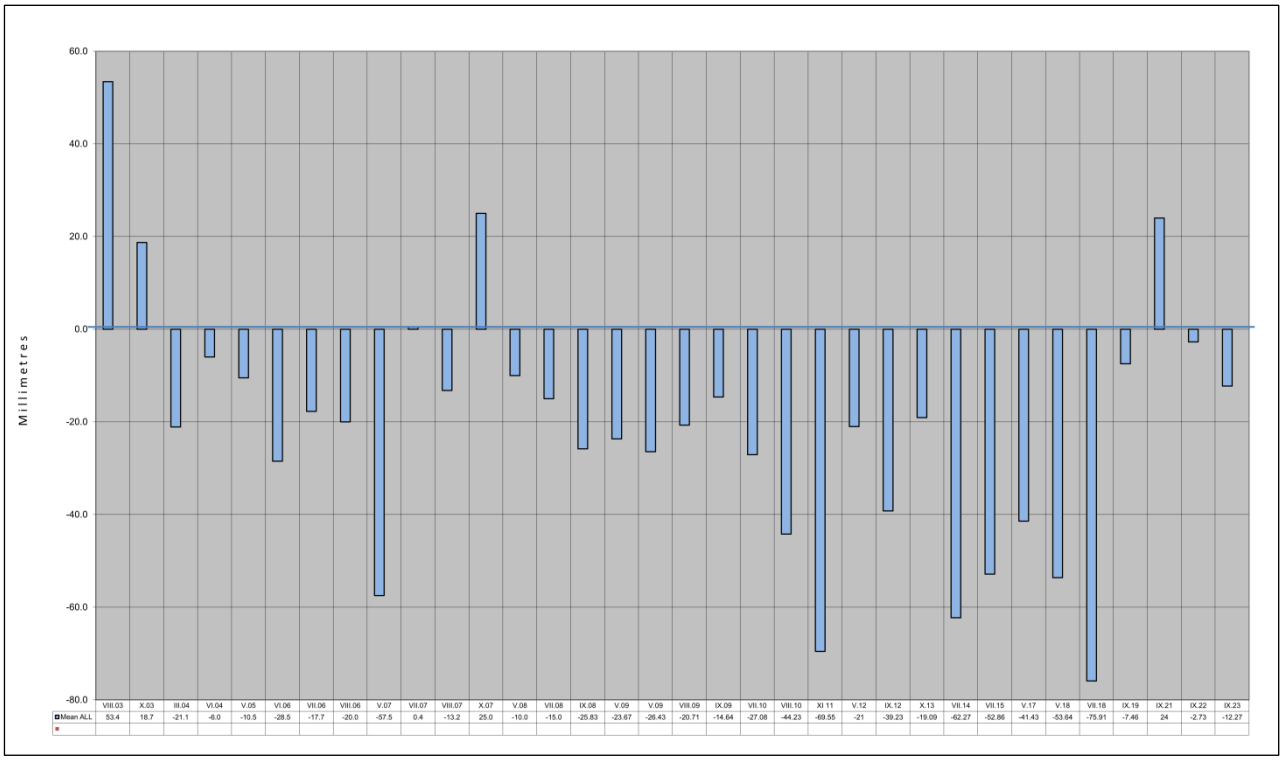
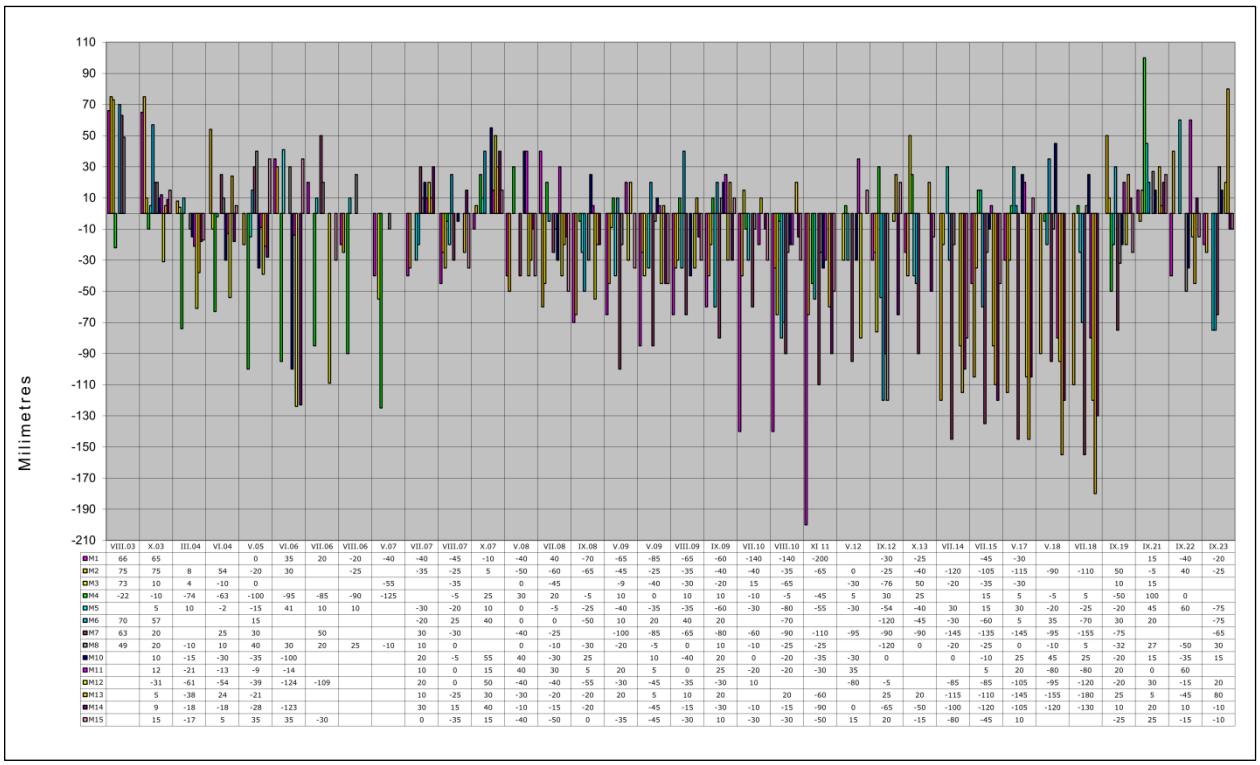


Fig 17
Chart showing the mean sediment level change on the site relative to the sediment levels in 2003 when monitoring began – this is represented by the horizontal zero line in the centre of the chart. These values are the average readings of all 14 monitoring points. Note how the plot for 2019-2023 seems to repeat the pattern recorded in 2007-2008



	VIII.03	X.03	III.04	VI.04	V.05	VI.06	VII.06	VIII.06	V.07	VII.07	VIII.07	X.07	V.08	VII.08	IX.08	V.09	V.09	VIII.09	IX.09	VII.10	VIII.10	XI 11	V.12	IX.12	X.13	VII.14	VII.15	V.17	V.18	VII.18	IX.19	IX.21	IX.22	IX.23
M1	66	65			0	35	20	-20	-40	-40	-45	-10	-40	40	-70	-65	-85	-65	-60	-140	-140	-200		-30	-25		-45	-30				15	-40	-20
M2	75	75	8	54	-20	30		-25		-35	-25	5	-50	-60	-65	-45	-25	-35	-40	-40	-35	-65	0	-25	-40	-120	-105	-115	-90	-110	50	-5	40	-25
M3	73	10	4	-10	0				-55		-35		0	-45		-9	-40	-30	-20	15	-65		-30	-76	50	-20	-35	-30			10	15		
M4	-22	-10	-74	-63	-100	-95	-85	-90	-125		-5	25	30	20	-5	10	0	10	10	-10	-5	-45	5	30	25		15	5	-5	5	-50	100	0	
M5		5	10	-2	-15	41	10	10		-30	-20	10	0	-5	-25	-40	-35	-35	-60	-30	-80	-55	-30	-54	-40	30	15	30	-20	-25	-20	45	60	-75
M6	70	57			15					-20	25	40	0	0	-50	10	20	40	20		-70			-120	-45	-30	-60	5	35	-70	30	20		-75
M7	63	20		25	30		50			30	-30		-40	-25		-100	-85	-65	-80	-60	-90	-110	-95	-90	-90	-145	-135	-145	-95	-155	-75			-65
M8	49	20	-10	10	40	30	20	25	-10	10	0		0	-10	-30	-20	-5	0	10	-10	-25	-25		-120	0	-20	-25	0	-10	5	-32	27	-50	30
M10		10	-15	-30	-35	-100				20	-5	55	40	-30	25		10	-40	20	0	-20	-35	-30	0		0	-10	25	45	25	-20	15	-35	15
M11		12	-21	-13	-9	-14				10	0	15	40	30	5	20	5	0	25	-20	-20	-30	35				5	20	-80	-80	20	0	60	
M12		-31	-61	-54	-39	-124	-109			20	0	50	-40	-40	-55	-30	-45	-35	-30	10			-80	-5		-85	-85	-105	-95	-120	-20	30	-15	20
M13		5	-38	24	-21					10	-25	30	-30	-20	-20	20	5	10	20		20	-60		25	20	-115	-110	-145	-155	-180	25	5	-45	80
M14		9	-18	-18	-28	-123				30	15	40	-10	-15	-20		-45	-15	-30	-10	-15	-90	0	-65	-50	-100	-120	-105	-120	-130	10	20	10	-10
M15		15	-17	5	35	35	-30			0	-35	15	-40	-50	0	-35	-45	-30	10	-30	-30	-50	15	20	-15	-80	-45	10			-25	25	-15	-10

Fig 18

This chart illustrates the changes at each individual monitoring point between 2003 and 2023 and shows the fluctuating levels of the sediment around the site. This plot also shows how 'outliers' in the form of individual extreme values occasionally occur

In 2003, four large granite blocks were buried at the edges of the site. Each block was fitted with a 10mm diameter stainless steel bar, and polyvinyl resin used to set it into a hole drilled into the block. These blocks were then partially buried in the seabed to act as master control points. Each block was buried to within about 10cm of its surface. This year it was noticed that MC1 (on the east side of the site – see fig 2) is now standing well proud of the seabed. It is clear from the weed growth on the sides of MC1 that it has been protruding from the seabed for some time (fig 19).

Fig 19

The master control point block MC1, now standing well proud of the seabed.

Scale = 50cm

While inspecting the dive trail this year it was noticed that a section of the leaded bottom line which guides divers out to dive station 11 and 12 has caused sediment shifts. The sediment appears to have built up under the seabed line (or possibly has been eroded away except directly under the line). The section of line where this was most apparent lies across the main tidal flow on the site (to the north east on the flood and south west on the ebb). This has not been noticed before – but the line has become colonised by fine seaweed, which may have generated this effect.

Fig 20
Two views of the dive trail bottom line showing how it now sits on a small ridge of sediment. This may be caused by the fine weed growing on the bottom line

Scale = 50cm

Morris Revisited

A team led by Roland Morris discovered scattered wreckage from *Colossus* in 1974. The following year they discovered thousands of fragments of decorated ancient Greek pottery. So what was this doing on a British warship? *Colossus* was in Naples on 28th September 1798, Nelson's 40th birthday. A lavish celebration was organised for Nelson by Sir William Hamilton's wife Emma, to which the Captain and officers of *Colossus* were all invited. When *Colossus* left Naples a week later for refit in England, she was carrying one third of Sir William's valuable second collection of ancient Greek pots, contained within eight stout wooden crates.

Morris' team worked for a number of years recovering this pottery in collaboration with the British Museum. Study of the team's original dive logs has shown that all this pottery was recovered from a very small area. It has long been our ambition to rediscover this area on the seabed.

Although the general area where Morris worked is known, the exact location of his work is problematic. It is, however, clear that his actual site lay largely outside the area designated under the Protection of Wrecks Act (fig 21). This phenomenon is fairly common on the early designated sites, and is sometimes attributed to the desire of the licensee to conceal the true location of the site. In fact, it is more likely to have resulted from the difficulty of establishing an accurate position at sea without the benefit of modern satellite Global Positioning Systems (GPS).

Morris locates his site plan with a bearing and distance (63° W of N and 270m) from his C10 (an iron gun) to Southward Well Rock. If plotted in this position, the numerous depths recorded on his site plan appear to accord well with those on the admiralty chart. In 2006, Wessex Archaeology suggested repositioning his site plan based on seabed topography and two iron concretions thought to represent positions where iron guns had been removed from the seabed. This entailed repositioning the most easterly of the Morris guns (C9) about 125m to the NNE and rotating the whole plan about 20° anticlockwise. Unfortunately this makes all the depths recorded on the Morris plan much deeper than those shown on the modern chart and reported by the Morris team in the surviving notes. '*Conditions under water were fairly constant, with depth at about 10m and visibility varying from 4m to 8m*…'

The site plan published by Morris shows a site which is widely dispersed, being over 250m east to west. There are at least three different versions of this plan, all of which differ considerably, although the plan he published in 1979 is certainly the most comprehensive.

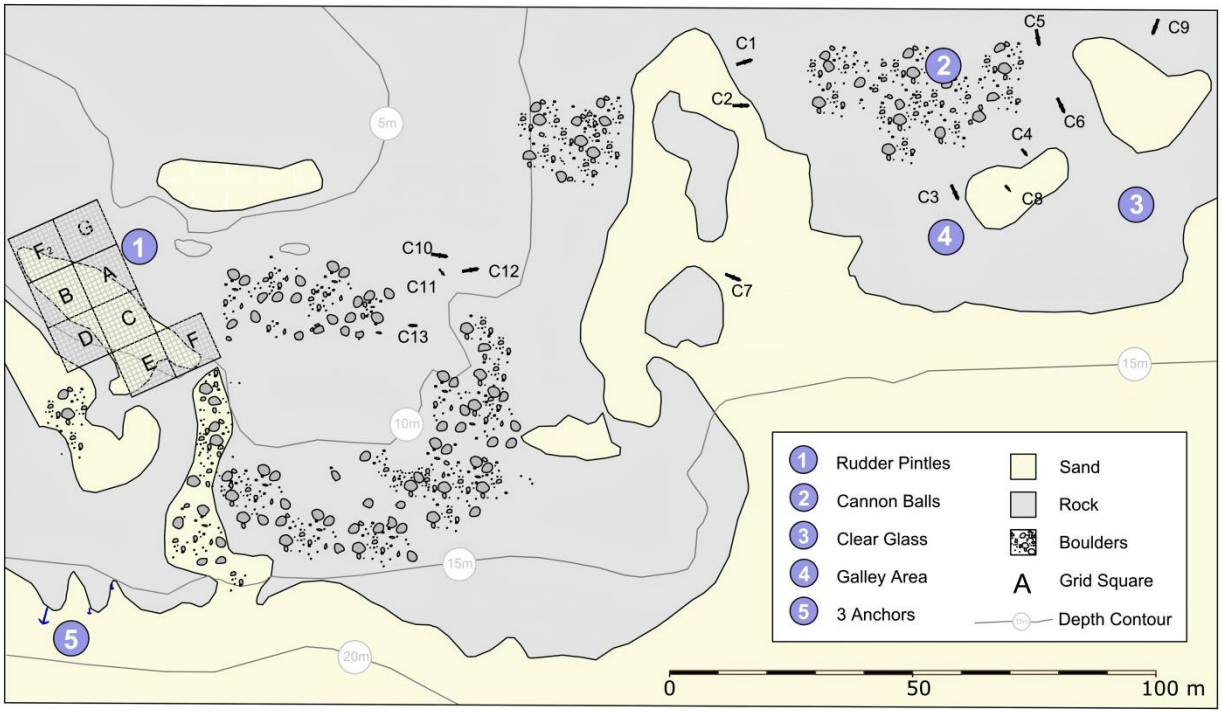


Fig 22

Simplified plan of the site excavated by Morris between 1974 and 1983. This plan is a synthesis based on those produced by Roland Morris, Ann Birchall, Slim Macdonnell and Wessex Archaeology. The cannons (C1 to C12) are as shown on Morris 1979. C13 was positioned approximately from the site log sheets, and there is some doubt whether C6 ever existed. Note how large the Morris site is – the above is 250m east to west. The 30,000 sherds of pottery were recovered from the grid squares (A-F), each of which was 10x10m

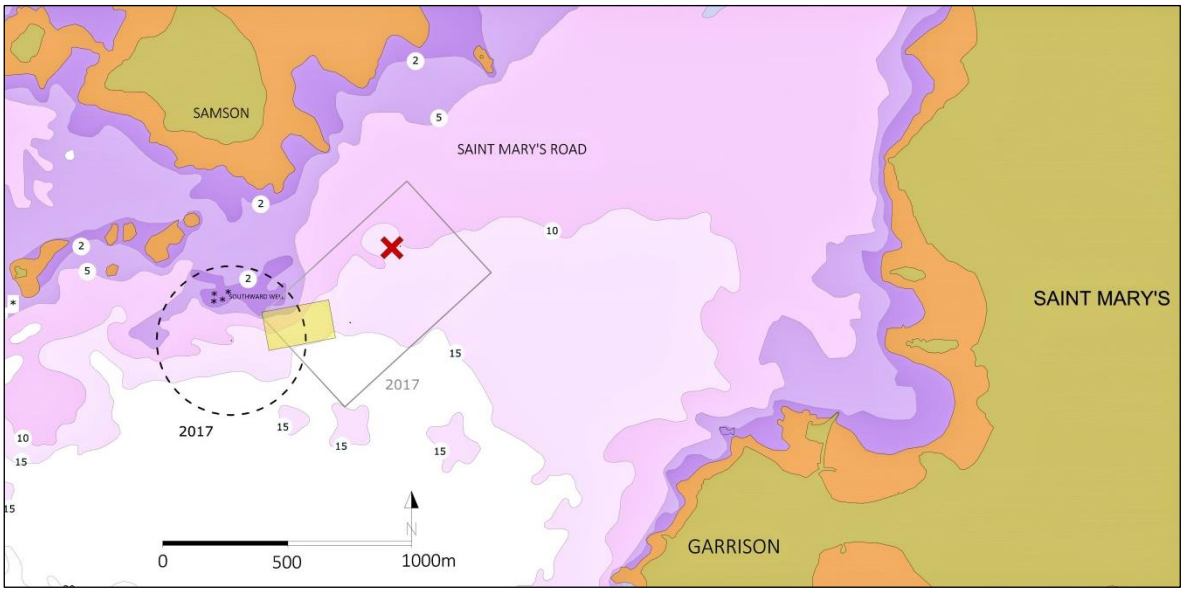


Fig 21

The 1975 designated area, shown by the dashed circle south of Samson, is 600m in diameter. The yellow rectangle on the eastern edge of the circle corresponds with the Morris plan (shown below) and illustrates how the area was only partly within the designated area. The current designated area is shown by the grey rectangle. Note: the location shown here is based on Morris' positioning; the alternative position proposed by Wessex Archaeology places the Morris area 125m to the NNE. The depth contours shown are in metres below chart datum. X marks the remains of the stern found in 2001.

Having completed our recording of the newly exposed material to the north of the stern we undertook two dives in the area where Morris had found the ancient Greek Pottery. One search was made in the area where Morris' site plan indicates the pottery was found and the other search was undertaken where the Wessex Archaeology repositioning would place the discovery.

Search One (Morris' original position) 259662E 5535265N

A circular search was undertaken by three divers out to a radius of 25m. The seabed consisted of rocky ground with thick kelp, mostly solid rock with boulders, rising to a shallow mound to the north of the shot line. About 15m to the south of the shot a substantial sand filled gulley was located.

Dive time 9:32 to 10:39
Depth encountered 13 to 17m
High Water 09:40 @ 4.3m

Adjusting the observed depths to chart datum we get a seabed depth of 9 to 13m, which accords well with the original stated depth of 'about 10m' and the depths shown on the Morris plan. The observed topography is similar to that shown on the Morris plan for the area of the pottery grids (see fig 22).

Search Two (Repositioned Morris Plan) 259705E 5535389N

A circular search was undertaken by two divers. Exceptionally thick kelp was encountered making a systematic circular search very difficult. The seabed was rocky with occasional small, shallow patches of sand.

Dive time 9.29 to 10.26
Depth encountered 5 to 7m
High water 09:40 @ 4.3m

Adjusting the observed depths to chart datum gives chart depths of 1 to 3m. This confirms that the pottery grid on the repositioned Morris site plan is far too shallow to be the area of the pottery grid. One possibility is that the eastern end and western ends of the Morris plan are not consistently accurate.

Given the similarity between the observed topography and water depths and those recorded on the Morris plan it seems likely that his original positioning for the pottery grid recorded by Morris is accurate. Further investigation of this area of seabed might make all this clearer. For instance, we know that Morris used concrete blocks to secure his underwater grid lines. It is highly unlikely that these were ever recovered and traces may remain on the seabed.

Team Contributions

The CISMAS dive team were all invited to contribute a short piece to the project report. Their accounts illustrate how rewarding community archaeology can be, and show that there are many different ways of appreciating our rich archaeological heritage.

360º video (by Jezz Davies)

As part of the celebrations to acknowledge the 50th anniversary of the establishment of the Protection of Wrecks Act in 1973, Historic England funded a number of projects around England. MSDS Marine was commissioned to undertake a project (HE: 9134) to bring maritime archaeology to inland and landlocked audiences, principally in Nottinghamshire and Derbyshire.

MSDS Marine loaned the HMS *Colossus* team a 360° camera, underwater housing and selfie stick to gather footage of the protected wreck site, and provided CISMAS with a Oculus Go virtual reality headset. The VR headsets have been used to show underwater footage at public events during the summer.

The 360° camera is deployed on the extended selfie stick (fig 23). As relatively little was known about the camera and the ideal set up, filming was undertaken using the camera in a number of orientations.

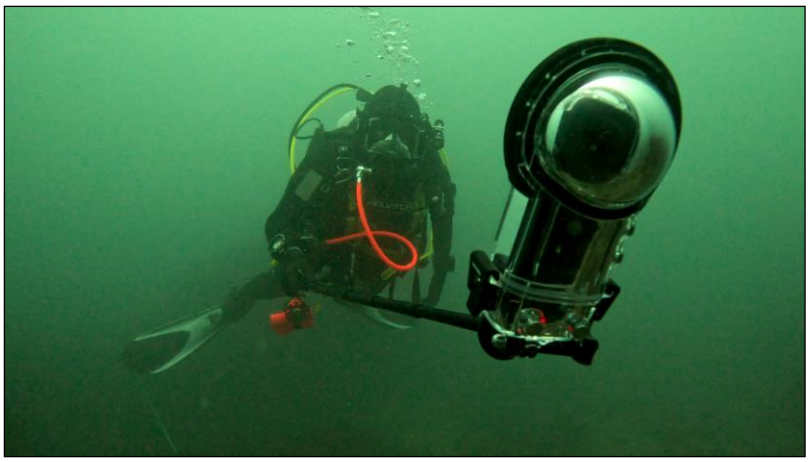


Fig 23
360° camera in action at Salcombe Cannon site, September 2023

Once the main project aims had been completed, the final dive presented an opportunity to use the camera around parts of the underwater dive trail including the outlying cannon and spare tiller, specific artefacts from the 2023 project and in particular the line of cannons (guns 1 to 6). Footage was kept to an absolute maximum of two minutes due to the large file size of each video. For the purpose of this report, a single image has been extracted from 360° video footage looking north between cannon numbers 5 and 4 (fig 24).

Completed footage is easily viewed via a Bluetooth mobile and Insta App. Files are then downloaded to an appropriate device where they can be viewed (the 360° elements of the video can be explored using a mouse, or moving a mobile phone or tablet, to see new areas). However, the full 360° experience is only fully appreciated when viewed on a VR headset.

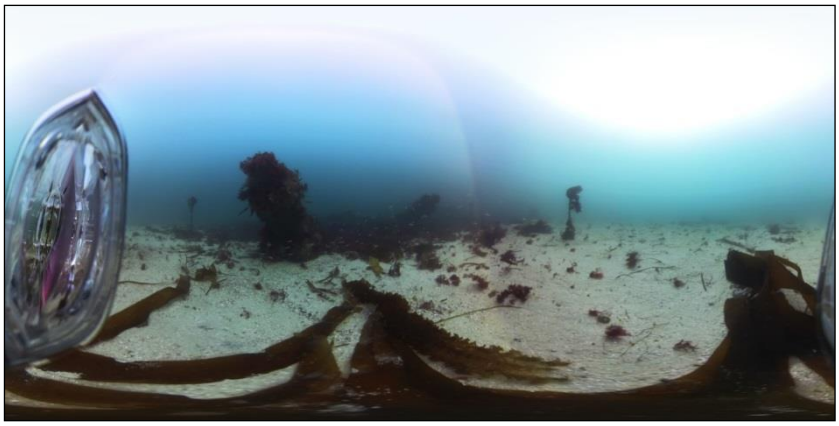


Fig 24

Image extracted from the 360° video looking north between cannon numbers 5 and 4

Video footage was edited by MSDS Marine and then made available on a Protected Wreck site playlist on YouTube.

Note: At the time of submitting the draft report, due to the large file sizes, the final HMS *Colossus* videos have yet to be edited and uploaded but will soon be available on the Protected Wreck Site playlist here: https://www.youtube.com/playlist?list=PLIGxgCwrLePDX2tZDZjaV1digYxN-0PsC (https://www.youtube.com/playlist?list=PLIGxgCwrLePDX2tZDZjaV1digYxN-0PsC)

Picture this (by Nick Sodergren)

As an enthusiastic volunteer on this project over the years, I hope I have developed a few useful skills. Artefact recording has been a key area to focus on for me; in particular, getting underwater photographs that are both useful and presentable.

I should say that I am never likely to be the main photographer on a project and the whole business has always been something of a 'dark art' to me. I have never owned a 'proper camera' above or below the water. My contribution to the project photography is my trusty GoPro Hero 4, which is a few years old now and has certainly been superseded by many successive new GoPro models.

Nonetheless, we work with what we have available and as our lead archaeologist keeps telling me 'any photo is better than no photo'.

To this end, here is what I have learned in the hope of making a better contribution:

- Ensure the camera is set with the correct time and date, which will avoid confusion with the 'tags' that are attached to the image files
- Leave the GoPro factory settings alone and allow a more knowledgeable person to make adjustments in later processing, if necessary. This project involved photography in fairly shallow (average 15m) seawater in well-lit conditions. I did not use any artificial light for photography. Turning 'Protune' off in the GoPro settings defaults the camera to factory settings for shutter speed, ISO and white balance
- Leave 'Spot Meter' turned off in the GoPro settings, to allow the exposure settings to react to the light levels across the whole image, rather than focussing on light levels in one particular part of the artefact

- Put the camera into the highest quality setting – '12MP Wide' in the case of my GoPro
- The GoPro lens is fixed and cannot be focussed. The minimum distance from the object whilst remaining in focus is 30cm or 12 inches, so avoid trying to get closer than this to the object being photographed
- There is a noticeable delay between pressing the shutter button and the GoPro taking the image, so a conscious effort is needed to hold the camera steady for at least a second after pressing the shutter button, to prevent a blurred image
- I'm not sure how I kept doing it, but I inadvertently took some of my photographs in 'burst mode' which took dozens of photos over a couple of seconds (all out of focus!) It is worthwhile checking that the camera is in the correct mode each time it is used
- Finally, I made up a laminated underwater 'crib card' to remind myself of the correct conventions for artefact photography, such as positioning of the scale, attributing a 'find number' within one of the photographs, photography from distance to give context to the artefact's position, etc.

Most of this information will be obvious to anyone with a modicum of photographic experience. But for me, every day is still a school day.

Provisioning the crew (by Andrew Earle)

During the CISMAS team discussions about life on HMS *Colossus*, the subject of provisions on board came up. The task of feeding six hungry divers pales into insignificance when compared to feeding 550 midshipmen, sailors and officers. This prompted me to undertake some further research on the food provided by the Royal Navy to give the necessary 5000 calories per day for each sailor whose heavy physical work was required to keep the ship sailing.

On previous trips to work on HMS *Colossus*, we had eaten meals that would have been enjoyed by the sailors, including hard tack (without weevils, fortunately) and lobscouse - a stew of salted pork and potatoes which was surprisingly highly spiced. This was probably a sensible precaution to hide the fact that not all the pork, which was cured and stored in brine barrels, was as well preserved as modern refrigeration allows.

For this project, the team decided that they might like to experience the food that officers enjoyed - and so I started by reading *Lobscouse and Spotted Dog* (Thomas & Grossman, 2000). This is a book of recipes that were theoretically enjoyed by the fictional characters Captain Jack Aubrey and Dr Stephen Maturin, created by Patrick O'Brian. I also consulted *Feeding Nelson's Navy* (Macdonald, 2006), which highlights the organisational difficulties of meeting the Royal Navy Victualling Board requirements. These defined quantities for provisions such as meat, hard tack and sugar - and included beer, or wine or rum when this was not available.

From this research, I chose three recipes to give an indication of the difference in foods between officers and seamen.

‘Sea pie’ in fact contains nothing from the sea, but is a layered suet pastry pie. Forcemeat (or stuffing), meat and pastry are built up in layers, with pastry on the top. Some pies were reported to be triple or even quadruple deckers, with multiple layers of each ingredient.

‘Spotted dog’ - also known as ‘spotted dick’ or ‘figgy-dowdy’ - is a steamed suet pudding with raisins.

‘Lemon posset’ is a simple dessert of lemon, sugar and cream. I may have taken a little licence with this as lemons were only introduced by the Royal Navy as a cure for scurvy in 1795 - just three years before HMS *Colossus* foundered. But it is possible that she returned from the Mediterranean with lemons on board.

On balance, the team quite preferred officers' food to the usual sailor fare.

Appendix I – The Finds Record

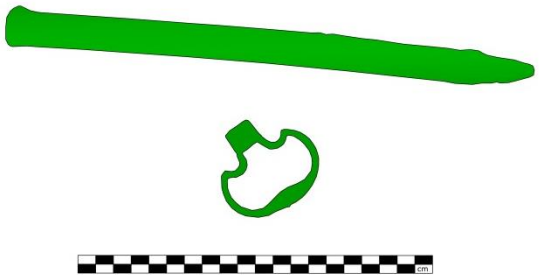
Lane	FID	Material	Context	Object	Description	Dims (mm)	Location (UTM)
1	2301a	Copper	23001	Dump bolt Or nail	Copper dowel , one end slightly burred over the other chisel shaped with diagonal grooves (ragged)	315x20∅	260160.56 5535597.17
1	2301b	Copper alloy	23002	Handle	Decorative copper alloy folding handle, has pivot point at the base. Possibly from a small box or furniture	60x56	260160.56 5535597.17
1	2303	Wood	23003	Sheave	Wooden block sheave. Recessed for a (missing) copper alloy three lobed coak. Marked with broad arrow, 'WT' (Walter Taylor) and 'MY 96' (May 1796) on one side and a broad arrow on the other face	125∅ x 25 Centre hole 20∅	260154.72 5535593.26
1	2306	Wood + Copper alloy	23004	Sheave	Wooden sheave with circular copper alloy coak (has four fixing holes)	180∅ x 38 Centre hole 30∅	260149.41 5535591.07
1	2305	Iron	23005	Fastening?	Heavily concreted iron object. Appears to consist of a rectangular plate with iron bolts and attachment. Chain plate??	680x320xc.100	260150.54 5535591.47
1	2307	Wood + Copper alloy	23006	Sheave	Block sheave with three-lobed copper alloy coak (three fixing holes). Marked with broad arrow, 'WT' (Walter Taylor) and 'MH 93' (March 1793)	160∅ x 25 Centre hole 20∅	260149.41 5535591.07
1	2309	Iron	23007	Object	Heavily concreted iron, no clear shape	780x450x280	260142.05 5535585.99
1	2312	Iron	23008	Object	Heavily concreted iron object	450x250x150	260140.71 5535586.22
2	2313	Lead	23009	Sash weight	Lead weight with small hole at one end. Square sectioned (30x30). Probably a sash weight from one of the stern windows	350x30x30	260155.53 5535596.38
2	2315a	Iron	23010	Object	Concreted iron bar (rectangular section) with ends bent into right angles	280x300x80	260154.11 5535598.76
2	2315b	Iron	23011	Musket?	Concreted iron bar, circular in section. One end has larger diameter 'head'. Possibly part of a musket	580xc.60∅	260154.11 5535598.76
2	2316	Lead	23012	Scupper	Scupper pipe with partly flattened ends	440x130x130 80∅	260132.70 5535583.53
2	2317	Iron	23013	Deadeye band	Concreted iron deadeye band and 'chain' attachment. Apparent deadeye diameter 450 Note this object had a survey tag attached with '2065' inscribed on it. This accords with object 2065 recorded by Wessex Archaeology in their 2007 Designated Site Assessment described as 'Iron ring with associated chain'. Their 2007 grid reference is less than 0.6m from our 2023 position	930x280x100 c.450∅	260134.51 5535584.01
2	2304	Iron	23014	Ring bolt	Heavily concreted iron with ring at one end – broken into two pieces	600x250x200	260146.27 5535593.40

Lane	FID	Material	Context	Object	Description	Dims (mm)	Location (UTM)
2	2301	Copper alloy	23015	Dump bolt Or nail	Copper alloy round sectioned rod with enlarged head (due to driving?) and chisel shaped point. Bent at the chisel end.	300x21∅	260153.91 5535597.96
2	2302	Iron	23016	Musket?	Heavily concreted iron rod. Possibly part of a musket	880x60∅	260142.04 5535587.96
2	2320	Iron	23017	Musket	Concreted musket barrel with traces of the heavily concreted flintlock mechanism	1200x60∅	260141.08 5535588.18
2	2311	Lead	23018	Sheet lead	Mass of crumpled sheet lead, the lead sheet is 3-4mm thick	480x330x130	260140.80 5535587.07
2	2319	Iron	23019	Musket or Bolt	Cylindrical length of concreted iron, with irregular concretion or stones at either end. Could be musket barrel or an iron bolt	620x50∅	260137.93 5535589.23
2	2314	Lead	23020	Sash weight	Lead weight with small hole at one end. Square sectioned (30x30). Probably a sash weight from one of the stern windows	350x27x30	260156.13 5535598.41
2	2310	Lead	23021	Gun apron	Gun apron made from two pieces of lead soldered together. The outer sheet is 4mm thick. A central 'shaped pod' is soldered on and was to accommodate the flint-lock firing mechanism.	280x235x145	260155.05 5535595.59
2	2318	Lead	23022	Scupper	Lead scupper pipe has a large flange with nail holes at one end.	440x82∅	260132.96 5535586.40
3	2303	Lead	23023	Scupper	Lead scupper liner. Hollow lead pipe, 80∅ with a wall thickness of 4mm. One end flared the other has a large flange, part bent at right-angle with nail holes around the edges (this was probably attached at the waterway)	490x260x80∅	260132.30 5535588.68
3	2305	Iron	23024	Chain	Concreted complex iron object. Appears to consist of links of chain fastened together – possibly part of the chain pump	510x290	260144.20 5535595.15
3	2307	Iron	23025	Ring	Concreted iron ring with a fragment of iron bolt attached – ring bolt (as used for gun tackle etc.)	Ext 200∅ Int 130∅ Ring dia 45	260132.96 5535590.21
3	2306	Lead	23026	Sash weight	Lead weight with small hole at one end. Rectangular in section (23x30). Probably a sash weight from one of the stern windows	280x30x27	260146.24 5535597.97
4	2323	Iron	23027	Chain?	Concreted complex iron object. Possibly consist of links of chain fastened together – possibly part of the chain pump	700x300x50	260142.89 5535597.54
4	2308	Iron	23028	Bracket?	Concreted iron bracket. One end has been broken; exposing what appears to be laminar striations – indicative of wrought iron. Rectangular in section. Essentially 'L' shaped with the short arm bent to 45 degrees part way along its length	450x190x35	260146.09 5535598.85
4	2324	Lead	23029	Sheet	Small fragment of lead sheet has two small square holes close to one edge (5x5). Possibly part of a gun apron?	160x60x2	260141.79 5535598.49
4	2325	Lead	23030	Sheet	Fragment of lead sheet, one circular hole (4mm ∅)	110x58x2	260138.91 5535597.42

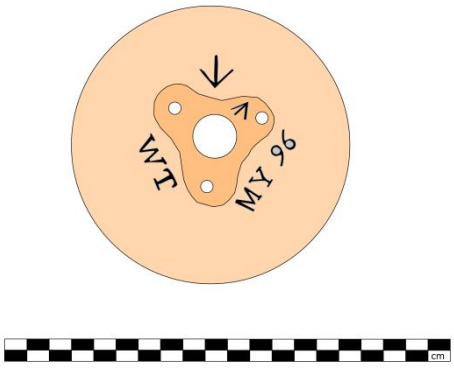
Lane	FID	Material	Context	Object	Description	Dims (mm)	Location (UTM)
5	2320	Lead	23031	Sheet	Fragment of lead sheet, two clear nail holes (round head with square shank – similar to sheathing tack)	150x75x2	260138.13 5535599.68
6	2319	Lead	23032	Sheet	Fragment of lead sheet, several small holes (possibly eroded nail holes?)	250x90x2	260144.42 5535605.73
MC3		Lead + copper	23033	Chip log weight	Crescent shaped strip of lead with 4 copper sheathing tacks attached – circular countersunk heads, square sectioned shanks (plus one empty part hole). Probably the weight attached to the lower (curved) edge of a chip log (used to measure the speed of the ship)	Lead 156x33x11 Tacks 33 long	260136.09 5535580.12

Appendix II – Finds illustrations

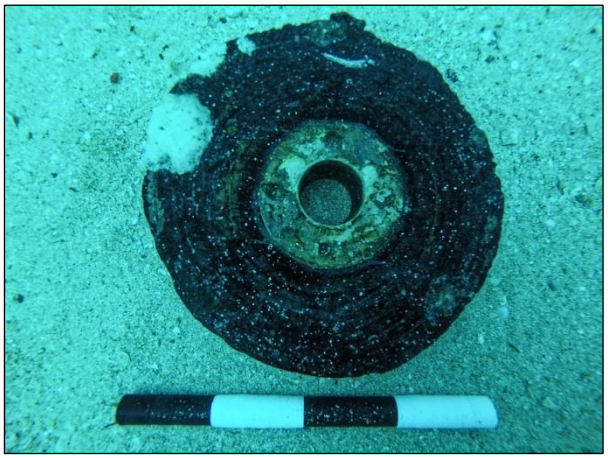
23001 & 23002 - Copper dump bolt and copper-alloy handle

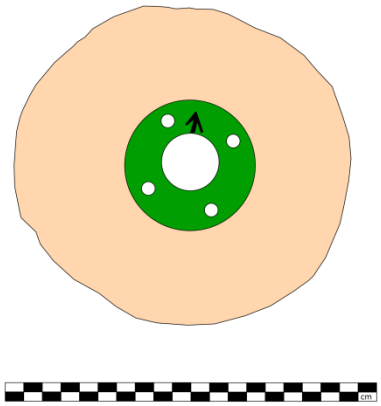


23003 - Block sheave

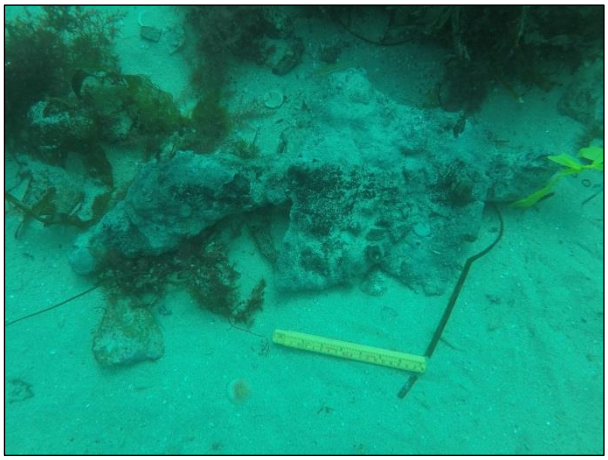


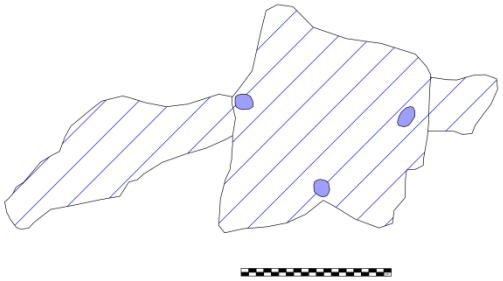
23004 - Block sheave



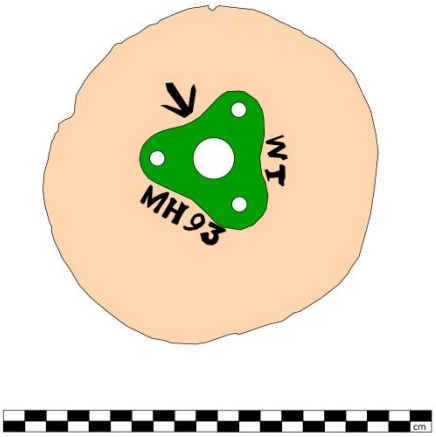


23005 - Block sheave

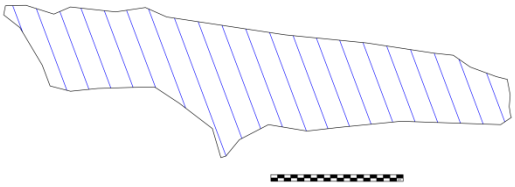




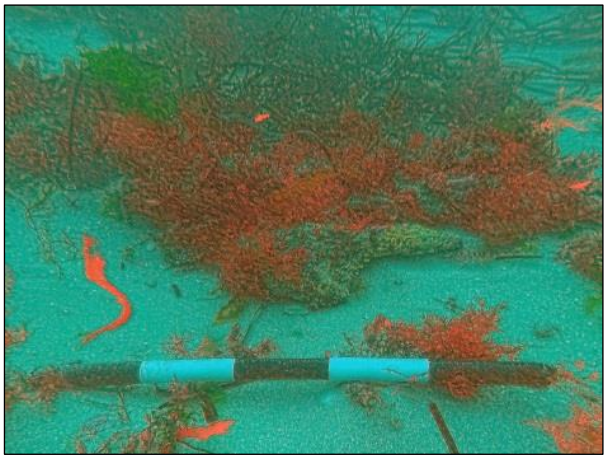
23006 - Block sheave

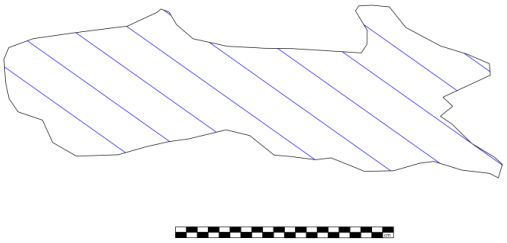


23007– Iron object

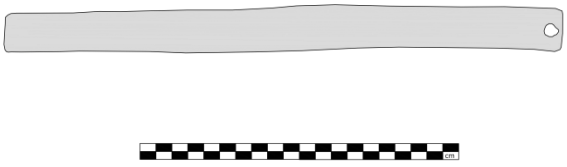


23008 – Iron object

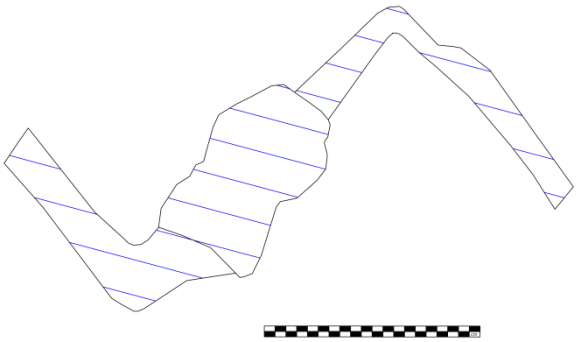




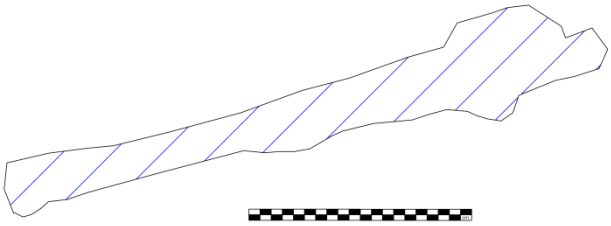
23009 – Lead sash weight



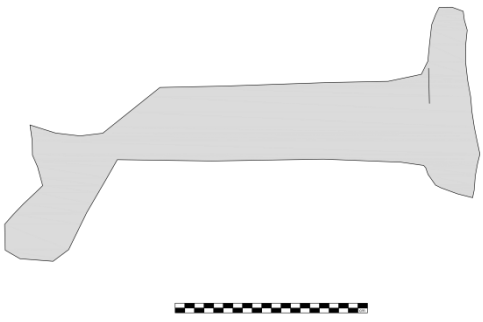
23010 – Iron object (lower artefact)



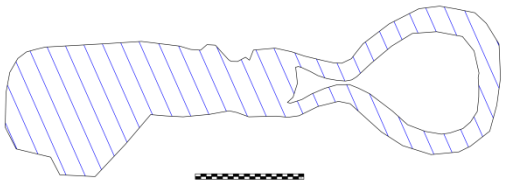
23011 – Musket part? (upper object)



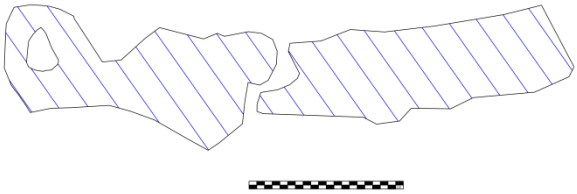
23012 – Lead scupper



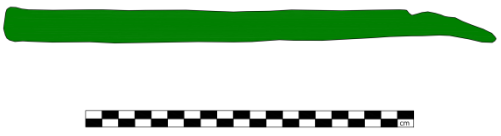
23013 – Iron deadeye band



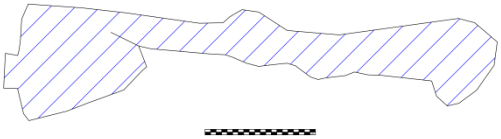
23014 – Iron ring bolt



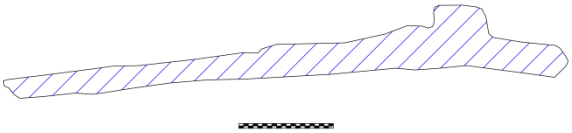
23015 Copper dump bolt or nail



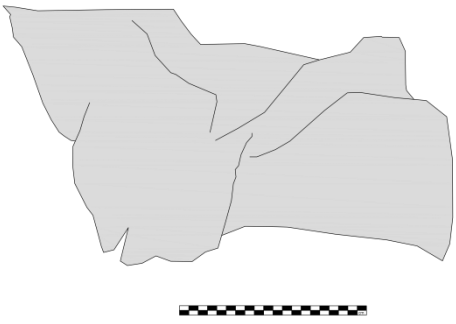
23016 – Iron object (part of musket?)



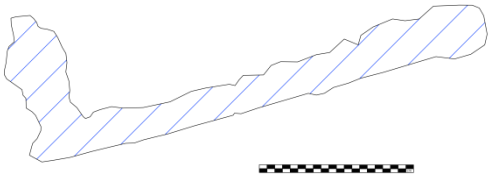
23017 - Musket



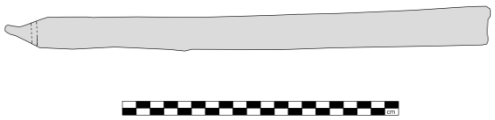
23018 – Lead sheet



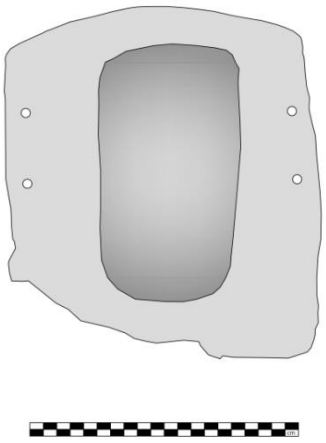
23019 – Iron object (musket or bolt)



23020 – Lead sash weight

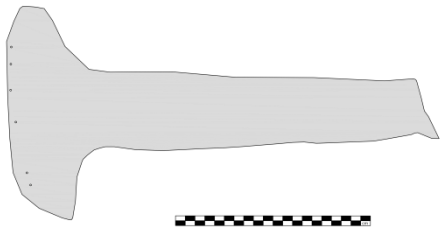


23021 – Lead gun apron

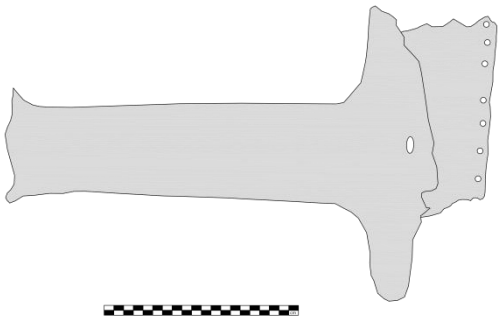


23021 (continued)

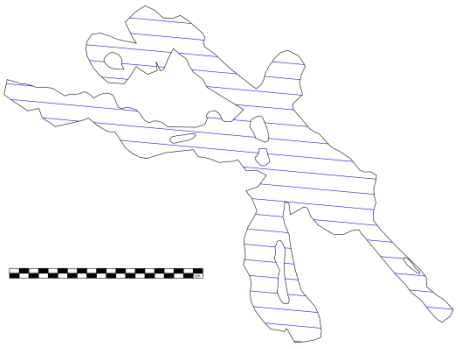
23022 – Lead scupper



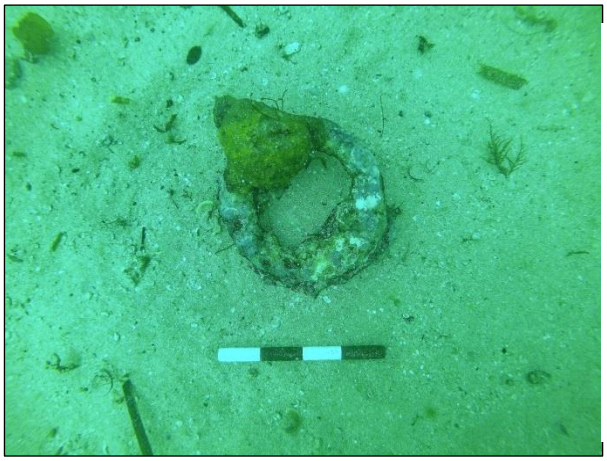
23023 – Lead scupper

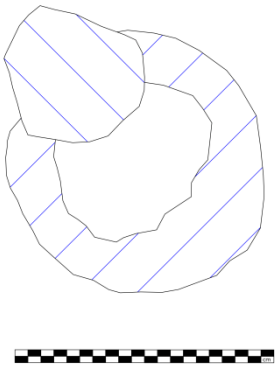


23024 – Iron object (chain?)

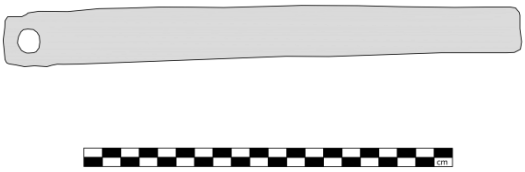


23025 – Iron ring bolt

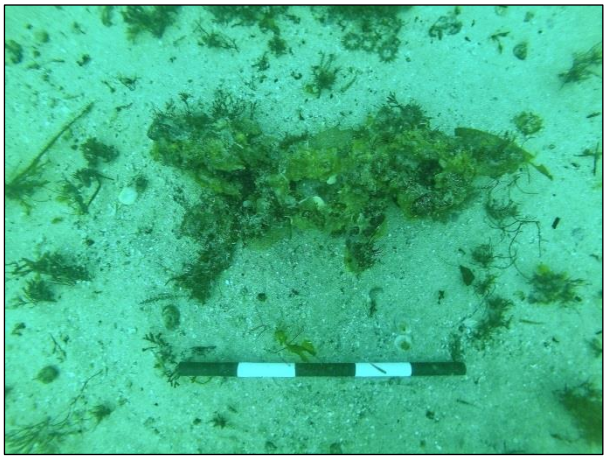


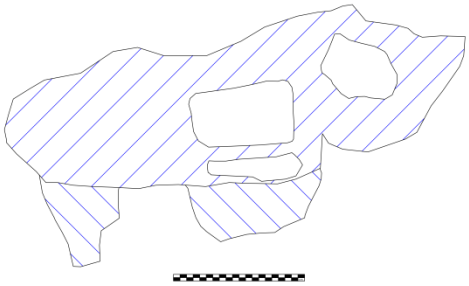


23026 – Lead sash weight

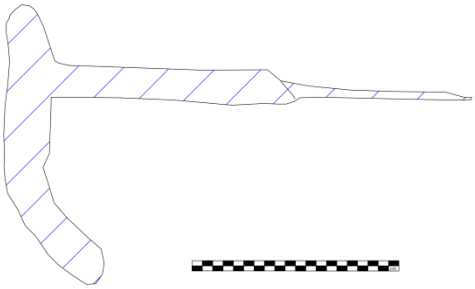


23027 – Iron object (part of chain pump?)

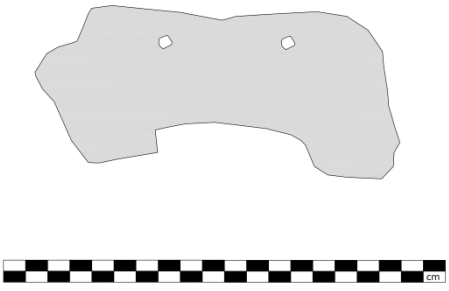




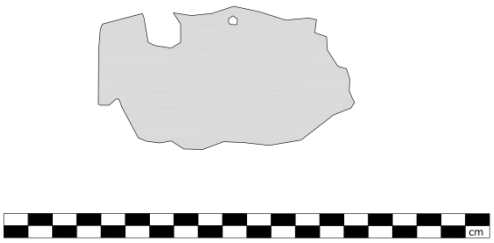
23028 – Iron object



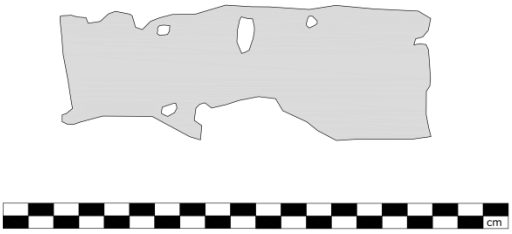
23029 – Sheet lead (fragment of gun apron?)



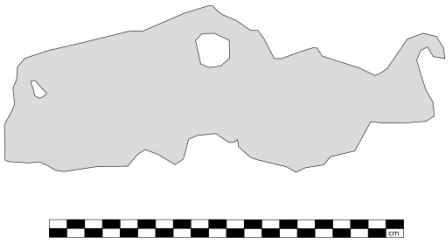
23030 – Sheet lead



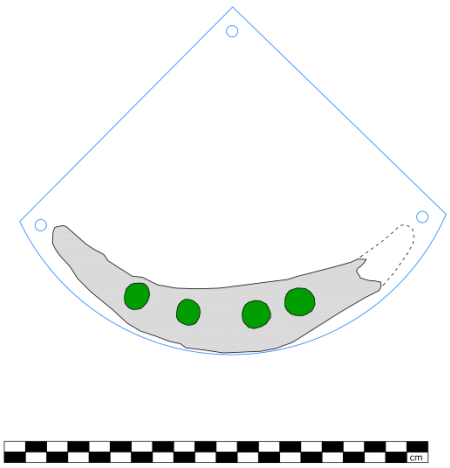
23031 – Sheet lead



23032 – Sheet lead



23033 – Chip log weight (lead with copper alloy tacks)



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