COLOSSUS 2025

DIVER TRAIL REFURBISHMENT

PROJECT REPORT

CISMAS

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Cover Photograph: The new diver trail station (13) – one of the 32-pound Blomefield guns, just visible in the weed on the seabed, photograph by Emlyn Morris

Acknowledgements

This project was commissioned by Historic England, and would not have been possible without their contribution. I would like to thank in particular Hefin Meara and Terence Newman of Historic England for their assistance throughout the project.

I would like to acknowledge the contribution made to the project by the CISMAS volunteers. They worked cheerfully for no pay, giving up their time and money in order to take part. Without them this project would not have been possible.

Jeff Dicker made the new dive station markers and sediment monitoring pins for this project, and as always made an excellent job of them. He only charged us for materials – donating his labour free of charge, for which we are most grateful.

I need to thank Izzy Allsop, the skipper of the dive charter boat *Morvoren*, who was always cheerful and very helpful; and ensured that diving went smoothly.

Ambient Pressure Diving generously supported the project by supplying Sofnalime for the two rebreather divers on the project. Otter Watersports have in the past supplied CISMAS members with a discount on their products.

The Isles of Scilly Steamship Company were kind enough to give us a discount on our ferry tickets to Scilly on this project, for which we are extremely grateful.

Last but not least, I need to thank the two new volunteers - Becky Gill and Jon Parlour - who joined us for this year's project and slotted into the team seamlessly.

Ambient Pressure Diving

Contents

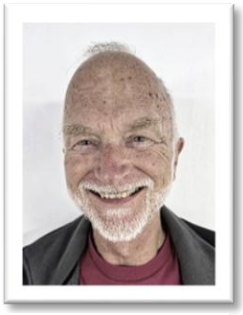
The Team

Kevin Camidge
Team Leader

Andrew Earle
Head Cook

Becky Gill
Diver

Emlyn Morris
Photographer



Jon Parlour
Diver

Bren Rowe
Safety Officer

Nick Sodergren
Diving Supervisor

Izzy Allsop
Boat Skipper

Summary

This report documents the fieldwork undertaken by seven CISMAS volunteers on the protected wreck site of HMS *Colossus* in the Isles of Scilly, during the first week of September 2025. We were blessed with unsettled weather and as a consequence we were only able to achieve five of our 12 planned dives on the site. Despite this all of the primary tasks of the project were achieved. We extending and refurbishing the *Colossus* dive trail, renewed the sediment monitoring system on the site and replaced the bottom-line leading from the mooring to the site. Because of the poor weather we were not able to undertake any of the secondary tasks proposed in the project design.

Background

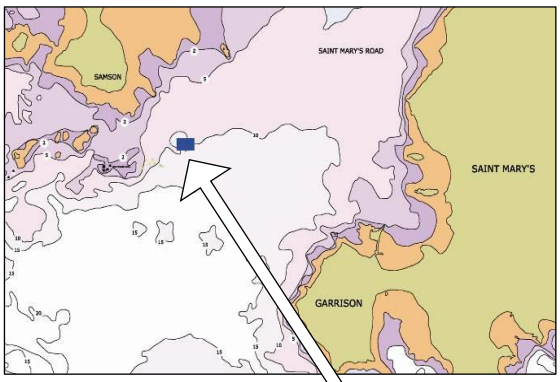


Fig 1
The location of the designated wreck site HMS *Colossus* in St Mary's Road, Isles of Scilly

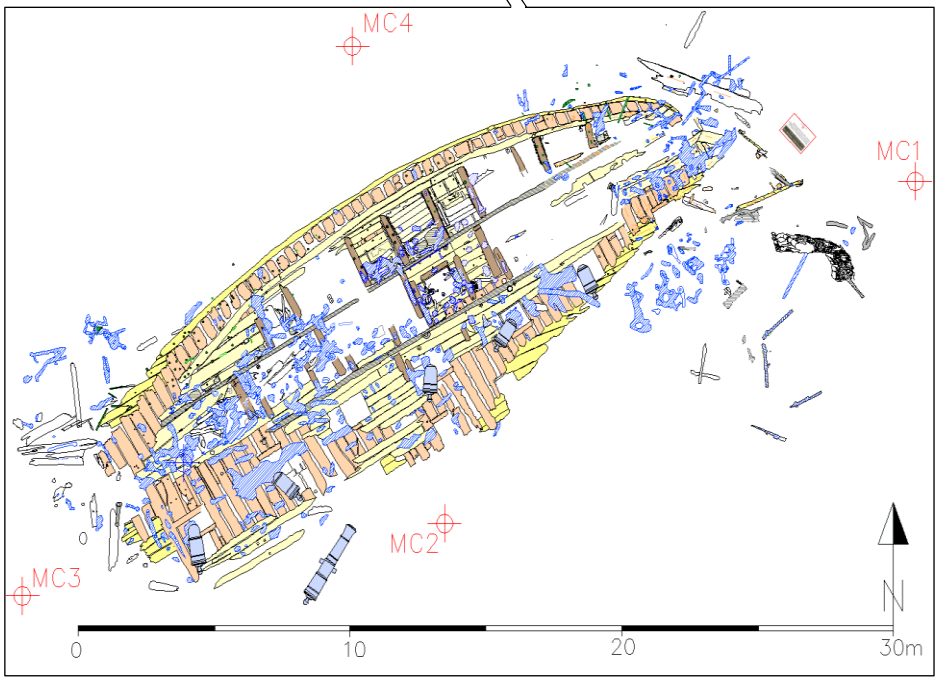


Fig 2
Site plan showing the exposed stern of HMS *Colossus*

The Ship

HMS *Colossus* was a 74-gun warship built in 1787 in a private shipyard at Gravesend and wrecked off Samson in the Scillies in 1798. These 74-gun ships were one of the most successful types of the period. They were typically about 51m (170 feet) in length and had a crew of 600. During a relatively short working life (eleven years) *Colossus* saw action at Toulon, Groix, Cape St Vincent and Cadiz. A comprehensive history of the vessel is contained in the CISMAS *Debris Field Survey report* (Camidge, 2005, pp.54-77) available at cismas.org.uk.

In December 1798 *Colossus* was on the 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 ancient Greek pottery. While sheltering from a gale in St Mary's Road the anchor cable parted and the ship was driven aground to the south of Samson. All but one member of the crew were taken off safely before *Colossus* turned onto its beam ends and proceeded to break up.

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 scattered bow wreckage and the more intact stern. In 1975 part of the wreck was designated under the Protection of Wrecks Act. Over 30,000 sherds of ancient Greek pottery were recovered (now housed at the British Museum). 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. The stern site lies in 10m of water (chart datum) on a level sandy seabed.

A virtual site tour of *Colossus* can be visited at http://hmscolossus.cismas.org.uk

Previous work

The stern of the vessel was found in 2001 by local divers. Since then, a number of projects have been undertaken on the site by CISMAS, including a small excavation in 2015 (Camidge, 2015) and a long-term trial of the efficacy of reburial on site as a means of preserving artefacts (Camidge *et al*, 2012).

All the CISMAS (Cornwall and Isles of Scilly Maritime Archaeology Society) reports relating to work on *Colossus* can be downloaded at www.cismas.org.uk

A YouTube video of the 2019 diver trail can be viewed at http://youtu.be/wS5KURop104

A Facebook page of recent work by CISMAS on the site can be viewed at:

https://www.facebook.com/pages/Cornwall-and-Isles-of-Scilly-Maritime-Archaeology-Society/843145725722673?ref=aymt_homepage_panel

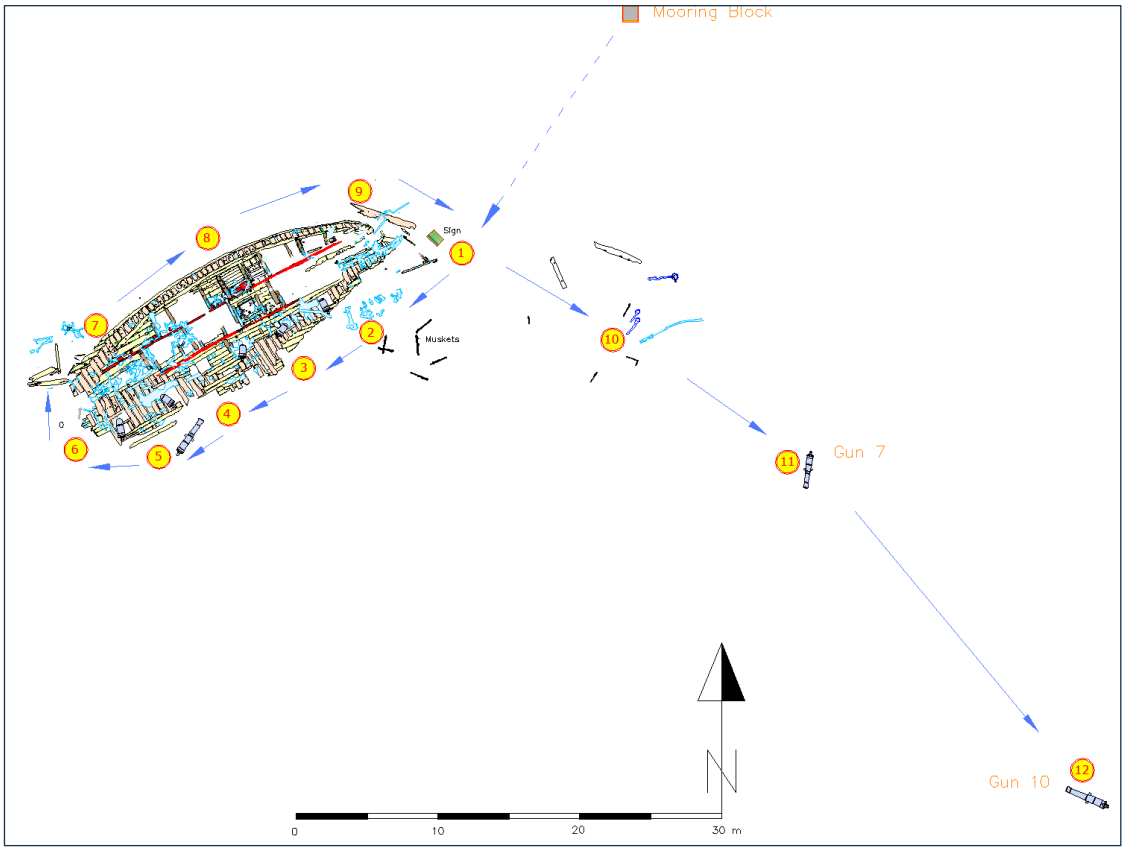


Fig 3 The 2014-2025 diver trail showing the 12 station markers numbered 1 to 12

In **2009** a diver trail was installed around the main area of exposed wreckage. It consisted of nine numbered dive stations (fig 3). This was supplemented by an 18-page waterproof guide book available to divers on board the Scilly dive charter boats.

The diver trail was refurbished in **2012**. The diver stations were cleaned and the seabed sign (installed in 2008) was replaced. The diver trail was extended by adding two new stations (10 and 11).

The diver station markers were all replaced in **2014**. They had become unreadable due to dense weed growth and were beyond cleaning. The bottom lines were replaced and refastened and the trail was extended by the addition of a further dive station (number 12). In **2015** an updated seabed sign was installed.

The last refurbishment of the diver trail was undertaken in **2019**. The stations (risers and floats) were all replaced. The bottom lines which lead to stations 10 to 12 were partly replaced and extra fastenings installed. The seabed sign was carefully cleaned. A new underwater diver trail guide was produced on A4 plastic slate (kept on board the Scilly dive charter boats).

A summary of all the archaeological work undertaken on *Colossus* can be viewed in the post-wrecking timeline at hmscolossus.cismas.org.uk This includes links to enable download of any of the project reports.

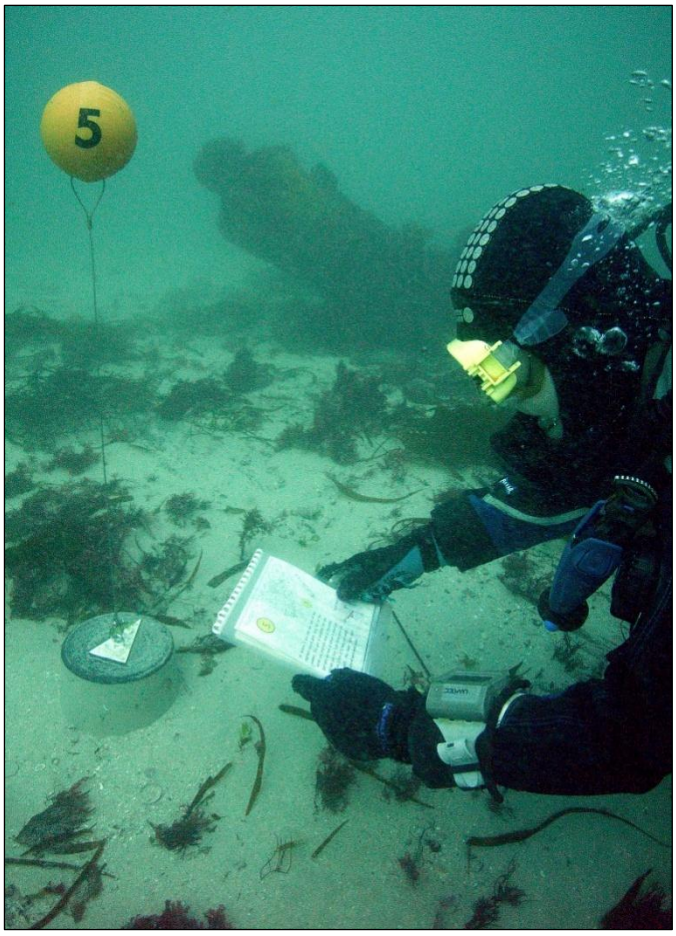


Fig 4

Diver at station 5 (18-pound gun visible in the background) on the *Colossus* diver trail in 2009 – just after the trail was first installed

The 2025 Fieldwork

Our Objectives

1. Refurbish the diver trail
By 2024 the diver trail had deteriorated, probably accounting for falling visitor numbers on the site. The main aim was to improve the visitor experience and interpretation of the site by undertaking much-needed maintenance of the diver trail, especially signage and interpretation. We wanted to use labelling on the dive stations which could be easily read despite the inevitable build-up of flora on the signage.

2. Extend the diver trail
To help improve the visitor experience, we decided to extend the diver trail to include extra points of interest and to connect the end of the trail back to the site to make a circular tour.

3. Record the sediment levels on the site
Record the sediment levels around the site using the remaining monitoring points.

4. Install new sediment monitoring points
Fit new monitoring points to enable ongoing measuring of the sediment levels on the site.

5. Record exposed timber in the western debris field
In 2024 CISMAS located an area of exposed wreckage in the western debris field. One of our secondary tasks, to be undertaken if time remained once the primary tasks had been completed, was to properly record this new wreckage.

6. Investigate geophysical targets
In 2023 a geophysical survey of the eastern debris field was undertaken by CISMAS and MSDS marine. Another secondary task was to investigate some of these targets if time and weather permitted.

What was achieved

The fieldwork was undertaken between 7th-12th of September 2025. We were faced with poor weather and significant swell for much of this period. The consequence of this was that we were only able to make five of the 12 planned dives. When it became clear that the weather was going to be challenging, we revised our planned operations to prioritise the essential parts of the core tasks. This allowed us to complete the refurbishment and extension of the diver trail as well as replacing the sediment monitoring system on the site. We were not able to take new photos and video to promote the refurbished diver trail. We did not have any spare time to record the timber in the western debris field nor were we able to undertake any investigation of the geophysical targets in the eastern debris field. This was a great disappointment to the whole team.

Diver Trail

The *Colossus* diver trail is designed to guide visiting divers around the site via a number of station markers, each of which are each located at a point of interest.

The station markers were all replaced with new, redesigned markers. The main difference was the addition of stainless-steel plates with the station numbers drilled into the plates. We are hopeful that these will remain legible even after the inevitable flora has collected on the plates. If they do become illegible through accumulated growth, we will scrub the plates with coarse steel wool which should quickly restore them to legibility.

Fig 5 The station markers as they appeared in 2019 when newly fitted (left) and how they looked in 2025 just before they were replaced with the redesigned station markers

The old station markers each consisted of a numbered float attached to a concrete sinker by a one metre length of nylon rope. These worked well with the single drawback that the number painted on the float soon became illegible through the build-up of underwater flora. When the trail was refurbished in 2019, we coated the numbered floats with anti-foul paint and added embossed plastic tags with the station numbers. Sadly, these all became overgrown within a few months. The new (2025) station markers have a stainless plate with the numbers defined by drilled holes – figs 6 & 7

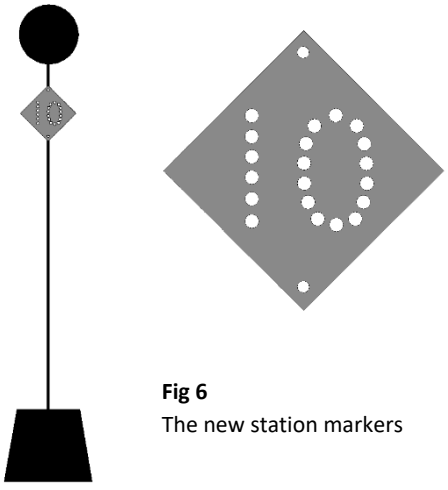


Fig 6
The new station markers

Fig 7
One of the new station markers installed by CISMAS in September 2025. Note the station number (13) drilled into the stainless-steel plate.

The poor visibility is due to the stormy weather

In addition to installing the new station markers to the existing diver trail, we added an extra dive station (13) to include another of the outlying 32-pound guns. We also installed a new bottom line, leading back from this to the main area of wreckage, creating an additional circular route on the trail (see fig 8 below).

Visitors to the site can now choose between the two circular routes or tackle both consecutively. Two divers swam the two routes and timed how long it took – this was with very brief stops at each dive station; most divers would probably stay longer at each station examining the points of interest. But the timings suggest that the whole of the new extended diver trail can be explored comfortably during a single dive.

Table of distances and swim times

Feature	**Distance (metres)**	**Time to swim (mins)**
Mooring to start sign	22	3
Blue Route Stations 1-9	73	11
Green Route Stations 10-13-sign	178	16
Start sign to mooring	22	3
TOTALS	**295**	**33**

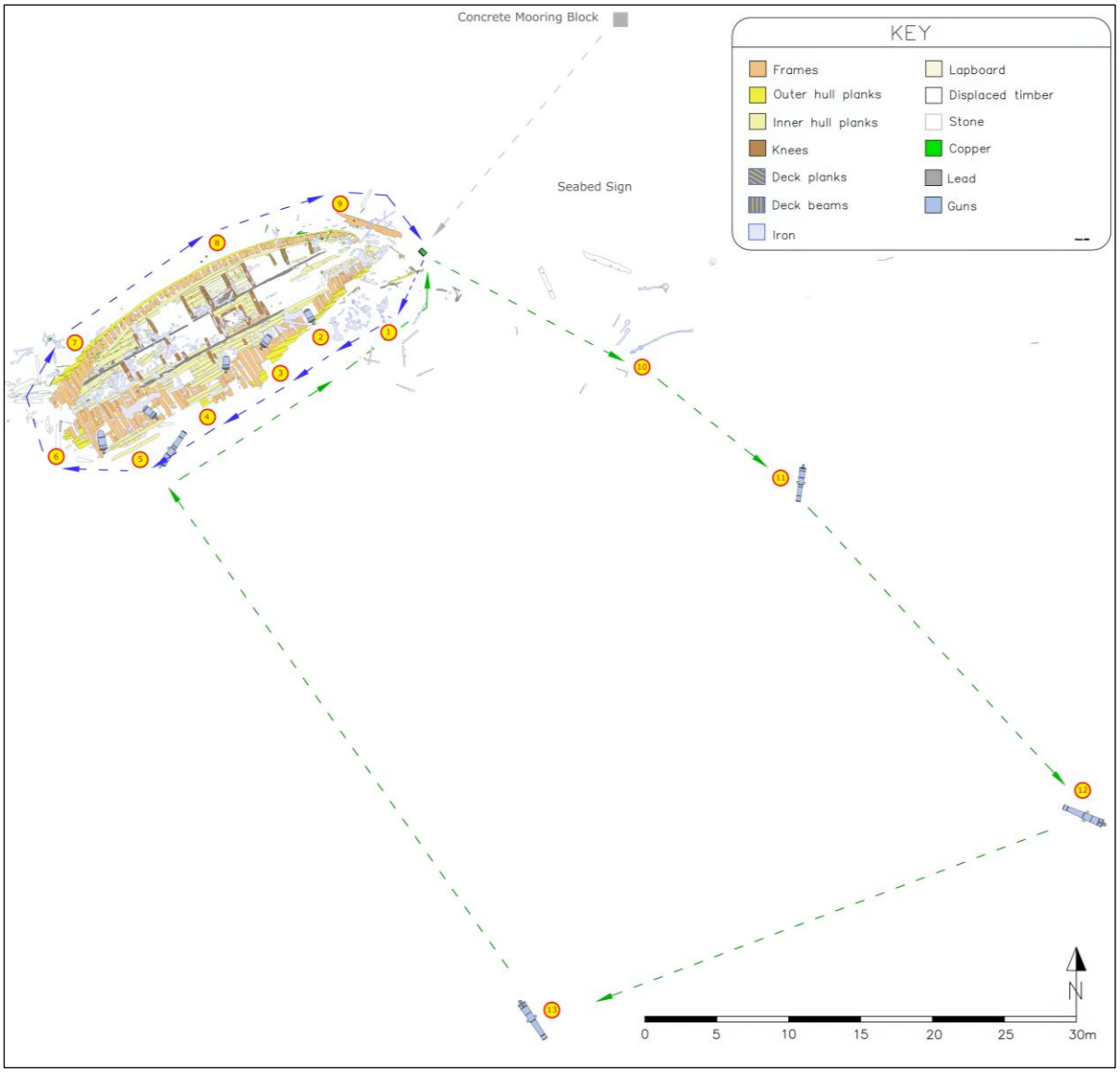


Fig 8 The new diver trail (installed September 2025). There are now two circular routes: the Blue Route which explores the main area of the exposed wreckage and the Green Route which takes in the outlying objects of interest and returns to the main wreck. Compare this with the previous trail shown in Fig 3

The dive stations on the Blue Route (1-9) are quite close together and the next station can often be seen if the visibility is reasonable. For this reason, there are no bottom lines except from the sign at the start of the trail to dive station 1. On the Green Route, as the stations are much further apart, there is a bottom line fastened to the seabed to guide divers between the station markers.

We were hoping to get some video and photographs of divers on the new diver trail, to promote both it and the new online guide. Unfortunately, we did not have the time or the visibility to do this.

New Online Guide

A new guide to the updated diver trail has been devised (see p 30). This will be made available on the CISMAS website. Access will be by QR code distributed along with an A3 plan of the new diver trail to dive skippers and *Colossus* license holders. The new guide will be smart-phone friendly and as there is a good 5G signal when above the site will be accessible to divers pre dive.

Sediment Monitoring

Since 2002 we have been monitoring the sediment levels around the wreck of *Colossus*. When the sediment levels fall on the wreck site, more of the wreck is exposed and the organisms of decay swiftly go to work on the timber and organic remains of the vessel.[1] As far as we are aware this is the only protected wreck site where regular sediment level measurement is still undertaken.

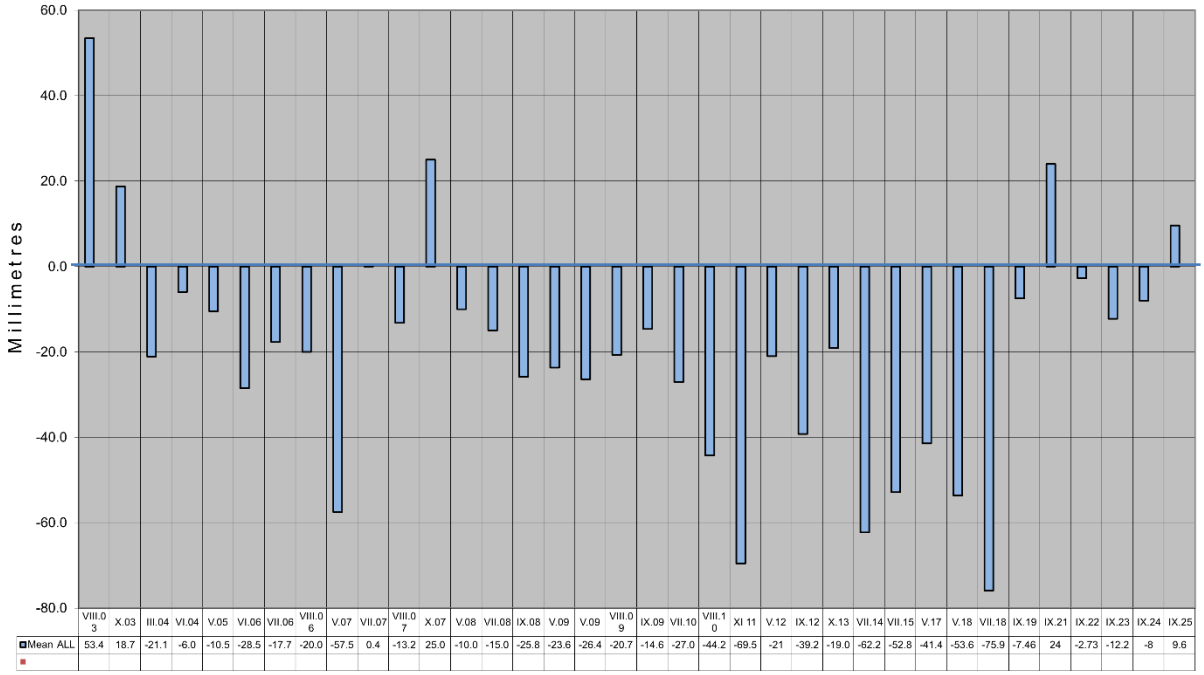


Fig 9 Histogram showing the mean change in sediment levels over all sediment monitoring points since 2003. The zero level represents the mean sediment level when measurements began in 2002

The above histogram demonstrates the change in sediment levels on the site; these are the mean change for all the points. This shows that this year the mean of the sediment levels measured rose by 9.6mm. This does not mean that sediment levels actually increased over the whole site. Ten separate points were measured this year, and there was a rise at six of these, no change at two and a fall at two. The chart shows that this is only the fifth time the levels have been higher than they were in 2002 when measuring began.

[1] The stabilisation trials conducted in 2004-5 demonstrated that the main threat to the exposed timber are wood boring organisms which can significantly degrade timber on the seabed of this site within months, Camidge et al, 2005, *Colossus Stabilisation Trial*, access at cismas.og.uk

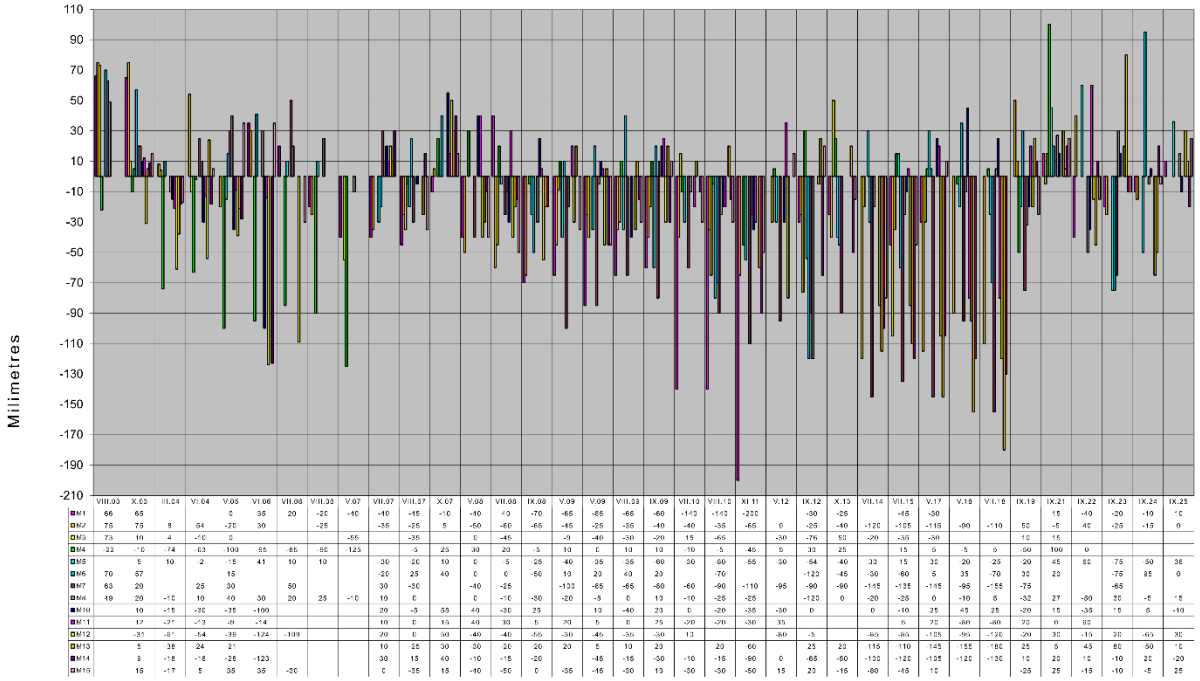


Fig 10 Chart showing the individual sediment levels for all the recorded levels since 2003. Where a particular point has no bar, the point was either missing or not located

It is clear from the above chart that there has been a change in the pattern of sediment levels which began in 2019 and appears to be ongoing. On the whole there have been more large sediment rises recorded and fewer large decreases.

New Sediment Monitoring Points

Four of the sediment monitoring pins have not been located for a number of years; they have been searched for on numerous occasions without success. These monitoring pins had been installed in 2014. We decided to replace the whole set with new stainless-steel pins. These were each 1m long, and were carefully driven into the seabed so that 200mm of the pin remained above the seabed. At the same time, we slightly adjusted the position of the pins so that they could be located more easily in the future.

The sediment levels are recorded by measuring the exposed length of the pin and comparing it to the levels recorded previously.

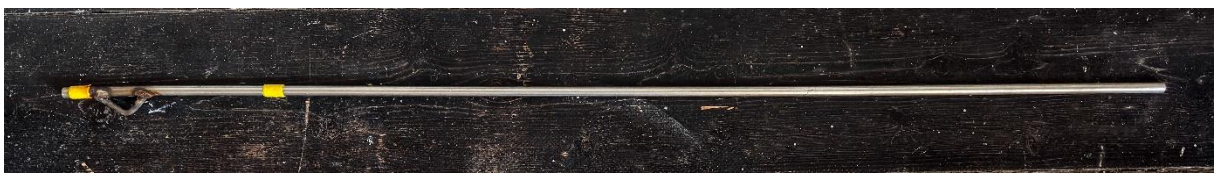


Fig 11 One of the new sediment monitoring pins; 1m long x 10mm diameter stainless steel rod

Fig 12

One of the sediment monitoring points installed in 2014. They have a unique (to this site) stainless washer attached and stamped with the monitoring point number – in this case M7

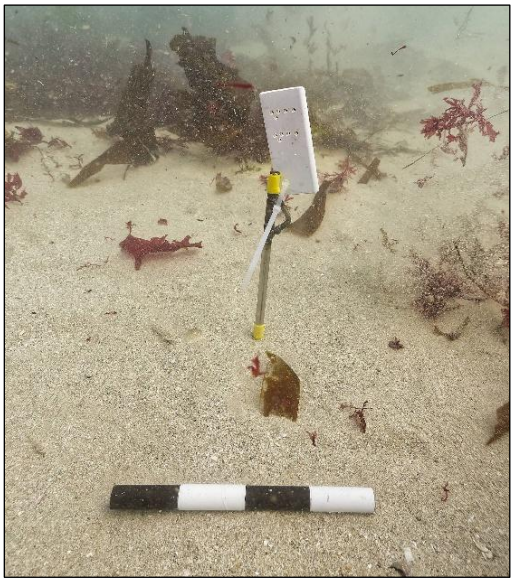


Fig 13

One of the new sediment monitoring points (M11) installed in September 2025. Note the semicircular eyelet and the attached numbered uPVC tag. The lower yellow tape band is 20cm from the top of the bar

The scale bar is 20cm long

The location of the Sediment Monitoring (SedMon) points was slightly altered to allow them to be more easily located, especially when the underwater visibility is poor. The table below gives simple locations, usually from the easily located diver trail marker floats.

Location of the post 2025 SedMon points	
Point	**Location**
M1	2m west of M4
M2	2m north of DS6
M3	6m south of DS3
M4	2m west of M2
M5	Midway between DS7 & DS8
M6	Midway between DES8 & DS9
M7	2.5m south of seabed sign
M8	1m north-east of GudE
M10	1m west of DS9
M11	2m north of M5
M12	Empty UGD port
M13	North of DS5
M14	2m south-west of DS3
M15	1m north of seabed sign

Please note that M9 has never been used (for historic reasons) – the first batch of points was M1 to M8, and when further points were added the numbering began at M10

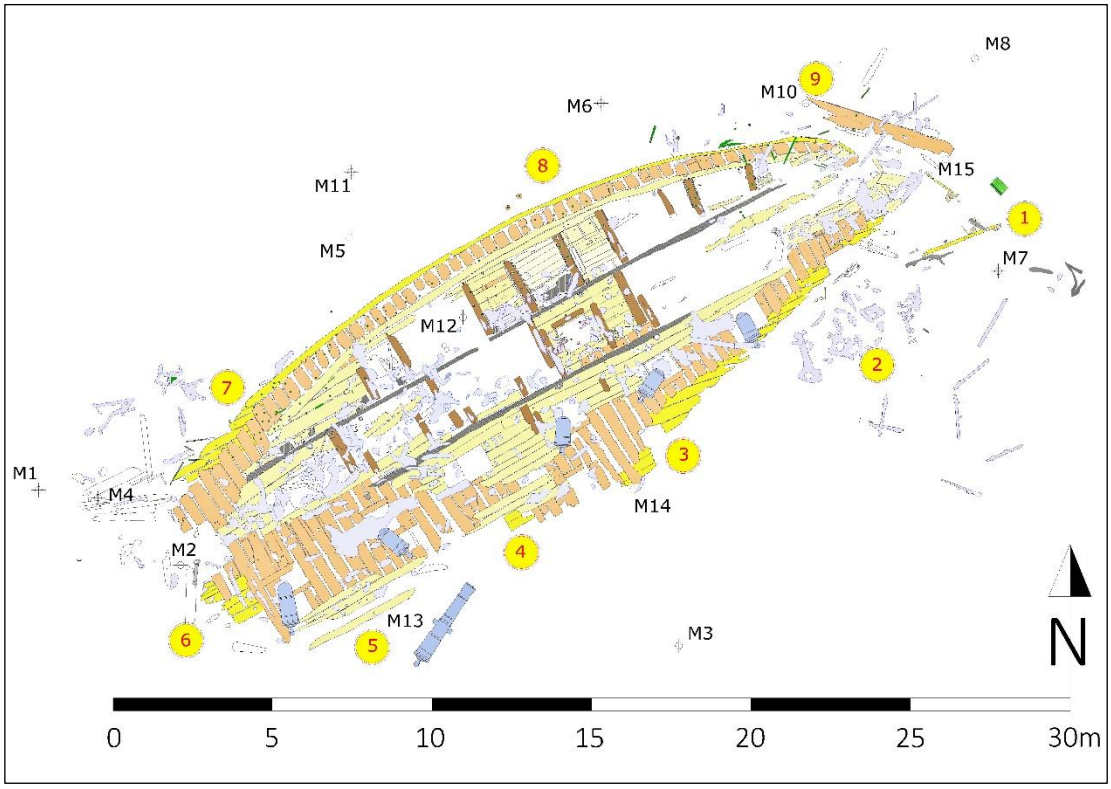


Fig 14 Sediment monitoring points M1 to M14 in place from 2014 to 2025

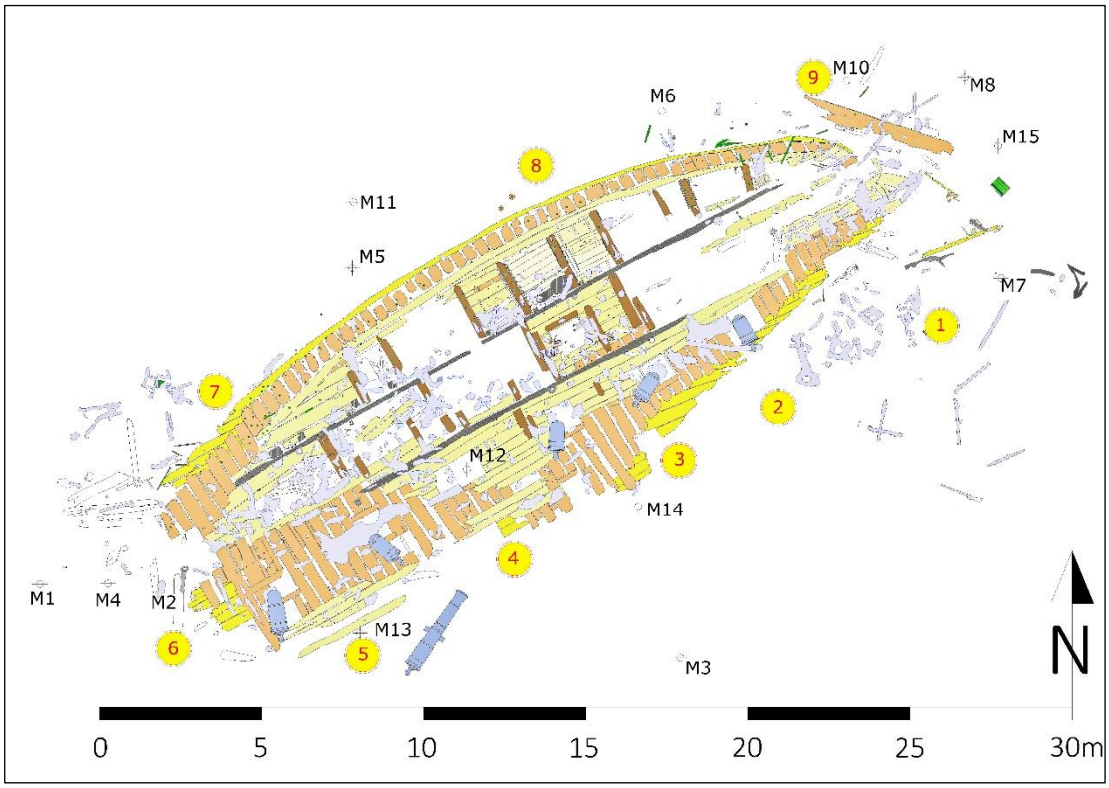


Fig 15 The new sediment monitoring points installed in September 2025

Due to the adverse weather conditions, there was no opportunity to retrieve the remaining old sediment monitoring points. These can be recovered at some future visit to the site, but in the meantime will not cause any problems as they are very different in appearance from the new sediment monitoring points (figs 12 & 13).

In the past we have always used yellow plastic survey disks to identify the sediment monitoring points (as well as the control points on site). The number is marked onto the disk using a permanent marker or burnt into the disk using a soldering iron; in either case they quickly become illegible due to a dark mould-like growth which embeds itself into the plastic. For this reason, we have tried a new method of tagging the sediment points, rectangular tags cut from uPVC window trim strips. These have been drilled with the SedMon point number. We do not know how these will fare underwater, but the tags float so the points are more visible on the seabed (figs 13 & 16). It will be interesting to see how they look after a year on the seabed.

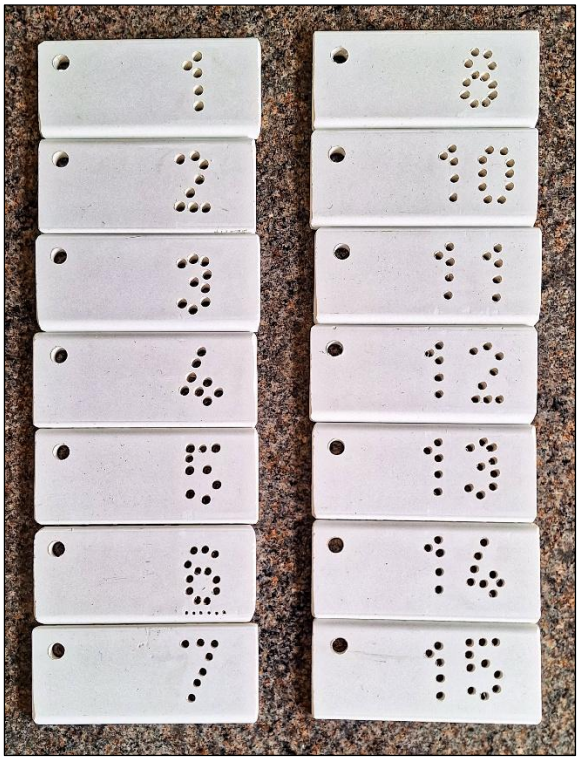


Fig 16

The new uPVC tags attached to the sediment monitoring points. Thanks to CISMAS volunteer Nick Sodergren for manufacturing these

The Mooring

Early in 2025 it was reported that the permanent mooring buoy on the site had disappeared. The mooring has been maintained so far by Tim and Izzy Allsop and usually needs to be replaced every two or three years. Materials to effect the repair have been secured – but poor weather has prevented installation. It has been decided to leave this until spring 2026, to avoid wear and tear over the winter months.

We were asked by Tim Allsop to locate and mark the mooring block and chain to make location quicker for him in the spring. We used one of the old diver station wash buoys to mark the chain

attached to the mooring block. We also replaced the missing bottom line leading from the mooring block to the seabed sign which marks the beginning of the diver trail.

Fig 17

The shackle on the end of the mooring chain – suggesting the mooring had failed where the rope riser joined the chain shackle. Note the very worn chain (bottom left) which is left over from a previous mooring. The wash buoy was tied to this shackle using a metre of rope to make the chain easier to locate when the mooring is replaced

The Future of the Diver Trail

The Isles of Scilly charter boat skipper, Izzy Allsop, has often suggested that CISMAS should come over to Scilly at the beginning of the season to clear the mobile kelp which accumulates over the site during the winter storms. Izzy again raised this matter while we were installing the new diver trail markers in September 2025. She has offered us the opportunity to do this from her charter boat in the brief period between the relaunching of her boat from winter layup and the start of her diving season (6-15 May).

Once the mobile weed has been cleared, experience has shown that the site can stay reasonably clear for several months as long as severe south-westerly storms do not occur. If CISMAS undertakes this clearance, that would be an ideal opportunity to make underwater photographs and video footage of the new diver trail. This could be used along with carefully crafted text to promote the new diver trail through the media. It seems likely that if 'ready to go' video footage is presented to the media at the right time (possibly managed by the publicity dept at HE) this is very likely to receive local and even national exposure for Historic England and the *Colossus* diver trail. In any case, supplying photos and text to the dive press usually results in publication.

Whatever publicity we achieve would help increase the visits by divers to the site, as well as adverting the general public to the existence of protected wreck diver trails in general and to the Scilly virtual dive trails for non-divers.

The Seabed Sign

The seabed sign has been replaced several times since the diver trail was first installed. It consists of a concrete block resting on the seabed with an A3 white polycarbonate board attached to its upper face with stainless steel screws. The original sign was vinyl on polycarbonate – similar to commercial shop signage. This looked good and survived immersion but quickly became illegible due to flora growing on the surface. Attempts to clean the board by visiting divers resulted in damage to the vinyl (Fig 18).

A commercial undersea signage system was donated to the site in 2015 by C-Tag anti-fouling signs. This worked very well for several years, but eventually it too succumbed to the flora, much of which is now embedded into the soft substrate of the sign itself.

What is needed is a waterproof sign which is flora resistant (copper or stainless steel?) which can be easily cleaned using an abrasive pad – but such things are expensive and certainly beyond the reach of CISMAS. Perhaps an approach to English Heritage signage department would yield some advice or assistance?

Fig 18 The original seabed sign, on the left when first installed, and on the right after a few years on the seabed

Fig 19 The current C-Tag sign, on the left when installed in 2015, on the right as it is now, Note the deformation of the sign is not a lens artefact – the sign is formed from a soft 'rubbery' substance.

Other Perspectives

Each member of the CISMAS project team was asked to make a contribution to this report. These accounts are all directed at a different aspect of the work undertaken by the team, and reflect the volunteers' own experiences of the project. They also highlight one of the many benefits of volunteers on projects like this – the astonishing diversity of skills volunteers can bring to a project team.

Fig 20

As soon as the new diver trail was in place we had our first visitor. This gives a good example of the possibilities of incorporating flora and fauna into the diver trail. See the CISMAS Facebook page for video of this visitation

Photos by Becky Gill

Feeding the Crew - Andrew Earle

Feeding the CISMAS Crew of seven for one week gave me an insight into how difficult it was for the purser and cook of the *Colossus* to feed 600 men who could be at sea for months at a time. The purser in the time of *Colossus* would have had to pay £65 for his warrant, and post sureties (from two people) amounting to up to £2,100 depending on the size of the vessel. This could be a good investment, as pursers could make money by selling on items to the crew - but if things went awry, he could end up in the debtors' prison. The Victualling Board were notoriously bad payers and often queried accounts or spoilage, leading to long delays in paying. The purser was often viewed with suspicion by both sides – The Admiralty who were always looking for fraud and the men who were unhappy about the prices charged by the purser.

On *Colossus*, the mess tables would be rigged between the cannons on the main gun deck. The food on Navy ships was plentiful and probably represented an improvement on what most of the crew had experienced in their life before the Navy. It was however subject to spoilage and the weevilly biscuit and rock-hard salt meat are iconic of the Georgian Navy. Each seaman was allowed per week: 7 pounds of bread or biscuit, 4 pounds salted beef, 2 pounds salted pork, 2 pints dried peas, 3 pints of oatmeal, 6 ounces of butter, 12 ounces of cheese and 7 gallons of beer.

Fig 21

Gun deck onboard HMS *Victory* with the mess tables set up between the guns. This is how it would have been at mealtimes onboard *Colossus* – but with less headroom.

Officers would supplement the basic rations with more exotic food and fine wines. There were detailed tables showing approved substitutions, for example olive oil could be substituted for butter on long voyages while wine or rum was substituted for beer when away from home waters. These were basic 'rights' allowed to each man, but substitutions were made as circumstances dictated. Vegetable, dried fruit, flour, suet, sugar would be supplied allowing the production of such favourites as plum duff, 'spotted dog', and 'boiled baby' (a suet-based pudding).

I was fortunate to have a fridge and freezer available to store produce with a short shelf life rather than relying on salted food in barrels, or dried food. On this CISMAS expedition, I wanted to cook some food that officers would have enjoyed as well as more basic seamen's fare.

The CISMAS Team experienced lobscouse and 'spotted dog', which would have been eaten by the seamen (and officers) - but also had duck in an orange sauce, lemon posset and a steamed honey sponge pudding that was more suited to the captain's or wardroom table. We also ate curry, which was not unknown to the officers and men especially those travelling to the East (and had the advantage of partially covering the taste of rancid meat). I aim for two 'Banyan' days or days without meat which, was the usual pattern for the Navy in *Colossus*' time. The word Banyan is derived from travels to the East where vegetarian food was more common. On this trip these was also soup and a pasta dish.

The Upside of Downtime – Becky Gill

Our trip suffered from unfavourable weather, which cancelled a few of the planned dive days. We were determined to make the most of our enforced non-diving time, and got out our computers, determined to get to grips with QGIS. For those unfamiliar with GIS (as I was until a few months ago), it is a Geographical Information System and is used to create, manage, analyse and map data. QGIS is a free open source software, which we are hoping we can use to record, map and easily visualise the various data collected from our wreck sites.

Earlier in 2025, some of the team had completed the NAS introductory course for QGIS. Using the basic knowledge gained on the course, we started to work with data specific to our chosen sites. Three of us sat around the table, each on our own individual computer, each trying to do the same thing. Comments like 'can it do this?', 'does anyone know how to do that?', 'look, I managed to do this' were common. It was slow going, and for every step forward it seemed there was another obstacle we had to deal with. When things got really tough and we weren't able to help each other, the magical internet search engines provided suggestions. When all that failed, the Protected Wreck Association set up a QGIS Support chat group for us to post questions which the team at MSDS would kindly answer.

Being relatively new to this discipline of diving, I found it invaluable to have around the table with me, divers with many years of maritime archaeological experience. I was able to question them about the type of data that should ideally be recorded on sites, and what professional software is capable of producing.

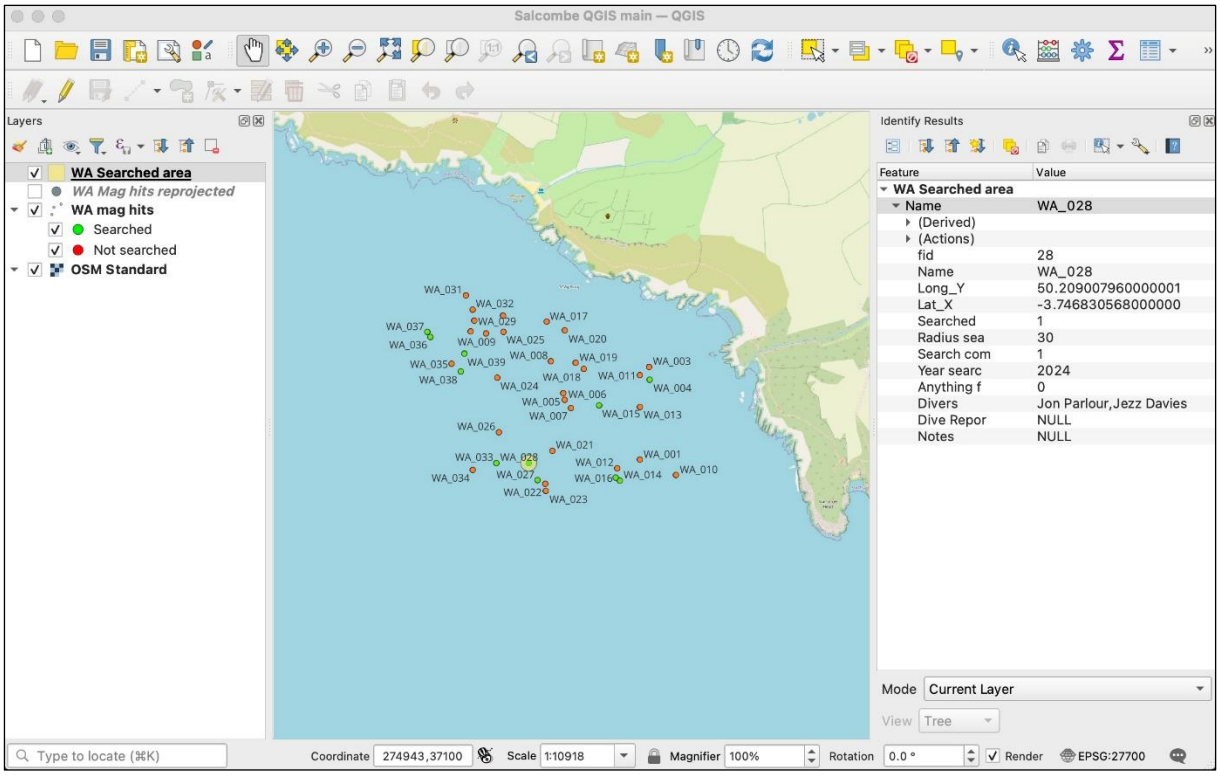


Fig 22 Screenshot of QGIS magnetometer targets on the Salcombe site

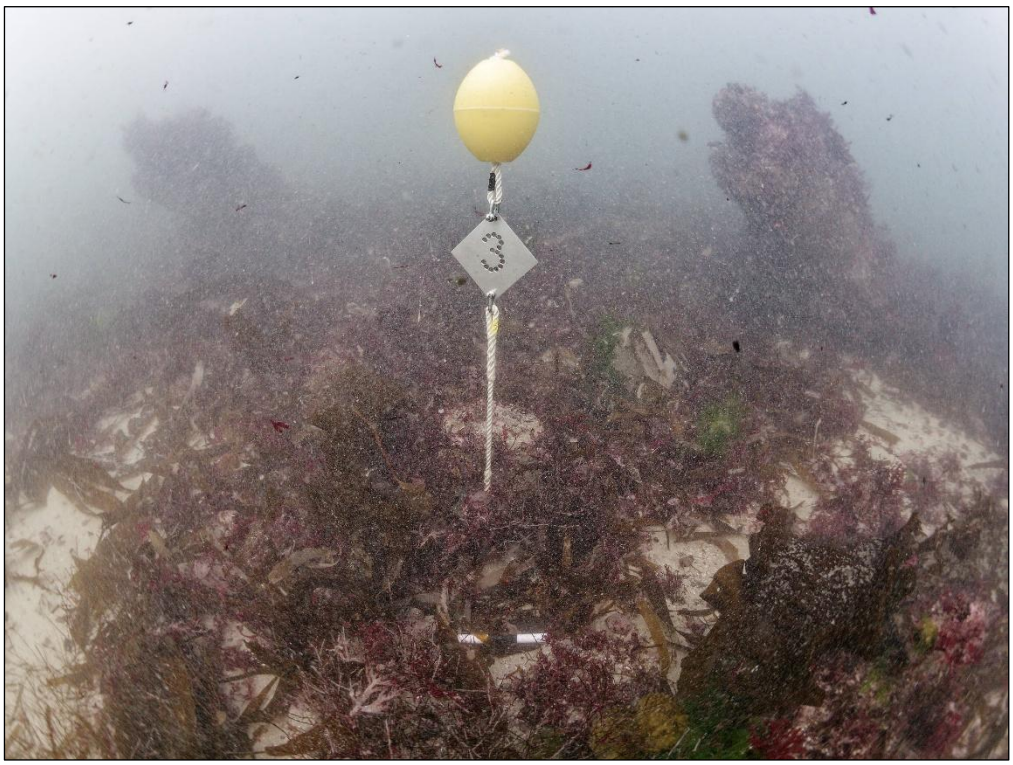
Several days after we started and many hours, iterations and cups of various hot drinks later, we were able to add layers for magnetometry hits, and visualise which hits had been searched and the approximate search area covered. We managed to work out how to complete a (very) basic site plan drawing, and how to import images. The fact that we were together and all supporting each other made the process not only easier, but also more fun. We kept each other going when it would have been much easier to give up. Growing our community to include the new chat group not only helped us, but will hopefully encourage others to take the leap to learn and use a powerful piece of software that isn't always the simplest to master.

Seeing Clearly in the Murk – Ammarin Emlyn Morris

This trip would be my second contribution to the CISMAS colossus project, with my first being last year. Yet again I am grateful to Kevin and the team for having accepted me for the second time as one of their own. This year I was again in charge of photography, and cataloguing the images into their respective folders.

Compared with last year, I became a lot more 'hands on' with completing the designated tasks on this trip, this being a new endeavour for me. Carrying more equipment down to the seabed yet leaving with less was a new experience. The sensation of carrying a camera while hauling tools was weird at first, but became natural after a couple of dives. However, protecting the camera while using tools will always remain a source of anxiety.

The weather during the expedition was not the most satisfactory, which resulted in us having to terminate a few days of diving. This allowed us to investigate the use of the geospatial software Qgis and gave me the opportunity to socialise with two of the new members to this year's expedition, learning from their expertise within the field of underwater archaeology and the passion that they both have towards it.



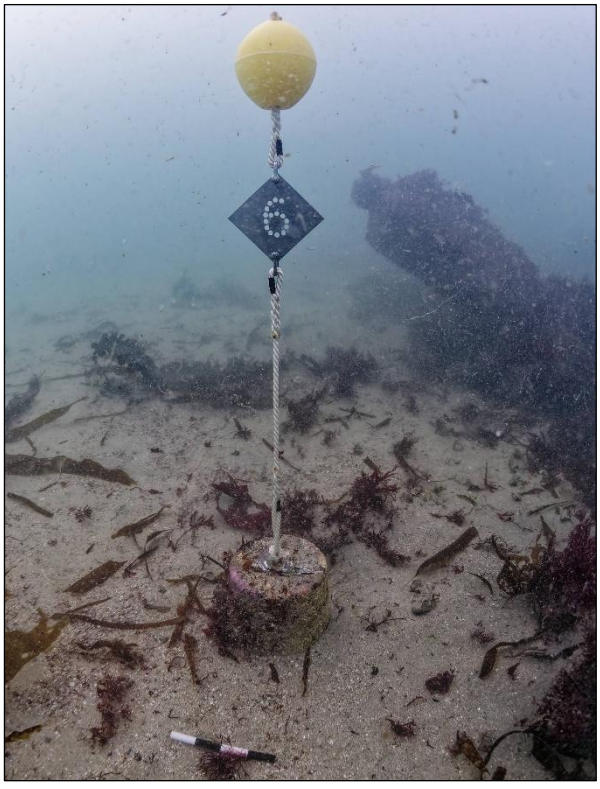


Fig 23

Photographs of the new diver stations 3 and 6 showing the upper gun deck 18-pound guns in the background. The poor visibility at the time was mitigated by using a fisheye lens to get very close to the subject. The distortion typical of fisheye lenses was largely corrected in post processing.

The scale bar is 20cm long

At the time of this expedition, I had only just graduated from the University of Falmouth and had been living away from home, at work within the New Forest. Being able to come back and see Cornwall again has made me realise how much I miss the landscape and the many people that I have befriended during my time at university. Yet again I am forever grateful to the CISMAS committee for giving me this opportunity. It has opened my eyes to a potential future within archaeology which I would very much like to pursue, and given the skills I have acquired during my time at university a fulfilling purpose.

Saving your Breath – Jon Parlour

The benefits and problems of closed-circuit kit on projects like this.

I first started using a rebreather for recreational diving about 25 years ago when I was involved in the *Metta Catharina* project in Plymouth Sound. The *Metta Catharina* was wrecked in 1786 off Raveness Point, Mount Edgcumbe, opposite Drake's Island in 30m-35m of water. At that time the team members were carrying an additional cylinder of decompression gas.

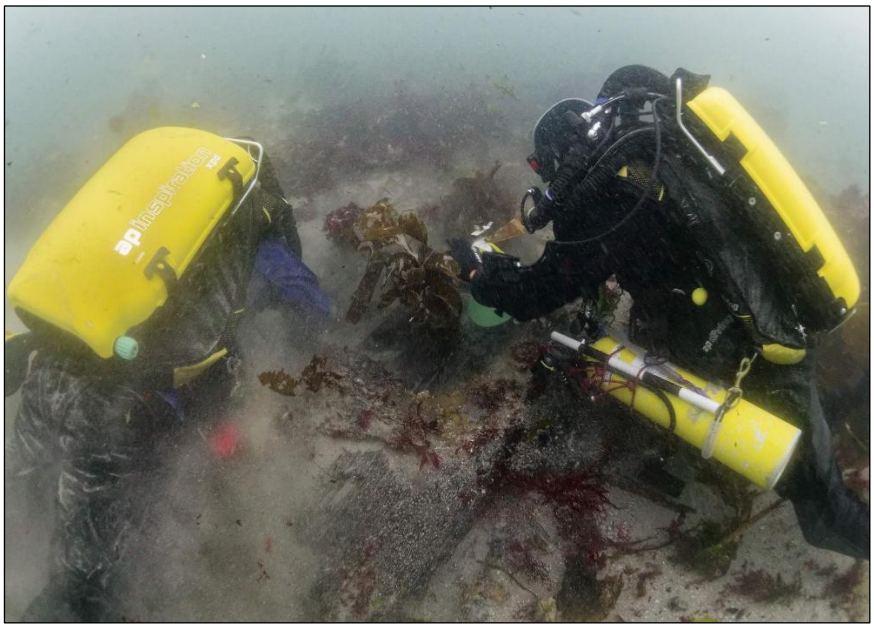


Fig 24

Bren and Jon on site, both using AP closed circuit equipment

The main benefit of the rebreather in that depth range was that it would constantly mix the best nitrox for the depth and increase the oxygen percentage on the way up and during decompression stops. It also provided much more available gas; up to three hours on a fresh scrubber. We dived all year round, and in the winter the warm breathing gas and reduced body core heat loss was a noticeable advantage over open circuit.

When diving on projects in the Baltic, where we were at around 50m depth and the water temperature was just 4C, the rebreather also provided a cost-effective solution when using trimix. Including helium in the breathing mixture reduces the proportion of nitrogen and its narcotic effects in depths over 30m-40m, a significant factor when doing precise measurements or operating

complex equipment. Helium is an expensive gas and very costly if used for open circuit. Once again, the rebreather provides very useful thermal protection in support of a heated drysuit, with run times of 90 minutes to two hours.

My main reason for choosing to use the rebreather on shallower projects like the *Colossus* is that I can be self-sufficient on nitrox for an extended project. In locations like the Isles of Scilly, where oxygen is not readily available for producing nitrox, I can dive two 60-90 minute dives a day for a week, taking just three 3 litre cylinders of oxygen and a small tub of sodalime to replace the scrubber material.

There is a cost to all of this, of course. The initial investment is significant and the ongoing maintenance, replacement of oxygen cells, etc more than one might expect with open circuit equipment. It's also not unknown for the electronics to play up or even stop playing. That can be inconvenient if it happens during a pre-dive system check, and a little more stressful if it happens during a dive. Rebreather training is all about managing these situations and making a safe return to the surface when necessary.

For an inexperienced rebreather diver, the focus required on monitoring the system can impact on completion of the project task. Sometimes focus on the task will lead to missing clues that the system needs attention. The diver's safety must always come first - so, just as with open circuit diving, it is important that the diver is familiar with and competent in using their equipment if they are going to take on additional tasks.

Weathering the Storm – Bren Rowe

Operating a dive team in Scilly presents unique logistical challenges. Each expedition demands extensive planning, and every effort is made to control the variables that could affect the project's success. However, some factors remain beyond our control.

Currently, only one resident charter dive boat operates in Scilly, and it's fully booked year after year. Fortunately, by reserving our slot a year in advance, we are assured of securing 'our week' annually. The same applies to all dive groups using the charter service, which means there are no spare weeks in the calendar and no flexibility to reschedule within the same season.

And then there's the weather. Like all UK dive operations, we are at the mercy of Britain's notoriously unpredictable weather. On Scilly, unlike other locations, we cannot simply return another time to finish the project, or switch providers. Diver safety is our highest priority, and we rely heavily on the skipper's in-depth local knowledge of tides and weather. When the skipper calls off a dive due to deteriorating conditions, we have no choice but to stand down.

Even when poor weather is forecasted, postponing is not a viable option. Doing so would mean delaying the project until the same week the following year, with little chance of a refund or alternative arrangement. Therefore, we proceed regardless, prepared to adapt and prioritise on the fly.

For this year's expedition, we returned to Scilly for our regular 6-day dive schedule during the first week of September. On arrival, we were relieved to find conditions not as severe as forecasted. We immediately adjusted our dive plan to prioritise the most critical tasks, making the most of the opportunity. Day 1 went well with all planned tasks successfully completed.

By Day 2, worsening weather signalled that this could be our final chance to dive. Plans were once again restructured to focus all efforts on high-priority objectives. Despite challenging conditions, we made excellent progress and were optimistic when the skipper agreed Day 3 was worth attempting. On day 3 we completed a single dive with six divers and managed to complete all essential tasks. However, upon surfacing, we were met with torrid seas and rising winds. The skipper delivered the news we had been dreading: diving was suspended for the day—and likely for the remainder of the week.

We remained on standby, consulting closely with the skipper and watching conditions carefully each day. Sadly, the weather did not improve. After just five of the planned 12 dives, the expedition was effectively over. The seven lost dives would have allowed us to progress to secondary tasks and continue to expand our understanding of this complex site. While frustrating, this experience underscores the importance of flexibility, prioritisation, and preparedness in fieldwork. The unexpected downtime allowed us to thoroughly review and process our results, and to reflect on the challenges and successes of the project - all while hoping for just one more window of opportunity to get back in the water.

Smooth Running – Nick Sodergren

For this project I was the dedicated Dive Supervisor and deckhand, remaining on the boat throughout the week (rather than rotating a diver to miss a dive and stay on the boat as we have done in the past).

Having liaised with the dive vessel skipper on matters of weather, tides and timings, I provided a full briefing to the assembled divers. Aside from the usual considerations, everyone was reminded how easily you can get 'task focussed' to the detriment of safe diving practices. There were many tasks where an array of tools and materials would need to be taken to or from the seabed by the divers. To ensure nothing was forgotten, a tools checklist, which I used to check off every diver before they entered the water, formed part of the dive log. The dive log also incorporated a record of dive gas used, so that the correct number of cylinder fills were arranged each day. Having one dedicated person recording the dive log made errors less likely.

Having a permanent dive supervisor also gave a consistent view of potential problems. An example of this was during diver entry, which was generally by backward roll over the gunwales. This often risked dangling tools/equipment from the diver getting hooked under the deck as they went over the side, resulting in damage, injury or just loss of dignity! Knowing this to be a persistent risk, I was particular in checking each diver myself.

Aside from dive supervisor duties, I doubled up as ‘deckhand’, which assisted the skipper. This project saw some fairly challenging weather and sea conditions. By deploying divers in pairs, I was able to assist them with ‘kitting up’, attaching sometimes cumbersome tools and equipment and moving them safely around the boat deck. This was also the case with assisting divers up the boat ladder at the end of their dives, where I could relieve them of awkward or heavy equipment before having to negotiate the ladder.

Fig 25 Divers ready to enter the water

I was also able to relieve the skipper of some other tasks such as setting and recovering shot lines, recovering tools sent to the surface on lift bags and generally observing for surfacing divers or their delayed surface marker buoys.

All of these duties could have (and have in the past) been carried out by rotation of the divers, but I believe that having a dedicated dive supervisor and deckhand makes for a more efficient and safer outcome.

A New Diver Trail Guide

The *Colossus* diver trail has had a number of different guide formats during its 16 years of existence. The first guide book was an 18-page spiral bound laminated A5 booklet designed to be taken underwater by the visiting divers. Copies were kept by the Scillonian dive charter boat skippers and loaned out to the visiting divers. The booklet was apparently well received by some divers – but others chose not to take it underwater as they thought it was cumbersome. These guides lasted surprisingly well, but started to delaminate after several years of use. In 2019 the guide booklet was replaced by an A4 printed plastic board. This has lasted extremely well, but was expensive to produce and only limited information could be fitted onto two sides of A4. This format would be the ideal choice to inform the visiting divers, as it consists largely of a site plan which can be taken underwater. It is, however, an expensive option (design and production cost over £800 in 2019).

We have designed a new guide to the updated diver trail, and a copy appears below. This will be stored on the CISMAS (or the Historic England) website. A paper site plan will be provided to the Scilly dive charter boat skippers, this will hopefully form part of the pre-dive briefing and will also carry a QR code linking to the diver trail guide. This QR code, or a PDF of the guide, could also be provided to all those who apply for licences to visit the site.

HMS Colossus Diver Trail Guide

History

HMS *Colossus* was a 74-gun warship built in 1787 by a private shipyard at Gravesend and wrecked at Scilly in 1798. These 74s was one of the most successful warships of the period. They were about 51m (170 feet) in length and had a crew of 600. During a relatively short working life (eleven years) *Colossus* saw action at Toulon, Groix, Cape St Vincent and Cadiz and also took part in the capture of two enemy ships *Le Vanneau* and *Vrai Patriot* in 1793.

In December 1798 *Colossus* was returning to England for refit with a remarkable cargo including eight crates of Greek antiquities, wounded sailors from Nelson's victory at the battle of the Nile and the body of a dead admiral. What the ship did not have on board was one of its spare bower anchors, which had been given to Nelson's ship *Vanguard* in Naples. While sheltering from a gale in St Mary's Roads the anchor cable parted and *Colossus* was driven aground to the south of Samson. All but one member of the crew were taken off safely before the ship turned onto its beam ends and proceeded to break up.

What you will see

The wreck lies on its port side and what you will see are the inside timbers of the ship's hull. There are also nine of the cannons which formed part of the ship's armament to be seen on the diver trail. Take time to look closely at the seabed. We have deliberately left many objects from the wreck in place on the seabed for visiting divers to discover and inspect. But please leave them in place for others to enjoy.

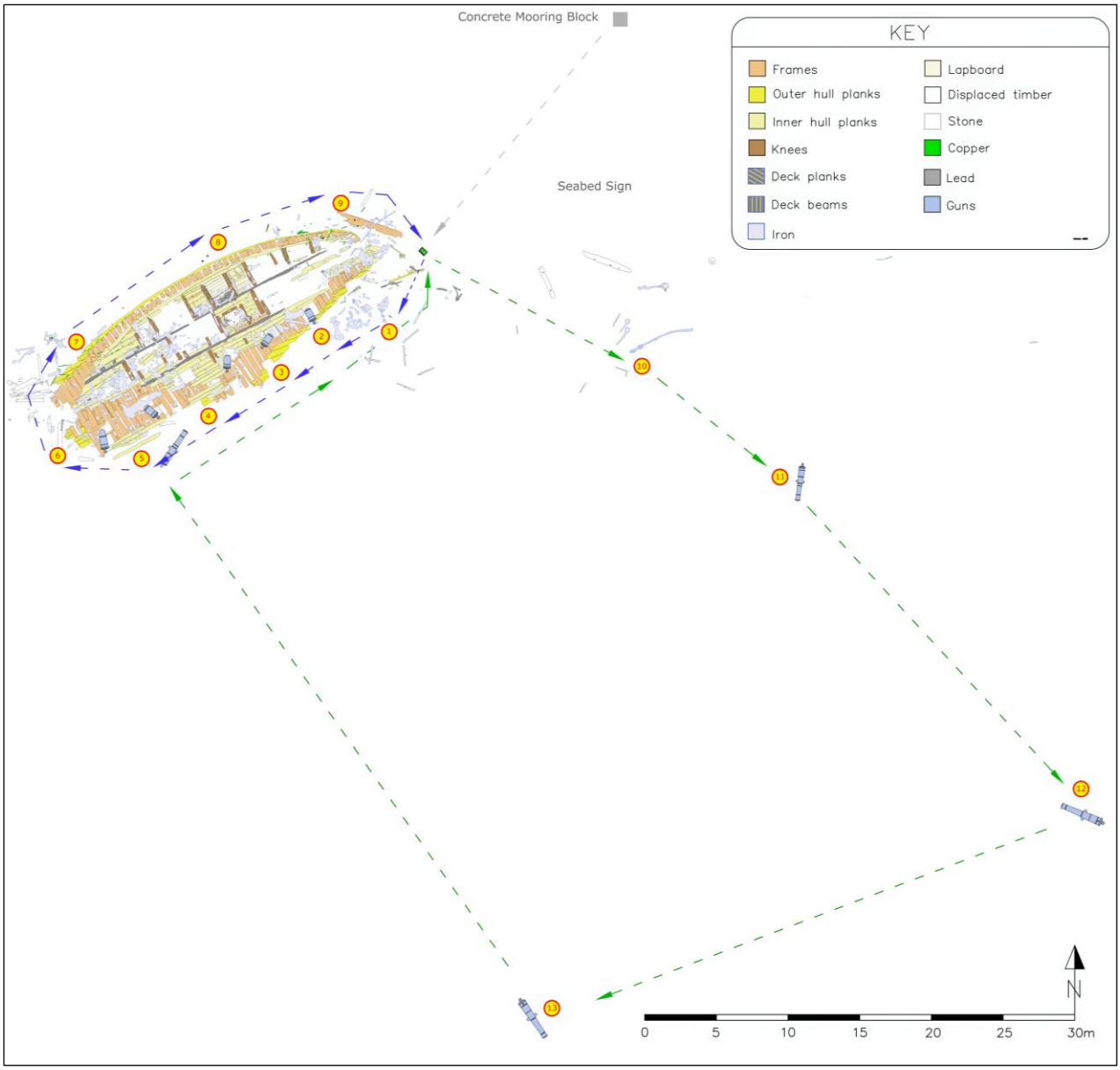
An example of the objects which can be seen on the seabed. This is a 5 inch wooden sheave pulley with copper alloy coake (bearing) – marked **WT** (Walter Taylor the manufacturer), **MY96** (May 1796 the date of manufacture), and the broad arrow ↑, a mark denoting government property. Photographed in 2023 near dive station 8.

More information about the work on the wreck of Colossus is available at www.cismas.org.uk . If you would like to see photographs or accounts of your visit on the web site, please email them to: contact@cismas.org.uk

Getting to the site

There is usually a permanent mooring on the site at 49° 55.479N 006° 20.485W. Follow the shot line to the seabed, and the site is 20m south west of the shot line – there is a bottom line you can follow leading from the bottom of the shot to the beginning of the diver trails. The old seabed sign marks the beginning of both diver trail circular routes. You can explore either of the two circular routes but we recommend you follow the Blue Route around the main wreckage first (stations 1 to 9) then, if you have time, explore the Green Route (dispersed objects) stations 10 to 13.

The Blue Route will take 10 - 25 minutes to explore (75m) and the Green Route will take 15 – 30 minutes (178m), depending on how much time you spend at each diver station. Keep your eyes open: newly-exposed material is often to be seen around the site –frequently where there was only bare sand last time you visited.

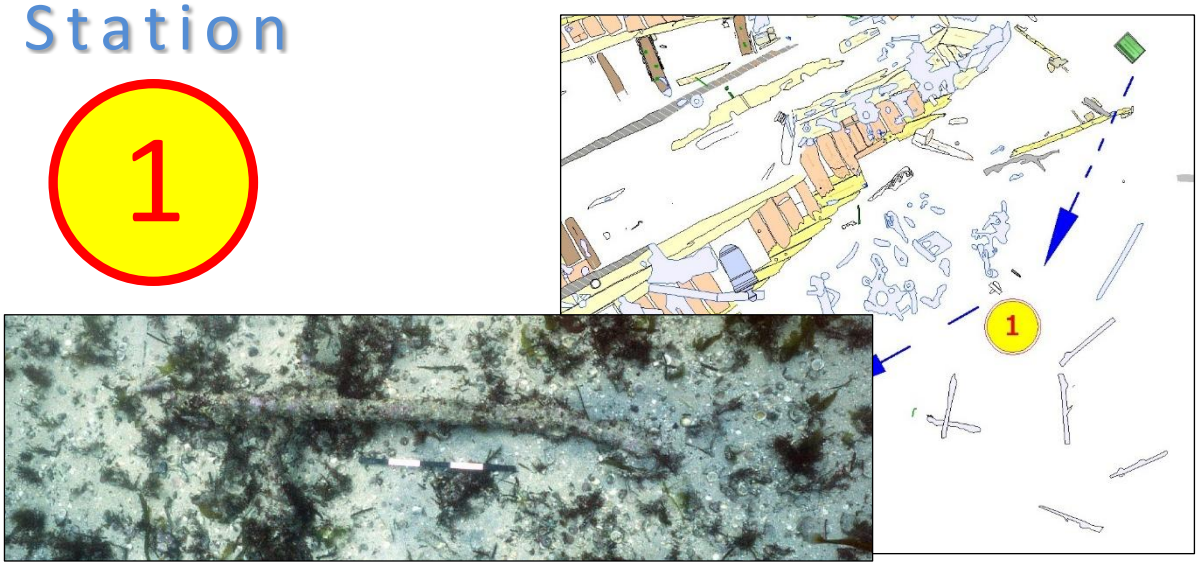


Plan of the diver trails. The grey dashed line shows the route from the mooring to the seabed sign. The Blue Route is the circuit around the wreckage of the stern, while the Green Route is a circuit taking in the more scattered objects.

Each point of interest on the diver trail is marked with a numbered station marker. The number is drilled into a stainless-steel plate just below the float. A small white arrow on top of the base indicates the direction to the next marker. Please do not hang on the station markers, they will break!

Here is the start of the diver trails at the seabed sign. The sign may have some marine growth covering the face – but even so is generally quite easy to spot. In front of you lies the stern of the wreck. To get to the first diver station you need to swim 5m to station number 1 – there is a bottom line to guide you.

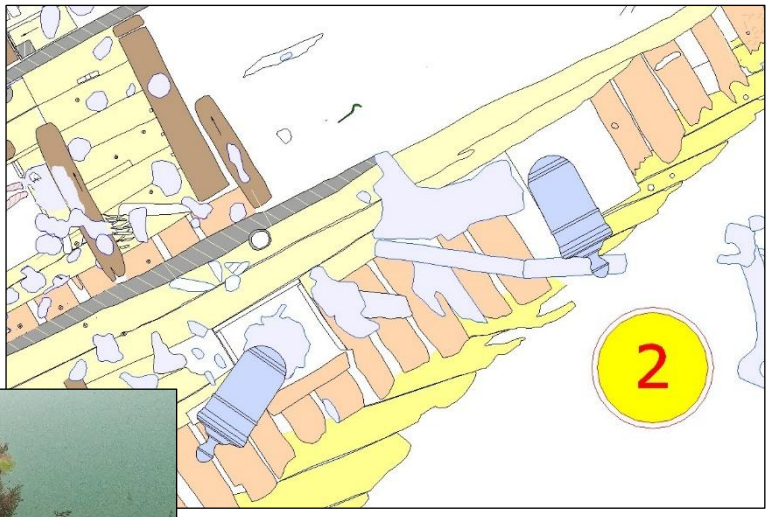
Station 1



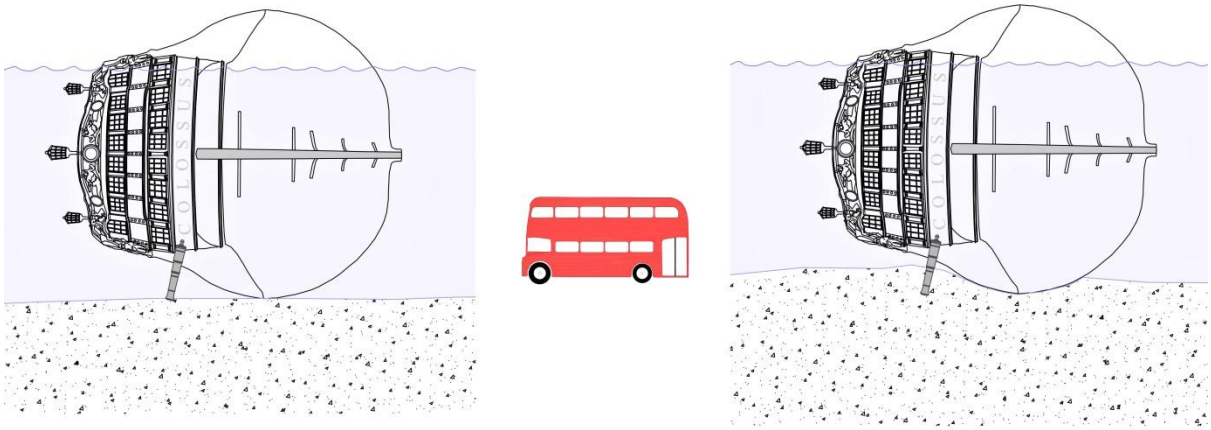
Here you can see the remains of several muskets. These were used by the 120 marines on board *Colossus*, as well as by the ordinary seamen. These are sea service muskets, similar to the well-known 'Brown Bess' of the British Army, but simpler and slightly shorter than the standard land musket. They were smooth-bore flint-lock weapons and fired a lead ball of 0.75 inch diameter. The accuracy of this type of weapon was low; the effective range would have been well under 100m. The barrel is made from steel, the stock is wood and the trigger guard and butt plate are copper alloy. To the north of the muskets are a number of large iron objects. These are the remains of the mizzen chains, the iron fastenings which held the shrouds (supporting ropes) which ran from the mizzen mast to the outside of the ship's hull.

This is what the now corroded muskets would have looked like. The musket was fired using black powder (gun powder), which was ignited by sparks generated by a flint striking a steel plate.

Station 2

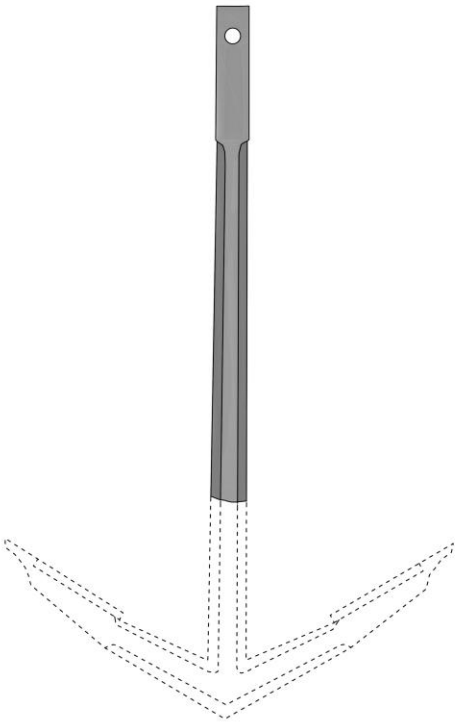


At station 2 you should be looking at what appears like a giant iron bollard sticking up from the seabed. This is one of the upper gun-deck 18-pound guns, standing where it crashed through its gun port when the ship fell onto its beam ends. Look carefully at the gun and you will see the remains of the iron bolts which held the wooden gun carriage together (the wood has rotted away but the iron bolts are still there). There is a row of six of these guns, and you will see them all.



These sketches explain how the guns came to be standing upright on the seabed. On the left is a schematic section of the hull after it turned over, as the upper deck guns crashed through their gunports and came to rest on the seabed, held upright by the gunports. On the right is the same view but after sediment had accumulated under the hull, trapping the muzzles of the guns. The London bus is shown to give an idea of the scale.

If you look at the seabed below the gun you will see a long, slightly bent bar of iron. We did not know what this was until in 2024 we removed all the weed from this bar and it became apparent that it was in fact the shank of a broken iron anchor.

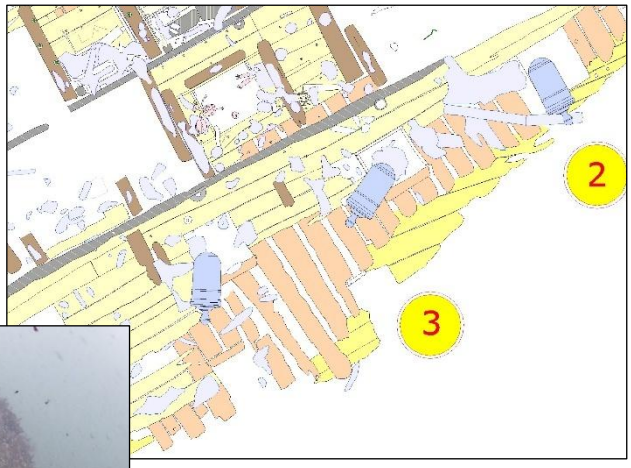


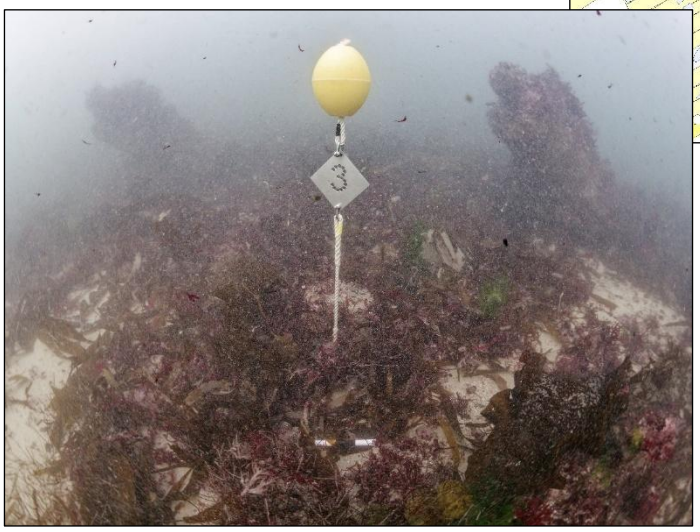
This sketch of an angle-crown anchor (the type carried by *Colossus*) shows the part lying on the seabed shaded and the missing arms and crown dotted. From the dimensions of the iron, it is clear this is too small to be from one of the main (bower) anchors of *Colossus*. It is, however, the correct size to have been the smaller stream anchor. *Colossus* had three bower anchors (18' 6" long), a stream anchor (12' 6") and a kedge anchor (9' 6") when it sank.

But what is a broken anchor doing here? A search of the surviving logbooks revealed that in 1797, on the eve of the battle of Cape St Vincent, *Colossus* was involved in a collision *'[Culloden] came aboard of us which broke the shank of the stream anchor'* – Masters Log, 12 Feb 1797. This is probably that same anchor shank, stored in the hold and on its way back to England for recycling.

If you look closely, you will see where the anchor ring and the wooden stock were attached to the shank of the anchor.

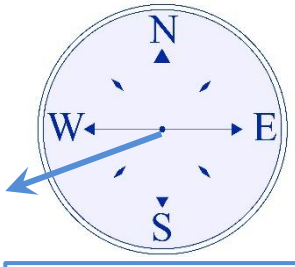
Station 3





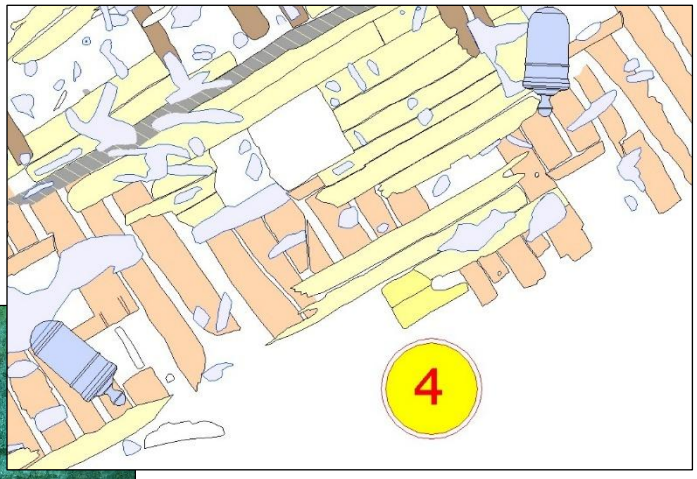
Turn to face north. In front of you now is one of the five eighteen-pound iron guns standing upright on the seabed, their muzzles buried in the sand. If you look carefully, you will see that the guns are still within their gun ports. Immediately in front of you there is timber exposed on the seabed. This is the inside face of the ship. You will also see an empty gun port very close to station 3. This is one of the quarter deck gun ports, where smaller nine-pound guns would have been.

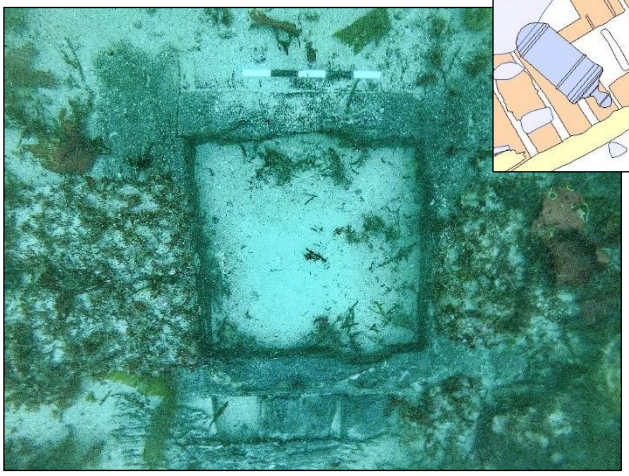
Although classed as a 74-gun ship, *Colossus* actually carried 82 guns on four different levels. This was because the convention at the time was to only count the long guns and exclude the eight Carronades on the poop and fore decks. All the guns were smooth-bored cast iron, and designed to fire a variety of projectiles (grape, case, bar, chain and round shot). The guns were classified according to the weight of round shot they fired. The lower gun deck had 28 thirty-two pound guns; the upper deck had 28 eighteen-pound guns while the quarterdeck and forecastle held the 18 nine-pound guns. The guns visible from this dive station are eighteen-pound guns of the Armstrong type, while the lower deck guns were the newer Blomefield 32-pound design.



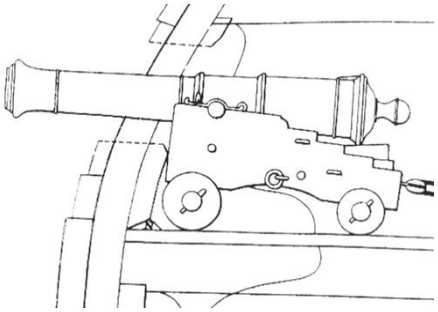
Next Station 6m 240°

Station 4



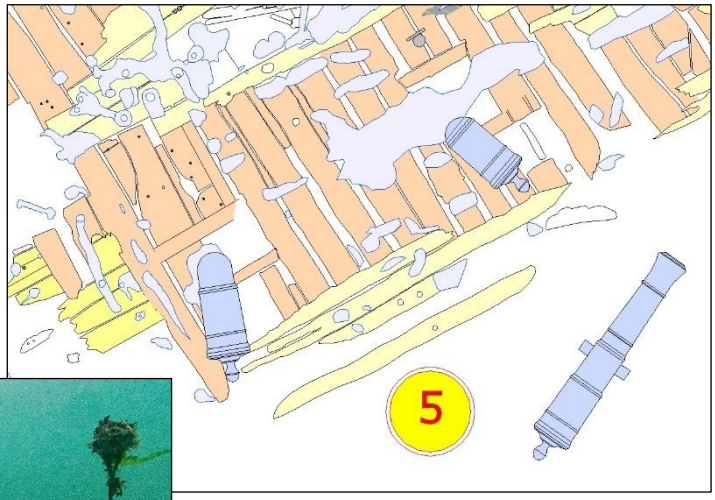


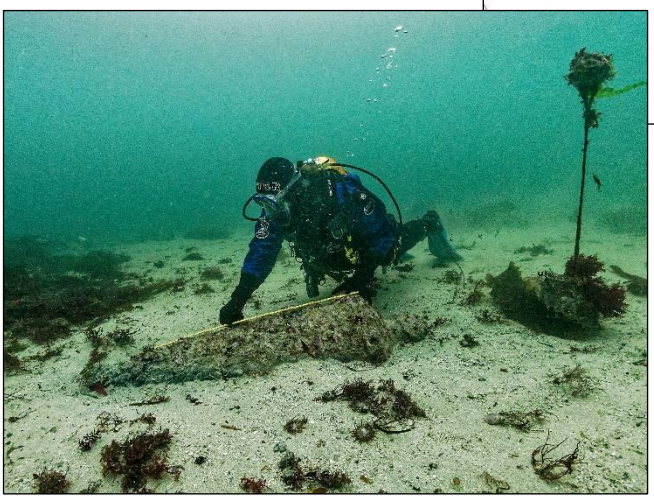
About two metres to the north of station 4 you will find an empty gun port. This gives a clear idea of what the gun ports looked like. Remember you are looking at the inside of the gun port. Notice the corroded iron ring bolts at the side of the gun port, which would have been used to secure the gun carriage to the side of the ship. If you look at the timber on the seabed, you will see the tunnels in the timber created by the wood-boring organisms (ship worm) which are attacking the hull timbers.



Three metres to the west of station 4 you will find another of the upstanding eighteen-pound guns. Notice a number of iron rods attached to the barrel of the gun. These are the iron fastenings which held the wooden gun carriage together. The timber of the carriage has now decayed, leaving only the remains of the iron fastenings.

Station 5

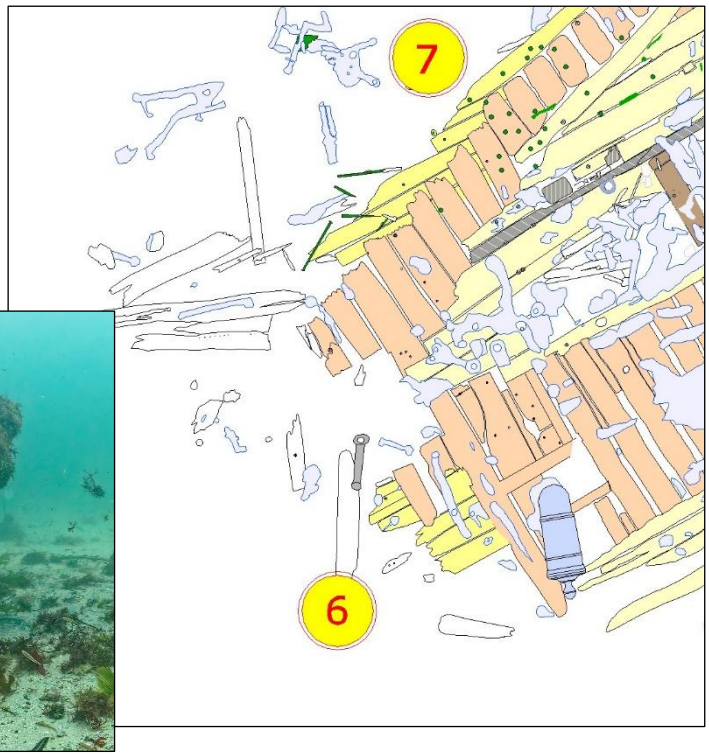




At station 5 you can see one of the eighteen-pound guns lying flat on the seabed. This gun is probably the one which was originally sited at the empty gun port you saw at station 4. Here you can see just how large these guns are. They are 2.75m (9 ft) long and weigh almost two tonnes each. The lower deck guns (thirtytwo-pound) were even larger. We do not know why this gun did not remain within its gunport as the other five eighteen-pounders did.

The last of the line of eighteen-pound upper-deck guns lies just to the west of you. Around this gun the inner planking of the ship survives exceptionally well and is worth a closer look.

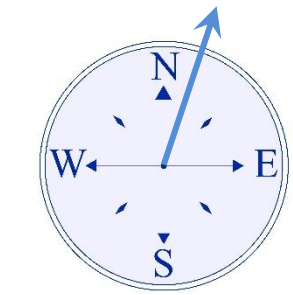
Station 6



You are now at the point where the ship broke in half – roughly where the mainmast was. The bow fragments of the wreck were found over 300m to the west, and were excavated in the 1970's by Roland Morris. He recovered thousands of pieces of ancient Greek pottery (now in the British Museum) which were part of the cargo of *Colossus* when it sank.

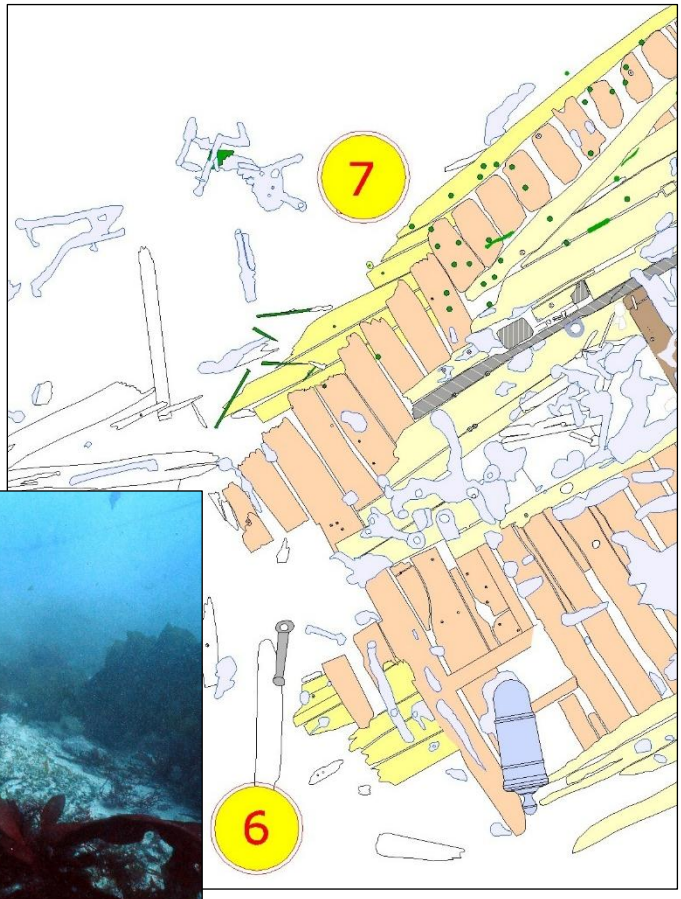
Why was a British warship carrying ancient Greek antiquities? Because *Colossus* was in Naples during Nelson's 40th birthday celebrations organised by Nelson's mistress Emma Hamilton. The Greek pots belonged to Emma's husband Sir William Hamilton, who wanted to have his valuable collection transported to England. Little did he suspect that they would soon be lying on the seabed in the Isles of Scilly.

One of Sir William's ancient Greek pots recovered from the wreck of *Colossus* by Roland Morris's divers

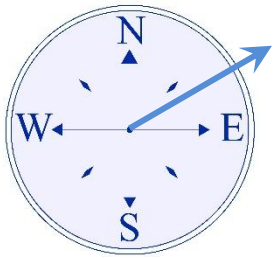


Next Station 8m 10°

Station 7

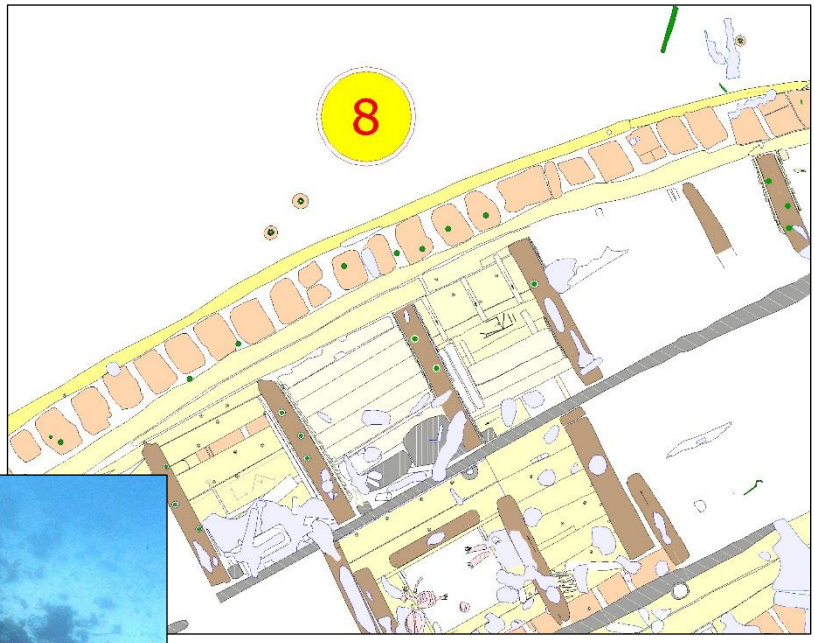


You can now see a number of copper spikes standing upright on the seabed. These are the remains of the copper bolts used to fasten the timbers of the hull. Before 1780 ships were fastened using iron bolts. After the introduction of copper sheathing below the waterline, it was soon discovered that the iron bolts corroded rapidly. The solution to this problem was to use copper fastenings below the waterline. Take care to avoid the sharp points on these copper bolts, which are caused by erosion of the exposed bolts on the seabed. The timbers you see here are the partly buried hull timbers. These consist of the inner planking, frames and outer planking. You are at the level of the orlop deck, where cables and sails were stored, below the water line of the vessel.



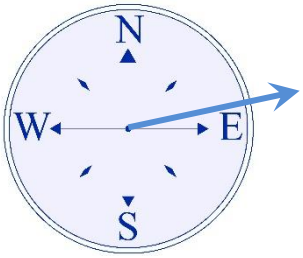
Next Station 12m 55°

Station 8



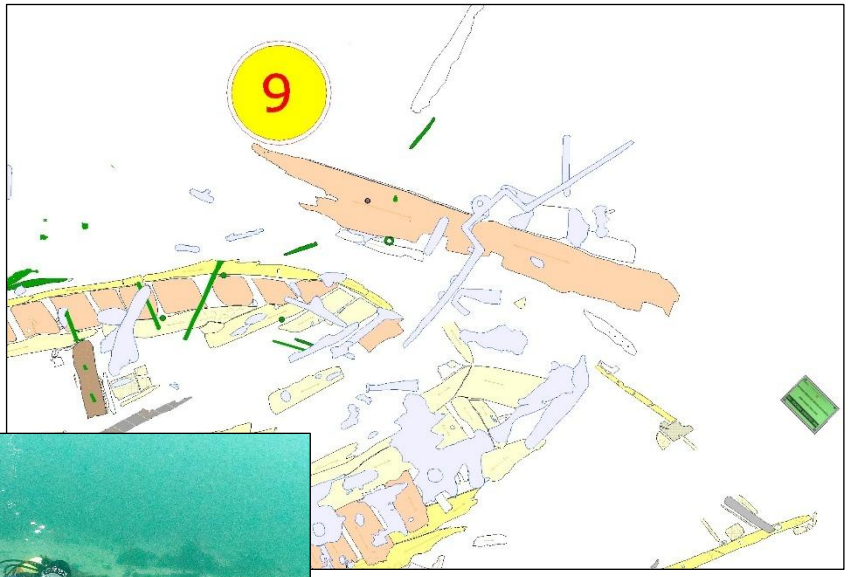
Turn so that you are facing south. In front of you are the timbers of the hull. You should also be able to see several copper fastening bolts similar to those you saw at the last station. At the outside of the hull (outer planking) you should be able to see some of the copper sheathing which covered the hull below the water line.

The photograph here shows you roughly what the hull timbers look like at this point (looking east). On the left is the outer hull planking. In the middle, the large square timbers are the frames of the ship. On the right-hand side is the inner planking. If you look carefully, you should be able to see the joins in the planking. Again, you will notice how the timbers are being attacked by wood-boring organisms – sometimes called gribble and shipworm.

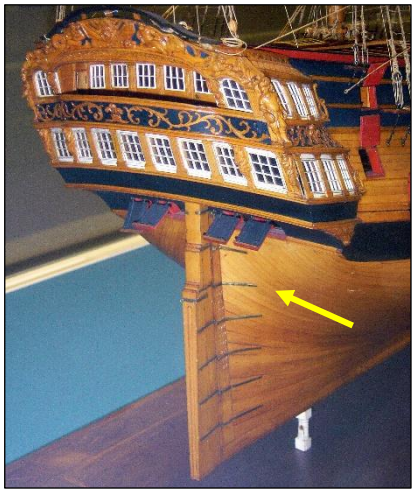


Next Station 9m 70°

Station 9

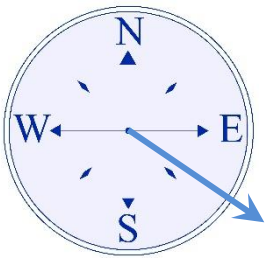


Here is part of the stern post of the ship. The large iron object on top of the timber is one of the rudder gudgeons, an iron strap used to attach the rudder to the hull (the gudgeons attach to the hull and the pintols (pin tails) attach to the rudder). The hole in the centre of the gudgeon is where the rudder pivoted on the pintol pin. *Colossus* lost its rudder when it first grounded some 400 metres distance to the west of where you are now.

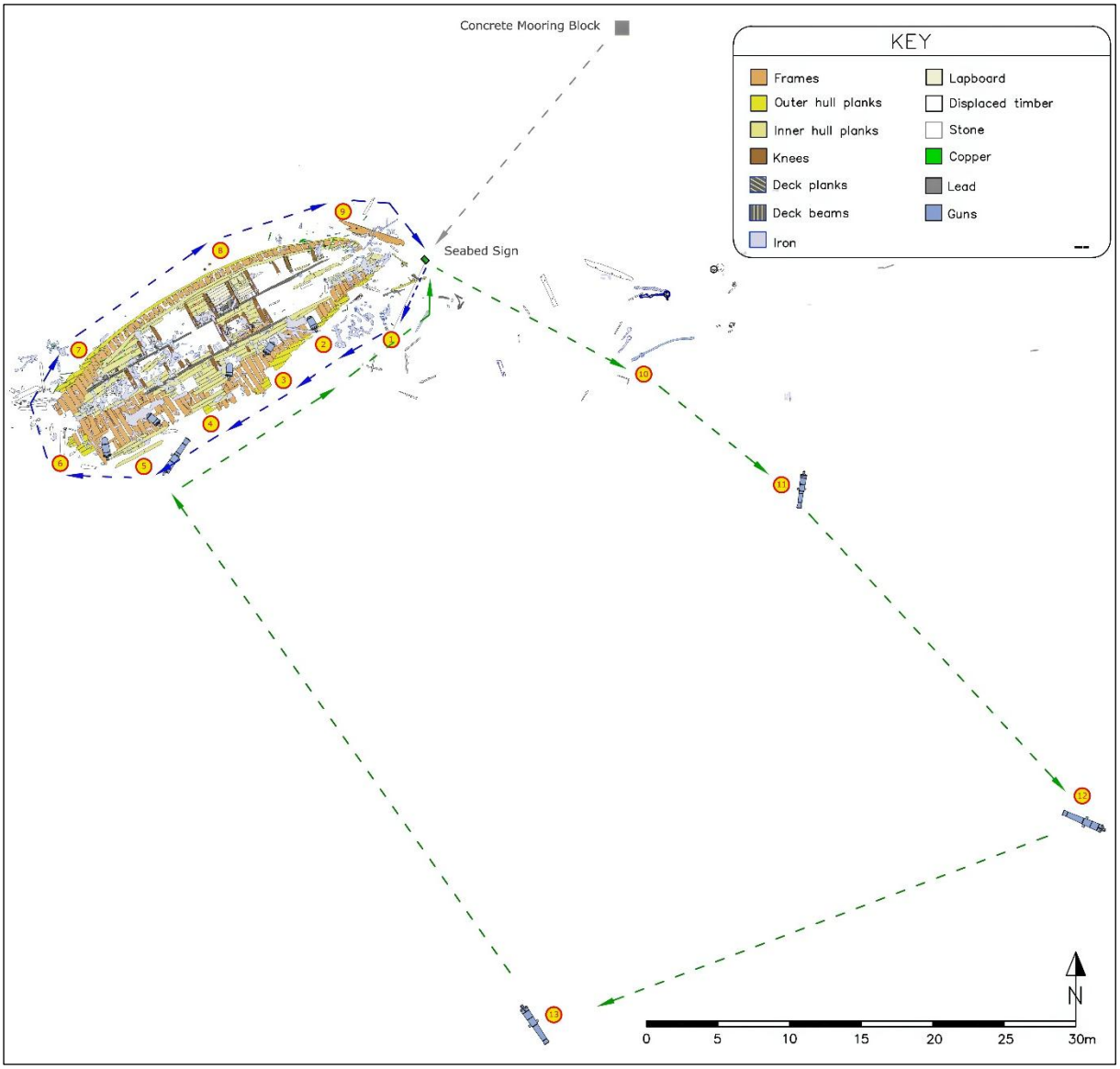


This photograph of the stern of a model of a similar ship shows the position of the rudder gudgeon (arrowed).

Station 9 is the final station on our tour of the wreck. Swim to the south-east to arrive back at the seabed sign where you started. There you will find a lead-line heading to the south-east which will take you on a tour of the outlying debris (the Green Route)

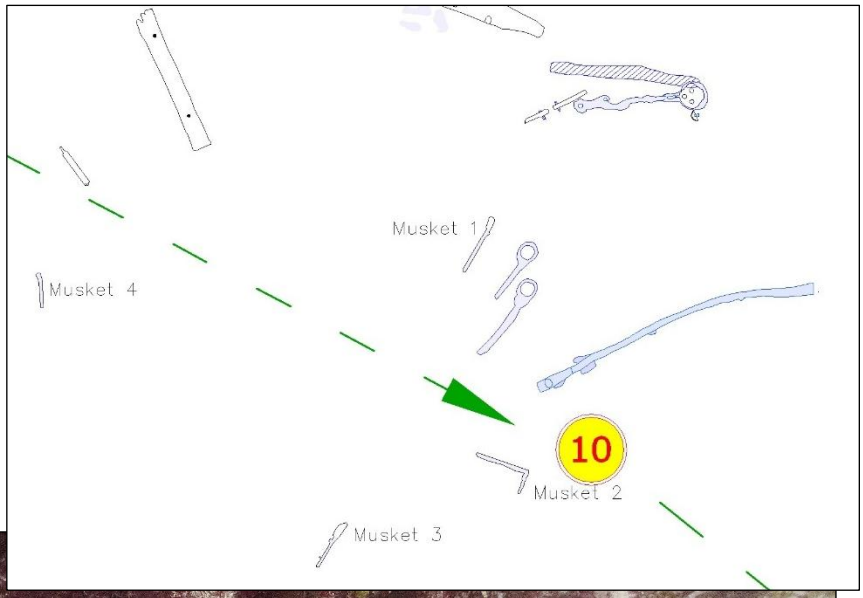


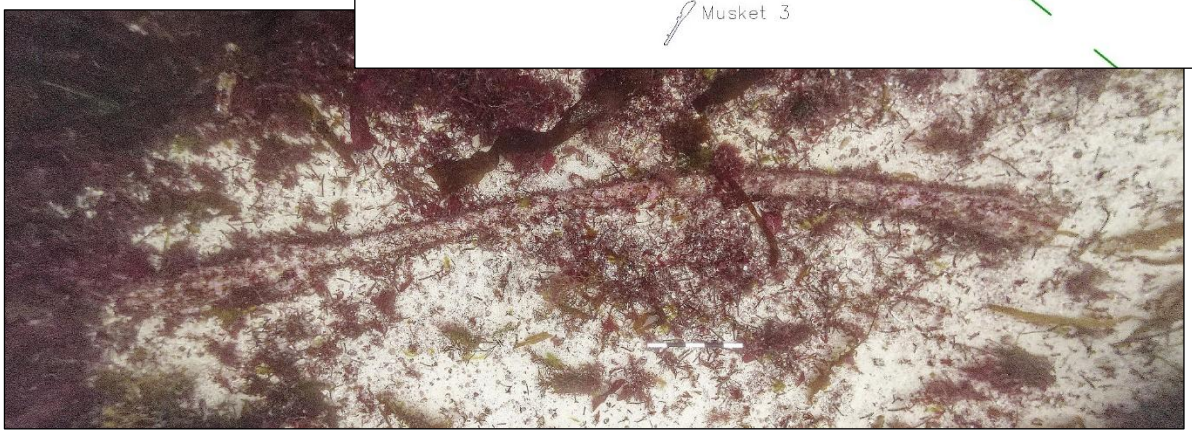
Seabed sign 7m 120°



You are now back at the seabed sign. If you wish to explore the outlying objects, follow the bottom line to the south-east to complete the Green Route. This will take 15-30 minutes to complete. The dive stations are all much further apart on this route, so to help you find them there is a bottom line to guide you. PLEASE do not pull on the bottom line - if you do, you could pull out the staples anchoring the line to the seabed.

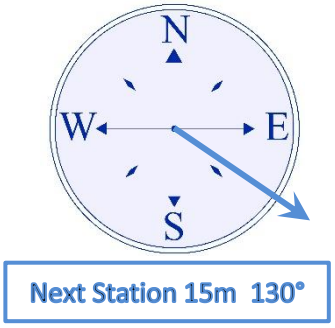
Station 10



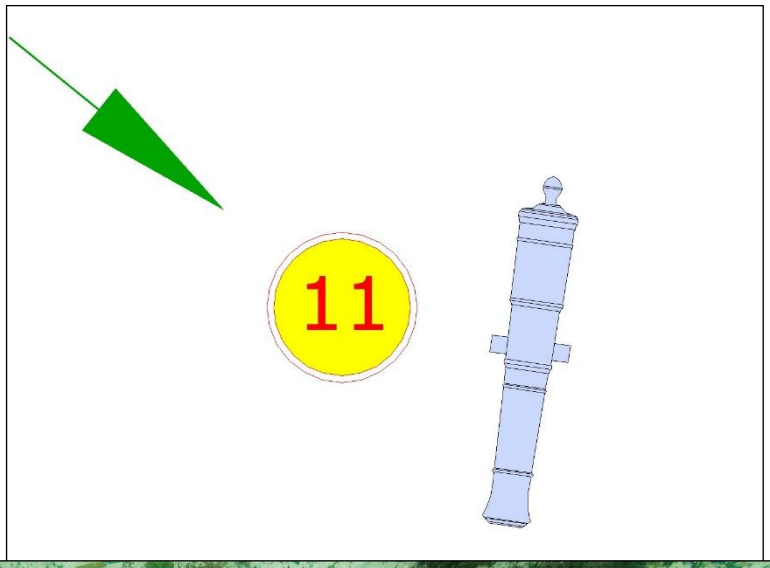


You should be looking at a long iron object on the seabed. It is 4.65m (15 ft) long and slightly curved throughout its length. For many years we were not certain what this large iron 'spar' was used for – but we now know that it was the emergency tiller for *Colossus*. It could be fitted to the top of the rudder if the normal wooden tiller (which was fitted immediately below the Gunroom ceiling) was damaged or broken. The emergency tiller would be fitted just above the Wardroom deck.

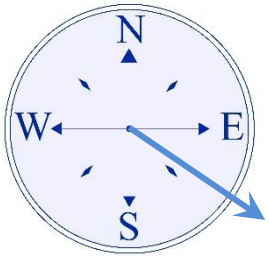
If you look to the west of the iron spar you will see three more muskets exposed on the seabed. These are sea-service muskets just like those you saw at station 2. These muskets became exposed by falling seabed levels in 2014.



Station 11



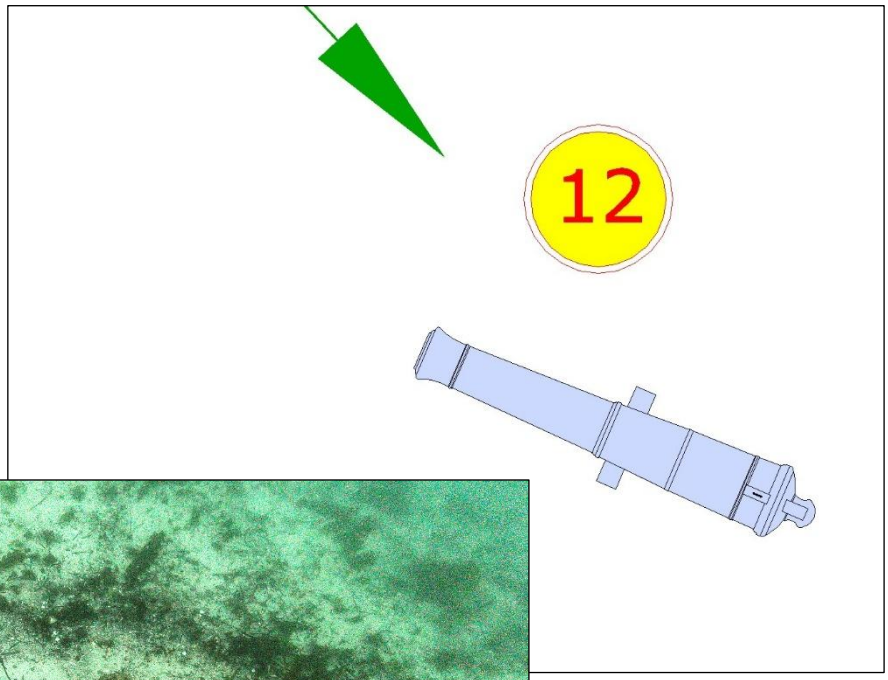
At this station you can see one of the Armstrong pattern 9-pound guns from *Colossus*. This is the only 9-pound gun on the site, although there were 18 on *Colossus*. This gun would originally have been on the quarter deck of the ship. Notice that the gun now lies upside down with the iron fastening bolts of the wooden gun carriage still attached to the gun. It is 2.35m (7ft 6 in) long and weighs over a tonne.



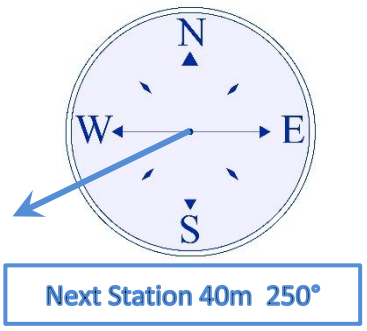
Next Station 28m 140°

Station

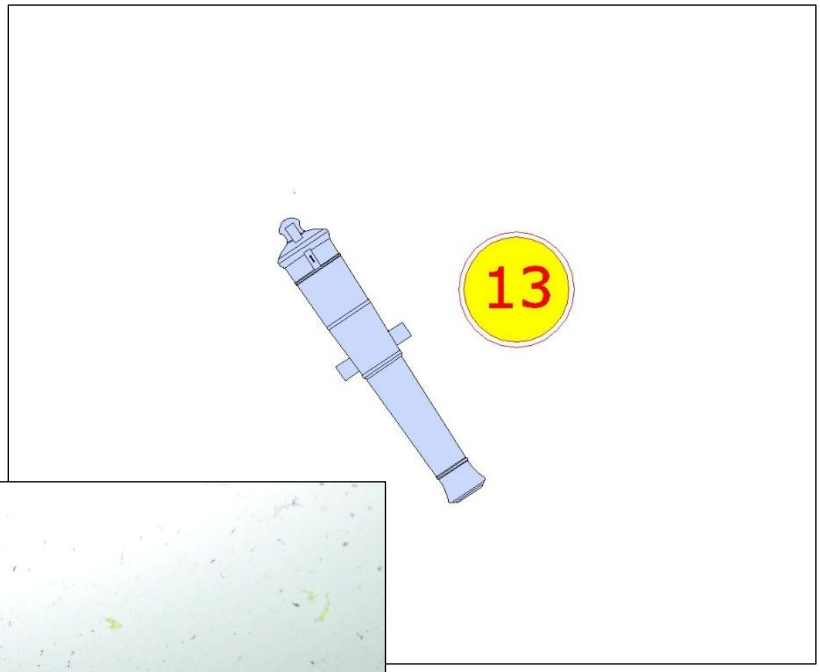
12



At this station you can see one of the Blomefield pattern 32-pound guns from *Colossus*. This gun would originally have been on the main gun deck of the ship. Notice that the gun now lies upside down with traces of iron chain wrapped around the middle of the barrel of the gun. This gun is 2.95m (9ft 6in) long and weighs over two tonnes.



Station 13



You have now reached the final station on the *Colossus* diver trail. This is another of the large 32-pound guns which formed the main armament of the ship. There were 28 of these guns, all on the main gun deck (14 on each side of the ship). The crew also ate and slept on this deck. You may have noticed that several of the guns you have seen have long thin fins running lengthways along their barrels. These form on the surface of the gun as it corrodes on the seabed, and indicate the location of a crack in the cast iron of the gun.

Follow the bottom line to the north west and you will arrive at dive station 5 on the main wreck site (Blue Route). Follow the trail to the seabed sign where you started, and from there back to the shot line you originally descended.

If you would like to share your observations, photographs or suggestions on the diver trail please contact us at contact@cismas.org.uk