

Project Solent Warships



Dive team enjoying the moment of finding the wreck of Edgar.

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- The Itchenor Harbour Master

This report has been written by Dan Pascoe with contributions from Malcolm Holden. The illustrations have been prepared by Dan Pascoe. Underwater and topside photographers were Dave Johnston, Dan Pascoe and Jan Gillespie.

1. Introduction

1.1.1. This report has been prepared by Daniel Pascoe for the British Sub-Aqua Jubilee Trust. It constitutes a project field report for fieldwork conducted in the eastern Solent in search of the wrecks of three Royal Navy Ships, *Edgar*, Newcastle and Nassau and an additional unknown wreck site inside Chichester Harbour.

1.2. Project Background

1.2.1. The inspiration for this project comes from the late Alexander McKee and his 1965 project, 'Solent Ships'. The aim of McKee's project was to locate the position of several historical wrecks in the Solent, with particular focus on finding the *Mary Rose* (McKee 1973, p. 111). This task was helped by the finding of an old Sheringham chart from 1841 with the positions of the wrecks of *Mary Rose*, *Royal George* and *Edgar* clearly marked (McKee 1973,146).

1.2.2. By 1971 McKee had succeeded in finding the wreck of *Mary Rose* and the rest, of course, is history. In the process of finding *Mary Rose*, McKee also found the Royal Navy wreck sites of *Boyne* and *Royal George*. However, as soon as *Mary Rose* was found, interest in finding other sites naturally waned. As a result, there are still several historical wrecks in the Solent that have yet to be located and this project proposed reigniting Alexander McKee's 'Solent ships' project to locate, map and assess the remains of these sites.

1.2.3. Considerable historical research was conducted by the author to identify the potential locations of the wrecks. This was followed up with multi-beam echo-sounder surveys (MBES) and magnetometer surveys in 2021 (Figures 1 and 2). Additional magnetometer surveys were conducted in the spring of 2023 in the regions of Bracklesham Bay and Hayling. These surveys identified potential sites and anomalies for divers to ground-truth. The diving was therefore directed by the results of the geophysical surveys and historical research.

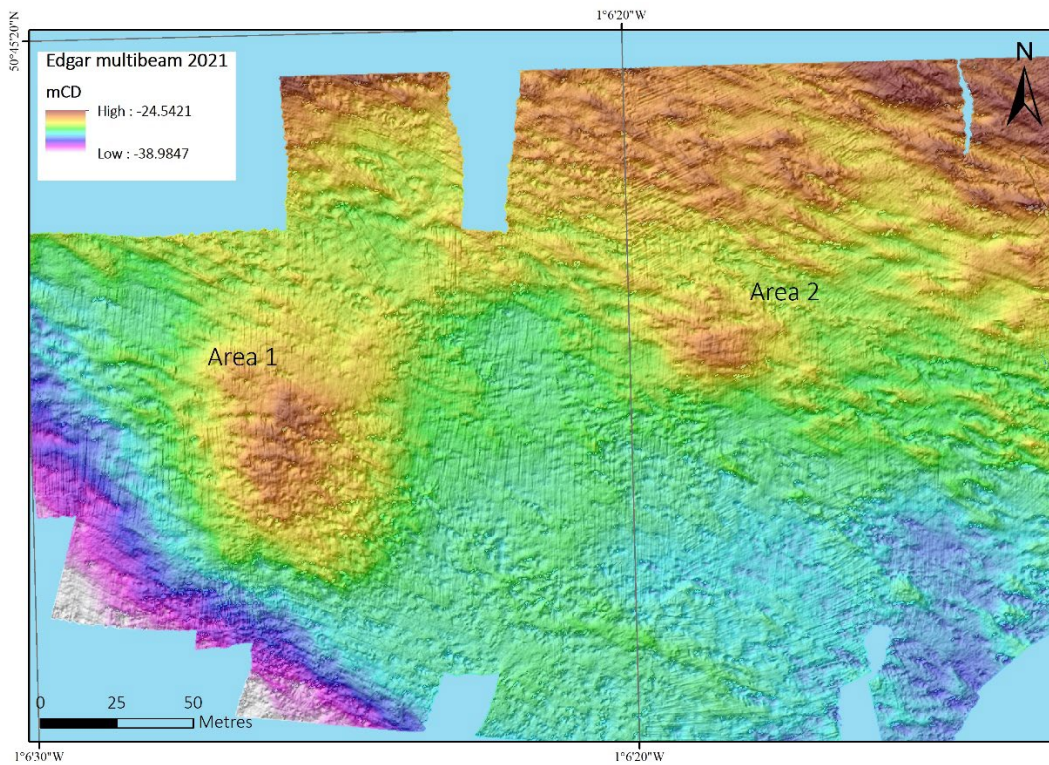


Figure 1: Showing the 2021 multi-beam bathymetry of the potential area of seabed containing the wreck of Edgar.

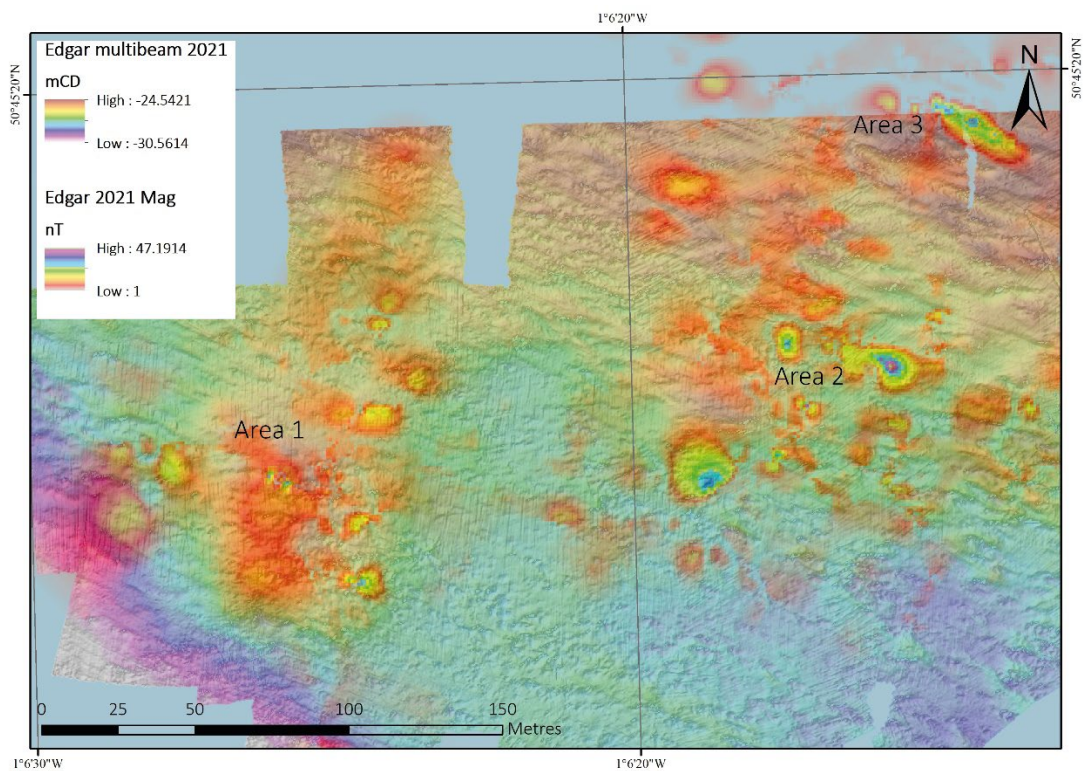


Figure 2: Showing magnetic targets and bathymetry. It identifies strong magnetic targets around Area 2 and 3.

1.2.4. Ground-truthing the *Edgar* search area began in 2022 with some positive findings at a location referred to as Area 2. Area 2 is a low-lying mound, 37m long east to west and 20m wide north to south, approximately 1m higher than the surrounding seabed (Figure 1). On the last dive of the 2022 season divers felt hard contacts when probing below the surface of the seabed, as well as finding fragments of broken glass and pottery, also below the surface. The glass consisted of a fragment of onion bottle and a square sided bottle, the latter similar to bottles found in a surgeon's chest of the period. The glass was seen by a specialist at Historic England and dated to the first half of the 18th century with likely manufacture to be from Bristol, England. The pottery was also seen by a Historic England specialist and given a broader date of between the 18th and 19th centuries. With this information, alongside the hard contacts felt while probing into the mound, Area 2 was going to be one of the focus areas for the 2023 diving project. This mound has good potential to be part of *Edgar*, but stronger and more tangible evidence is required to be absolutely certain, which makes diver investigations at this location so exciting and important.

1.3. Project Aims

- 1.3.1. To locate and confirm the location of three historic Royal Navy shipwrecks in the region of the eastern Solent. These warships are as follows: the third-rate *Edgar*, lost in 1711; the third-rate *Nassau*, lost in 1706; and the fourth-rate *Newcastle*, lost in 1703.
- 1.3.2. To locate and confirm the location of an unknown wreck inside Chichester Harbour.
- 1.3.3. To give the project team a fun and exciting experience searching for historically significant wrecks sites and to learn new scientific diving skills in the process.

1.4. Project Objectives

Edgar search area

- 1.4.1. Conduct further historical research into the Victorian salvage operations on the wreck of *Edgar*.
- 1.4.2. Ground-truth magnetic anomalies in the Area 2 of the *Edgar*, which lies within the Spithead naval anchorage.
- 1.4.3. Ground-truth Area 2 of the *Edgar* site, identified as a mound 37m long by 20m wide and 1-1.5m high.
- 1.4.4. Probe mound to identify hard contacts, which have the potential to be archaeological deposits below the surface.

- 1.4.5. Identify potential archaeological contacts and excavate test pits to confirm archaeological remains.

Newcastle search area

- 1.4.6. Ground-truth magnetic targets in Bracklesham Bay
- 1.4.7. Ground-truth bathymetry anomalies in Bracklesham Bay

Nassau search area

- 1.4.8. Ground-truth magnetic targets near the west pole sand bank outside Chichester Harbour
- 1.4.9. Ground-truth bathymetry anomalies near the west pole sand bank outside Chichester Harbour.

Unknown wreck inside Chichester Harbour

- 1.4.10. Ground-truth magnetic targets inside Chichester Harbour.

2. Method Statements

2.1. Diving

- 2.1.1. All divers were required to produce proof of their diving qualifications, medical fitness to dive and evidence of third-party insurance. They also dived by the rules and regulations of their certifying organisations.
- 2.1.2. Diving on the project was undertaken using open circuit scuba equipment.
- 2.1.3. At the beginning of each day the project team were briefed on the dive plan, survey and recording methods and health and safety. The team members were then divided into buddy pairs for diving and given survey tasks to carry out underwater.
- 2.1.4. Diving operations were carried out from the MCA coded diving support vessel *Wight Spirit*, an Evolution 38s and licensed to carry 12 divers. The international code flag Alpha was deployed during diving operations.

2.2. Underwater survey

- 2.2.1. Underwater survey tasks were conducted using tapes, rulers and GoPro cameras.

2.3. Test pit excavation

- 2.3.1. Two small portable in-water airlifts were borrowed for the project to assist with the excavation of small test pits. These airlifts have been designed to be easily transported by a diver to the site and run off an independent diving cylinder. They have been used previously on the protected wrecks of *London* and *Hazardous* (Figure 3).



Figure 3: Diver using the portable airlift on the wreck of Hazardous in Bracklesham Bay, May 2023 (Photo by Dan Pascoe)

2.4. Finds

- 2.4.1. In line with the requirements of the Merchant Shipping Act, all recovered finds were reported to the Receiver of Wreck. In addition, Historic England and the Ministry of Defence were informed of any discoveries.

Edgar search area

- 2.4.2. As the search area for *Edgar* was located in the Spithead naval anchorage, permission to dive from the Kings Harbour Master (KHM) was required to conduct diving operations, prior to the start of the project. This was granted with the caveat that KHM, alongside Southampton VTS, were informed each day when diving ops were underway and over. During the two days on site KHM was called on VHF channel 11 and Southampton VTS on channel 12.
- 2.4.3. A buoyed shot was deployed on the site which the divers descended. When at the bottom divers clipped onto the bottom of the shot and reeled out to their chosen areas to investigate. This method ensured that divers never got lost from the shot and could always return safely to the surface to be picked up by the dive vessel. It was essential that divers entered and exited the water from the buoyed shot as the site was close to the northern edge of the shipping lane running east to west along the Solent.

Newcastle and Nassau search areas

- 2.4.4. A buoyed shot was deployed on magnetic targets and bathymetry anomalies, which divers descended. When at the bottom divers clipped onto the bottom of the shot with their reels and conducted circular searches to locate anomalies.
- 2.4.5. When a feature of archaeological interest was found divers would record a distance and take a bearing back to the shot or, if a single feature, move the shot to the feature.

Unknown wreck inside Chichester Harbour

- 2.4.6. Due to the location of this potential site inside Chichester Harbour and on the side of the channel in and out of the harbour, permission to dive was required from Chichester Harbour Conservancy and Harbour the Master at Itchenor. This was obtained prior to diving and, in addition, the Harbour Patrol was called on channel 14 to inform when diving operations were in progress and completed.
- 2.4.7. A shot was deployed onto the location of the mag targets which divers descended to the bottom to conduct searches. Due to the location of the site on the edge of the channel and to avoid boat traffic, divers were not to lose contact with the shot and must return to surface via the shot line.

2.5. *Magnetometer survey*

- 2.5.1. An Aqua Scan AX2000 proton magnetometer was used for the collection of magnetic data in the region around Bracklesham Bay and Hayling during the spring of 2023. The magnetometer was towed from a RIB using a soft-tow cable at a known distance behind the RIB. The position of the magnetometer was calculated using manual layback, which calculates the position using length of cable out and the depth of magnetometer. Throughout the survey an average altitude of c. 2-4m above the seabed was achieved.
- 2.5.2. The magnetometer data was recorded on the AX2000 display unit and exported as .csv. for post processing. The profiles were gridded and filtered using a standard polynomial background approximation to remove geological trends. The data was then re-exported as a .csv into MS Excel. An average background value was calculated for each dataset and then removed from the nT values. Finally, all data was converted to absolute values in order to grid and visualise in ArcGIS.

2.6. Diver methods

- 2.6.1. The methodological approach to carrying out archaeological work underwater followed the procedures and guidelines set out in 'Underwater Archaeology: The NAS Guide to Principles and Practice' (Bowen 2008).
- 2.6.2. The recording of the site was carried out following procedures and guidelines set out in the 'Institute for Archaeologists Standards and Guidance for Nautical Recording and Reconstruction' (CIFA 2014).
- 2.6.3. Initial assessment and recording involved observational survey and sketch plans of key features. These were supplemented by digital photographs and HD video. The observations were recorded by the diver onto survey boards and using digital cameras and GoPro HD cameras.

3. Results

3.1. *Edgar* (Spithead Naval Anchorage)

Historical background (the ship and loss)

- 3.1.1. *Edgar* was a 70-gun third-rate ship of the line built in 1668 by the merchant shipbuilder, Bayley, whose yard was in Bristol (Fox 1980, p. 139, Winfield 2009, p. 292). This was the same Bayley that constructed the third-rate Northumberland, which was lost on the Goodwin Sands during the Great Storm of 1703 and which is now a designated site (Pascoe and Peacock 2015, p. 133).
- 3.1.2. *Edgar* was the biggest ship ever launched from Bristol at this time and was commissioned by King Charles II six years after his Restoration in 1666 and launched two years later (Fox 1980, p. 139). *Edgar* went on to serve four monarchs over a very turbulent period for England, later Great Britain. She achieved numerous battle honours when allied with the French against the Dutch in the Third Anglo-Dutch Wars (7th April 1672 to 19th February 1674) and then in alliance with the Dutch against French expansionist plans during the Nine Years War (1688-1697). Finally, she served during the War of the Spanish Succession from 1701 until her tragic end during October 1711.
- 3.1.3. On the 15th of October 1711, the *Edgar*, while at anchor in Spithead, blew up and sank. Studying the Court Martial enquiry, one learns that during the early hours of the 15th October some of the crew, under the supervision of the Master Gunner, were moving powder from the aft powder room to the forward powder room. This task was completed by 7 o'clock in the morning and the Master Gunner reported to Lieutenant Rumsey that all was safe. By 11 o'clock the officers onboard the ship went ashore to see the captain and at 12 o'clock the *Edgar* blew up. Lieutenant Rumsey was charged by the Court for leaving the ship with no commissioned officers aboard (ADM 1/5268).
- 3.1.4. Excluding the officers and their shore party, plus a handful of other men conducting duties away from the ship on a nearby bomb ketch, all that were on board *Edgar* when the magazine blew went down with the ship. This was believed to be in excess of 300 sailors. This great loss of life was attributed to the fact that, "...no sooner was the blow heard, but the ship was under water" (Higgins 1711, pp 1-4).

Historical background (aftermath)

- 3.1.5. With the remaining carcass of *Edgar*'s hull lying on the seabed at the Royal Navy's anchorage of Spithead, she became a hazard to shipping. She must have been indicated as a

danger to shipping early on because, two years after the disaster on 21st April 1713, the Master Attendant at Portsmouth, Edmund Barrett, required new buoys to be dispatched from Deptford to replace one at the wreck of *Edgar* at Spithead (TNA ADM 106/688/242). However, over time the wreck buoys marking the site were displaced and the resitting was misdirected causing small fishing vessels to lose their anchors and equipment over the site (London Evening Standard 29th August 1844, p. 4). As a result, the Royal Engineer divers had to relocate the wreck again in 1843.

- 3.1.6. *Edgar* was rediscovered in 1843 by divers from the Royal Engineers. These divers were under the command of Major General Pasley and had been clearing and salvaging the nearby wreck of the *Royal George*, a first-rate, which capsized at Spithead in 1782. As well as having a full battery of desirable bronze guns, *Royal George's* hull was intact and upright, causing a hazard to shipping. As such the Admiralty commissioned her clearance and over several seasons between 1740-1743 the Royal Engineer divers, alongside divers of the East India Company, had managed to clear the wreck of all but a few guns. To keep the whole dive team occupied a selection of divers from the Royal Engineers were detached to locate and clear the remains of *Edgar*, which only lay a short distance to the east of *Royal George* (TNA ADM 1/5536).
- 3.1.7. These early underwater salvage operations are important to try and understand as they have had a significant impact on the remains of the hull and subsequent site formation processes on the wreck. These factors have shaped the archaeology that currently survives today and therefore need to be taken into consideration when interpreting the site.
- 3.1.8. According to reports, by the 4th November at the end of the 1843 diving season, approximately half a dozen guns, along with a piece of the keel and floor timbers, had been recovered from *Edgar* (Connolly 1855, p. 21).
- 3.1.9. The Royal Engineers returned to *Edgar* the following year to resume diving operations. An accurate survey of the site was undertaken in May 1844 by Lieutenant Barlow, the 'executive engineer'. He described that a great mass of timber, consisting of the centre section of hull, was embedded in the mud and stood 13 ½ feet higher than the general level of the bottom (Connolly 1855, p. 34). This description is significant as it appears to suggest that the forward and aft parts of the hull were missing, a probable result of both the forward and aft magazines igniting when the ship sank. This also suggests that the remains of the hull could have been in at least three sections on the seabed, with the central section being the largest and most intact. This is entirely plausible as the archaeological evidence

from the wreck of the Restoration warship, *London*, which blew up in the Thames estuary in 1665, demonstrated that the explosion of the magazine caused the ship to separate into at least two large sections. These have been identified as site 1 and 2, 400m apart. Site 2, consisting of a section of the side of the hull from gundeck down to the hold, was only discovered by accident in the 1960s and not confirmed until the early 2000s, and Site 1, which was known to the Port of London authorities much earlier and is probably the main bulk of the wreck where contemporary salvage operations took place (Pascoe 2017, p. 33).

- 3.1.10. With this in mind, there could have potentially been sections of the *Edgar* that were not found by the Royal Engineers, and which were thus left undisturbed. The 2021 magnetometer survey results located a wider scatter of magnetic targets as well as more concentrated magnetic areas and thus would appear consistent with a warship that blew up into multiple sections, scattering ferrous objects like guns, anchors and shot (Figure 2). The 2021 bathymetry also identified two distinct mounds labelled as Area 1 and 2, with Area 2 being the focus of the 2023 diving season (Figure 1 and 12). If confirmed as the *Edgar*, could Area 2 be part of the wreck that the Royal Engineers salvaged or an entirely different section, representing the forward or aft ends?
- 3.1.11. By August 1844 the hull of *Edgar* had been lowered by 10 feet, by the continual removal of pieces that had been loosened or fractured by explosives. The depth of the wreck was specified as 13 ½ fathoms deep at low water and the consequent pressure at the bottom was very trying to the divers (Connolly 1855, p. 34).
- 3.1.12. The Royal Engineers continued to work on the wreck until 31st October and, according to Newspaper reports, salvaged 54 whole guns and five broken guns, along with hull timbers, including sections of the keel (Sun 26 December 1844, p.7). This leaves a possible 11 guns still on the seabed to discover and would certainly explain some of the larger magnetic targets in the area.
- 3.1.13. Newspaper reports recorded that 72 ft 3 in of keel were recovered with sections being 9 ½ ft long, 2 ft 6 in broad and 14 in thick (Evening Mail 6th October 1843, p.6). These dimensions, however, are much too large for a third-rate or even a first-rate, leading to questions over the accuracy of these newspaper reports.
- 3.1.14. Two vessels, *Success* and *Drake* were employed in the salvage work upon the wreck of the *Edgar*, plus one or two unnamed lighters, which had the dive team's air pumps and purchases on board and where the explosives were set off (Figure 4) (Sun 26th December 1844, p.7). *Success* was an old frigate described as a hulk, which acted as the

accommodation for the working party. Success was also fitted with derricks and winches for hauling up heavy objects from the wreck site such as the rudder. These vessels, or similar, are illustrated in operation over the wreck of *Royal George* (Figure 4).



Figure 4: Shows two slave vessels over the wreck of *Royal George* with lifting gear. Alongside these vessels are two smaller boats which could represent the lighters carrying the dive pumps and explosives. These vessels match those used on *Edgar*. Also note in the background, the town of Ryde and it's pier on the Isle of Wight.

3.1.15. In the background of the illustration, the Isle of Wight town of Ryde can be seen, along with the town's pier, extending out into the Solent. 183 years later and the Solent warships project dive team were exploring in the footsteps of those Royal Engineer standard dress divers on *Edgar*, which was located 700m to the Southeast of *Royal George* (Figure 5).



Figure 5: Photograph showing the shot on the site of Edgar with divers bubbles on the surface. The Isle of Wight town of Ryde and it's pier in the background.

- 3.1.16. The Royal Engineer divers were using standard dress diving equipment, designed by Siebe, on the wrecks of *Edgar* and *Royal George*, from the second diving season (TNA ADM 1/5528). This kit was preferred over the Deane open diving helmet which was used during the first diving season on *Royal George* in 1840 (Figure 7) (Bevan 1996, p. 200).
- 3.1.17. The divers used explosives to break up the wrecks. Reports from The Sun newspaper reported:

“The quantity of powder exploded during the whole season in small charges, placed by the divers and fired by the voltaic battery, was 6,222 lbs. A few of the largest charges consisted of about 130 lbs. each. None of the others exceeded 50 lbs.; many were smaller” (Sun 26th Dec, 1844, p. 7).

It was discovered by General Pasley that the use of detonators as fuses upon underwater structures was too dangerous. He therefore moved to the procedure of firing the explosive by applying batteries constructed in a copper exterior with an interior of zinc rods in a solution of sulphate of copper and sulphuric acid. The conducting filaments were 600 – 840 ft (183 – 256 m) in length. They were waterproofed with red tape and ‘a coating of waterproof composition’. To prevent the stretching and severing of the conducting cable, a

rope was secured along its length, which was also waterproofed. The conducting wires were then attached to the two priming connectors, “...by two fine platina threads” which were separated by a piece of wood. The platina threads were placed in a waterproof heavy cotton bag which held a small charge. These were then inserted into an airtight container containing ‘cylinders of gunpowder’. The explosive was detonated by, “...connecting the opposing poles of the batteries and making the platina treads red hot” (TNA ADM 106/121/1/2) (Figure 6).

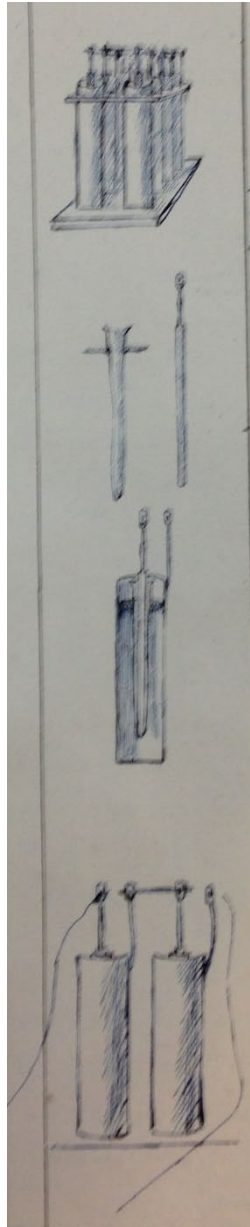


Figure 6: Showing the illustrations of the batteries of galvanic cells and the electric detonators employed in firing the charges sketched by the medical surgeon in his journal (TNA ADM 106/121/1/2).

3.1.18. After detonation the divers would then descend to the wreck and attach lifting gear to items on the wreck including guns, anchors and structure (Figure 7). This is illustrated in a medical journal of a surgeon who was observing and recording the effects of these diving operations on the team of divers (Figure 7).



Figure 7: Illustrations inside a medical journal. Illustration a) shows a diver receiving the lifting hook from the surface, to possibly recover a gun from the wreck of Royal George. Illustration a and b identifies that the divers were using Deans open helmet. Illustration c shows the diver suit and d illustrates the air pump with cranks, gears, flywheel and water reservoir (TNA ADM 101/121/1/4).

3.1.19. Trawling was used to locate debris scattered on the seabed and there were two different methods. The first process involved the anchor creeper attached to a cable, which was dragged through the mud from a boat in the search for the guns. The second technique was more involved and was performed on the seabed. Two divers would follow a guideline, pre-laid for the area of search. The divers carried a length of chain or rope between them, which they would drag along the seabed to snag obstructions. On the surface, two launches would track the divers and wait for line signals from the divers to indicate they had found an object for recovery (Sun 26th December 1844, P. 7).

3.1.20. It is clear from the newspaper reports of the time that General Pasley's divers succeeded in salvaging a great number of guns and other objects, along with collapsing and clearing the hull structures of both *Royal George* and *Edgar*. In doing so they used a variety of techniques including explosives. Both these wrecks had a combined loss of around 1000

sailors and the sketch of the working diver on *Royal George*, by the medical surgeon, clearly identifies human remains on the seabed. It is interesting that these wrecks were only lost within a few generations of the Royal Engineer divers and yet there appears to be no sensitivity or consideration of the sailor's remains when it came to salvaging the wrecks. Looking at this from a modern perspective it's difficult to comprehend that there was no mention of disturbing human remains in the newspaper articles or even any public outcry. This just goes to show how different the Victorian people's relationship with the relatively recent dead differed from how we now believe the dead should be treated, especially the dead lost on military vessels.

Diving 2023

- 3.1.21. Diving was carried out over two days from the 12th to the 13th of June 2023. The dive boat *Wight Spirit* was based at Haslar marina, Gosport, for the duration of the project. *Edgar* was only a very short steam straight out of Portsmouth Harbour entrance (Figure 8). A total of 22 individual dives were undertaken by 12 divers with a total dive time of 804 minutes.



Figure 8: The view from the stern of *Wight Spirit* as the team left Portsmouth Harbour Entrance.

- 3.1.22. The location of *Edgar* near the southeast corner of Spithead naval anchorage is a challenging place to dive (Figure 9). The area dived is close to the shipping lane, which runs east to west along the Solent, with some of the largest container ships in the world passing by. These vessels can be heard even when 25 m down on the bottom, engine noise vibrating loudly through the water column. At 25 m it is dark, with minimal ambient light, but with torches off your eyes can adjust to make out silhouettes to aim for in the distance. The seabed is soft, like the consistency of a wobbly blancmange, and when disturbed clouds

of silt rise and hang motionless in suspension. There are no hard features to grab and take hold of, swimming around the site is slow and precise, as a stray flap of the fin or loss of neutral buoyancy ends in a dark cloud of nothingness, until you emerge from the fog continuing the circular search. With every plunge of the probe comes the anticipation of striking a hard contact that could be the remains of the wreck we are looking for. The potential of what lies beneath the surface is what spurs you on in this dark hostile environment, as you know from the *Mary Rose* the reward could be incredible.

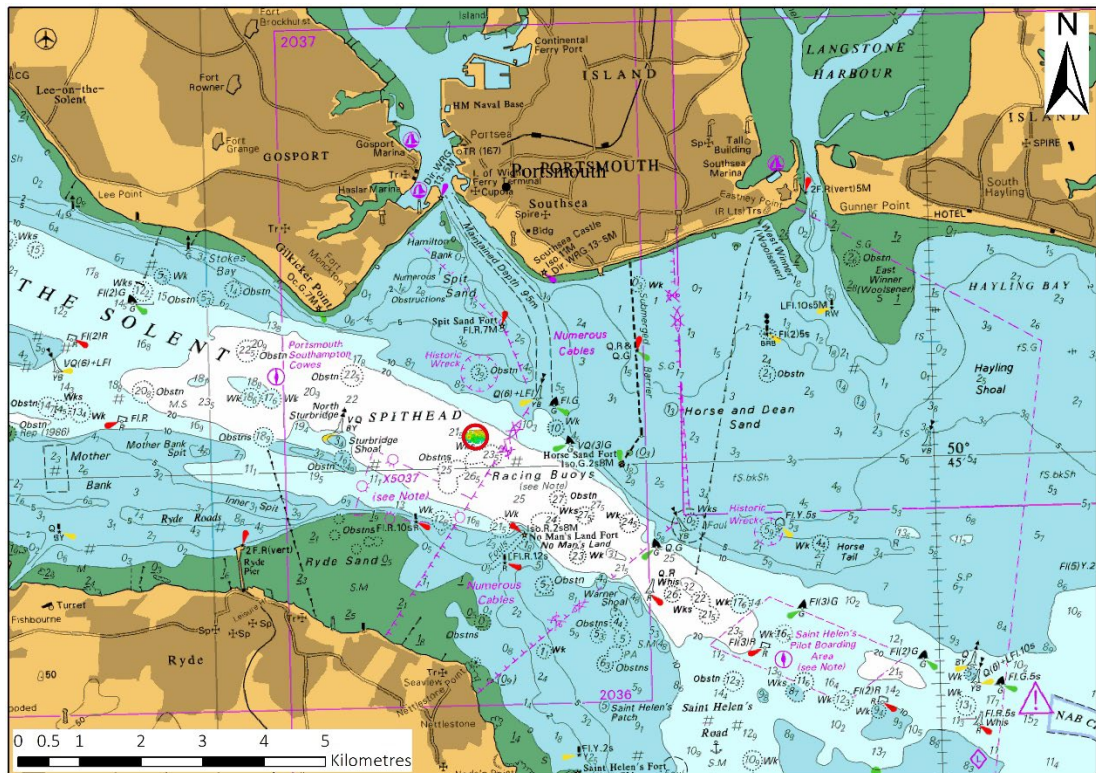


Figure 9: The red circle near centre of the chart is the location of Edgar.

3.1.23. To maximise time on site and to conduct multiple tasks simultaneously, two shots were initially deployed. The first shot was deployed on the centre of the mound in Area 2 (Figure 10), and the second on a large mag target northeast of Area 2. One pair of divers were tasked with locating either exposed archaeological features or hard contacts below the surface of the seabed on the mound, using metal probes. The second pair were given a metal detector and a metal probe for locating potential guns or other large ferrous objects.



Figure 10: Showing the shot on the site of Edgar with Portsmouth Harbour in the background.

- 3.1.24. On reaching the bottom of the shot, at the centre of the Area 2 mound, the divers attached a reel and conducted a circular search, while probing into the seabed and visually inspecting for exposed wreck (Figure 11). At 25m deep there was just enough ambient light to see without the use of a torch. With torches on, vision was restricted to what was immediately in the torch light. With torches off, however, it was possible to make out subtle shapes and undulations in the distance. As such, torches remained off while searching but when potential features were spotted torches were switched on to inspect.



Figure 11: Diver probing into soft silty seabed with head torch on.

- 3.1.25. The seabed was extremely soft, made up of very fine mobile silts, that when disturbed remained in suspension during slack water. Movement, therefore, was slow and controlled so as not to disturb the bottom, except to push the probe into the seabed (Figure 11).
- 3.1.26. The surface of the mound was undulating with shallow but obvious peaks and troughs. The bottom of the troughs were approximately 0.3 - 0.5 m deeper than the peaks. When probing during circular searches hard contacts were found all over the mound. The contacts were within c.0.5 m below the surface within the troughs. With bottom time running out, the decision was made to head back and find a contact that was within the bottom of a trough close to the shot (Figure 12).
- 3.1.27. A firm contact was established 5 m from the shot and the probe was placed firmly into the seabed marking the position. The divers then laid a pink ground line from the probe back to the shot to enable the next pair of divers to find it (Figure 12).

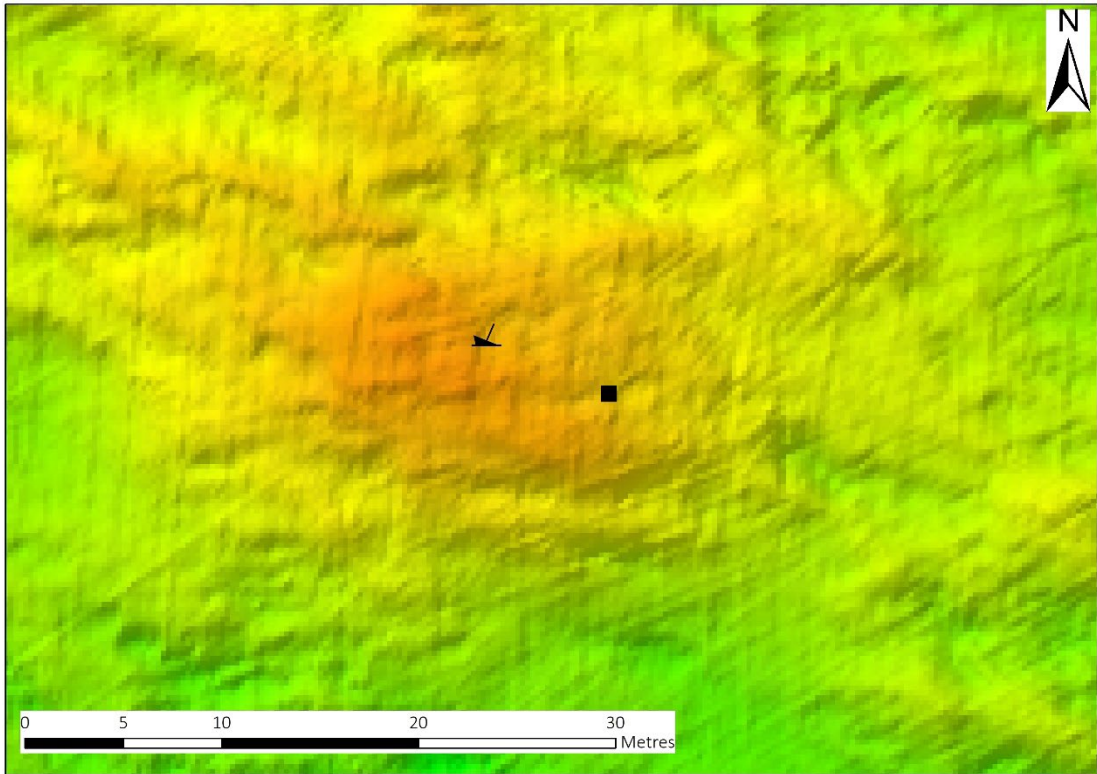


Figure 12: Showing the bathymetry of the mound. The wreck mark identifies the centre of the mound and the black square relates to the hard contact and location of test pit.

- 3.1.28. The second pair of divers conducted a circular search, while one was using the handheld aqua scan metal detector and the other used the metal probe, to prod into the seabed for hard contacts. The seabed northeast of Area 2 was slightly deeper at 27m but still made up of very soft silts. No positive contacts were found, either with the metal detector or by probing.
- 3.1.29. Following a quick briefing on the surface by the first pair of divers the next pair of divers were deployed on the centre of Area 2. The new pair of divers were tasked with excavating a small test pit at the location of the probe to identify potential archaeological features. The divers were given a portable airlift with a single 18 litre cylinder to run the airlift (Figures 13-15). Portable airlifts were chosen as the excavation tool because hand fanning, alongside hand trowels, were found to be ineffective on site, due to the fluidity of the surface silts and lack of bottom currents during the dive windows. The airlifts were also a much more controlled method of excavation than hand fanning, which immediately destroyed any visibility. The portable airlift had been trialled with reasonable success on the 2014-2015 excavations of *London* (Cotswold Archaeology 2015). They were also being used to excavate the forward gundeck of *Hazardous* a few miles East in Bracklesham Bay during the 2023 season (Figure 16).

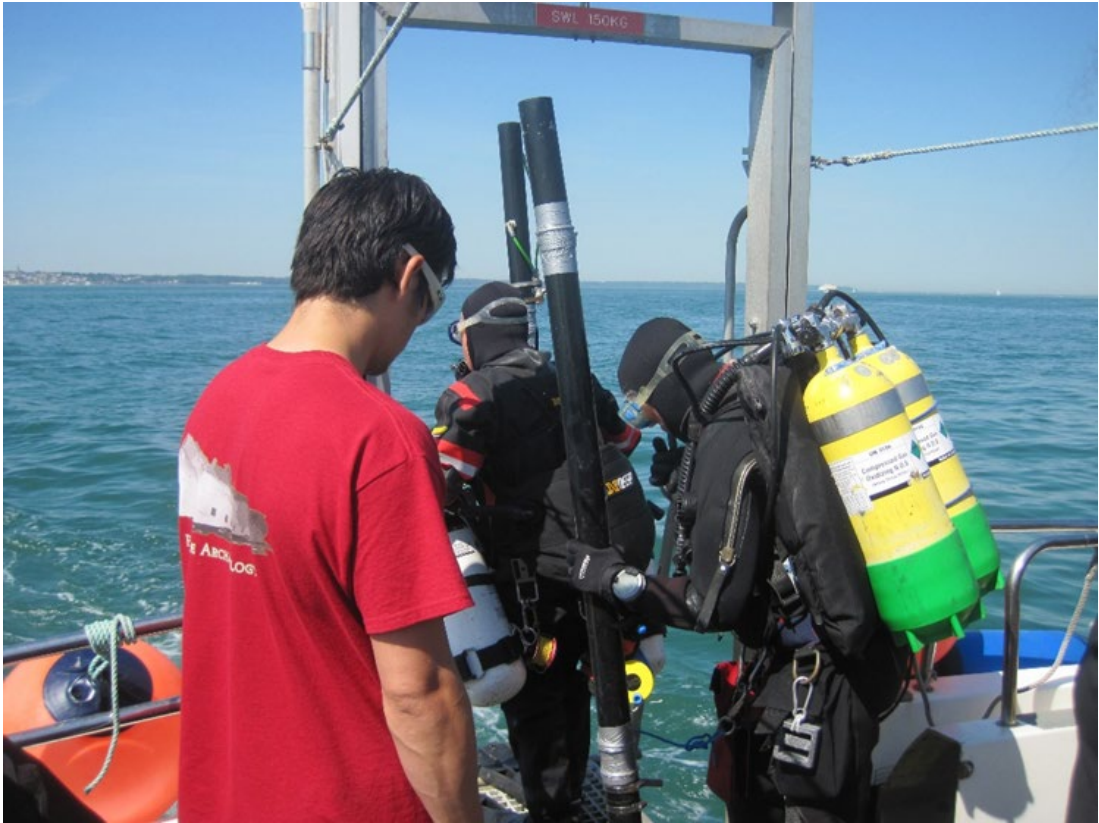


Figure 13: A pair of divers ready to jump in on Edgar and take down the portable airlifts.



Figure 14: The next pair of divers about to jump in carrying an 18-litre cylinder each to use with the portable airlifts, which had been left on the seabed by the previous divers.



Figure 15: Bubbles from the divers airlifts rising up to the surface from Edgar.



Figure 16: Diver Keith using the portable airlift while excavating the gundeck on the wreck of Hazardous in Bracklesham Bay during May 2023. This image is being used because visibility was too poor on Edgar for taking photographs when the airlifts were in use.

3.1.30. When the divers returned to the surface, they described with great excitement that they had found a large wooden pulley block, alongside timber structure. Due to the fluidity of

the silts, along with the poor underwater visibility, when using the airlift, they could only feel the archaeology that they had just found. They also described that there was a layer of oyster shells just above the archaeology. At the level of the archaeology and below they also described that silts became firmer, more clay like. The texture of the stratigraphy is very similar to that found on the site of the *Mary Rose*.

- 3.1.31. The identification of oyster shells was quite encouraging as I remember excavating through a layer of oyster shells when I was excavating the bow of the *Mary Rose* in 2004 and 2005. During excavation of *Invincible* in 2017 I had also found that there were oyster shells stuck to the outer planking of the port side structure. John Deane had also encountered oysters when salvaging the wreck *Royal George*. The evidence of which can be seen on drawings he had commissioned of artefacts recovered from the wreck, which are covered in oyster shells (Figure 17). The evidence of oyster shells on and around these wrecks identified that when they were exposed above the seabed, they provided a good habitat for oysters. The finding of oyster shells below the surface of the mound at Area 2 was a very good indicator that there had been a wreck exposed above the seabed at this spot in the past.



Figure 17: Artefacts recovered from the wreck of Royal George by the diver John Deane. Note how they are covered in oyster shells (Image Portsmouth City Museum and Record Services but copied from John Bevan's book, plate 14, *The infernal Diver* (Bevan 1996)).

- 3.1.32. The 2022 finds from Area 2 were very small, consisting of broken glass and ceramics. Although they matched the time period, they had the potential to be rubbish, discarded by other vessels at anchor in Spithead. So, to find a large pulley block, with associated timber structure was the tangible archaeological evidence we were looking for to confirm this was indeed the site of *Edgar*.
- 3.1.33. With limited time on site combined with challenging seabed conditions it was decided that the remaining dives would focus on excavating a small test pit to expose and record the block and timber structure.
- 3.1.34. Each subsequent buddy pair spent their dives carefully excavating using the portable airlift and it was hoped that the archaeology would be exposed to allow for photographic recording. However, the top 0.5m of silt was so soft that the excavation hole would immediately infill with the surrounding mobile silts. By the end of day one it was apparent that to expose the archaeology a much wider area would need to be excavated and there

was not enough time to do this. As such, it was decided that the block should be recovered for the purpose of providing the tangible evidence that would prove this was the site of the *Edgar*.

- 3.1.35. The next day when we returned to site the shot was dropped on the position of the centre of the mound and the first pair of divers conducted a circular search to relocate the test pit and block, which was still marked by the upstanding metal probe. When the divers located the test pit, they laid a pink ground line back to the shot and took a distance and bearing, so to record an approximate position of the test pit. The test pit was 7m ESE of the shot.
- 3.1.36. The next two pairs of divers continued to excavate around the block and loosen the firmer silts immediately below it. In doing so divers felt other fragmented objects which they thought were broken ceramics. A piece was put into the diver's bag and recovered for dating purposes. The bag was placed immediately into a bucket of water when the diver made it to the surface.
- 3.1.37. With only two pairs of the divers left it was decided that the penultimate pair would try to recover the pulley block, leaving the last pair as either back up or to clean up the site and make sure no exposed timber was left uncovered.
- 3.1.38. Fortunately, the penultimate pair managed to free the block, place the block into a large net bag and recover it by hand to the surface. When on the surface the block was measured and identified as a 19 inch shoulder block. The size and type were consistent with one coming from a large wooden sailing vessel (Figure 18).



Figure 18: Photograph a showing diver Felix returning to the boat with block in net bag. Image b is the initial photograph of the block taken while still on the boat.

- 3.1.39. After the excitement of examining the block, our attentions turned to the object in the other bag. To our initial shock and surprise the object was not ceramic but bone and looked suspiciously human, but with no specialists in human remains onboard we could not be certain. As such the bone was placed in a plastic finds bag with water and taken to Bournemouth University conservation lab, along with the wooden block, where it was held in passive storage. Both finds will be described and analysed in more detail in the finds section below.
- 3.1.40. With the recovery of the block, potential human remains, and other unidentified timber structure left in-situ, the team had found the tangible archaeological evidence we needed to feel confident that we had found the wreck site of *Edgar*. The team were jubilant with their latest discovery - it isn't every day that you find the site of a 70-gun warship (Figure 19).



Figure 19: Happy dive team having finding the archaeological evidence confirming the location of Edgar.

2023 Finds

3.1.41. The block was given artefact find number **Edgar23A00001** and has been identified as a shoulder block (Figure 20). A shoulder block, according to David Steel's 1794 publication on rigging and seamanship is:

“ a large single block, left nearly square at the lower end, or arse of the block, and cut sloping in the direction of the sheave. Shoulder-blocks are used on the lower yardarms, to lead in the topsail-sheets; and, on the topsail-yards, to lead in the topgallant-sheets; and by means of the shoulder are kept upright, and prevent the sheets jaming between the block and the yard: they are also used at the outer end of the boomkins, to lead in the fore-tacks. (Steel 1794, p. 156).

Edgar23A00001 consists of three parts, the shell, sheave and pin. The shell is unfortunately missing one side but originally would have been turned and cut from a single piece of wood, probably elm. The shell is 490 mm (19.3 in) long and this is the dimension that determines the size of the block. The sheave is made of a hard wood, possibly lignum, and has a diameter of 275 mm (10.8 in) and is 70 mm (2.75 in) thick. The pin has a diameter of 62 mm (2.4 in) and is 160 mm (6.3 in) long. The pin has teredo damage at one end suggesting it is not made of a tropical hardwood such as lignum vitae. At present the wood species is only a

suggestion made from personal experience of recording blocks from Royal Navy ships of the 17 and 18th centuries. Analysis by a wood species specialist will be sought in the future.

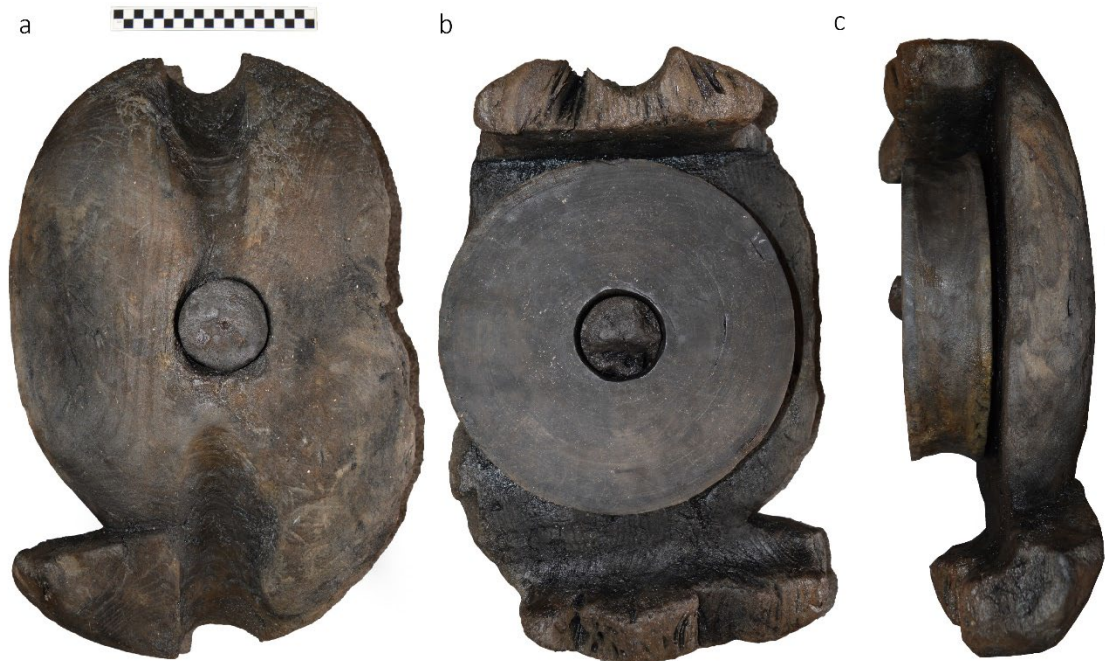


Figure 20: Showing the shoulder block Edgar23A00001. side a shows the the intact side of the shell, side b shows the sheave inside the block due to the other side of the shell missing and side c shows the profile of the block and thickness of the sheave and shell. The scal in the imgae is 20 cm with 1 cm increments.

3.1.42. A human remains specialist at Bournemouth University examined the bone **Edgar23A00002**, confirmed it was human and identified it as the sacrum (Figure 21). The sacrum is at the lower end of the spine and, along with the coccyx, is actually variably fused vertebrae. During adolescence the sacral vertebrae fuse into one immobile, wedged shaped bone, known as the sacrum. The coccyx can fuse with the sacrum in later life but it is not present here, suggesting this individual was not elderly; unsurprising on a ship of the line.

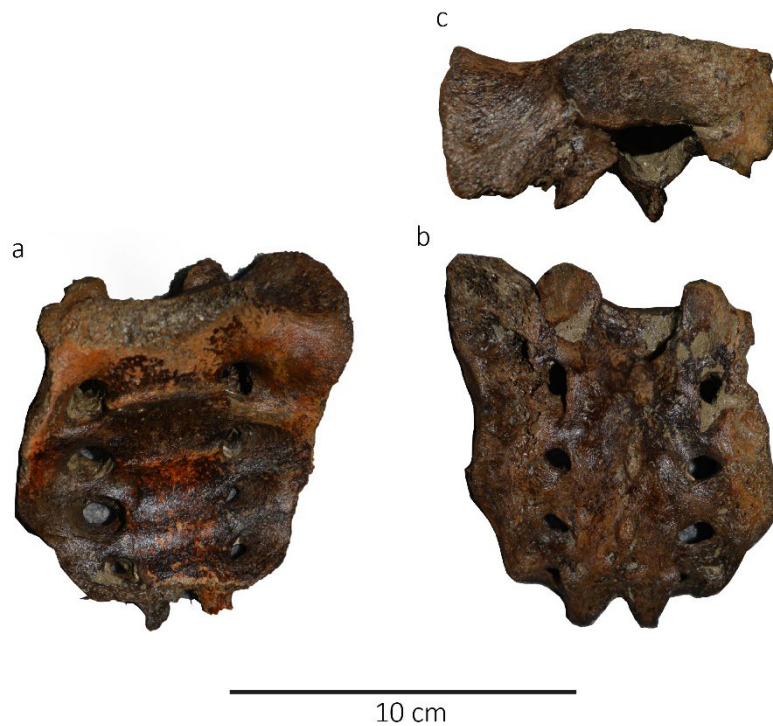


Figure 21: Shows the sacrum recovered from *Edgar*, a is the anterior, b is the posterior and c is the proximal end.

3.1.43. Apart from the initial assessment and subsequent confirmation as human, the bone has had no further analysis by a specialist. When further analysis is undertaken it would be interesting to find out if the sex and approximate age is able to be determined. You'll notice that there is damage to the right side of the sacrum and from the colour of the bone this did not occur recently. This has likely occurred by some dramatic trauma and it would be interesting to know whether this trauma occurred when the ship originally blew up or whether this happened post-mortem during the clearing and salvage of *Edgar* by the Royal Engineers.

3.2. *Newcastle* (Bracklesham Bay)

Historical background

3.2.1. *Newcastle* was a 50-54-gun fourth-rate (Figure 22), which was originally built by Phineas Pett II and launched at Ratcliffe in 1653 (Winfield 2009, p. 107) (Winfield 2009, 107). The ship was rebuilt in 1692 at Rotherhithe (Winfield 2009, p. 133).

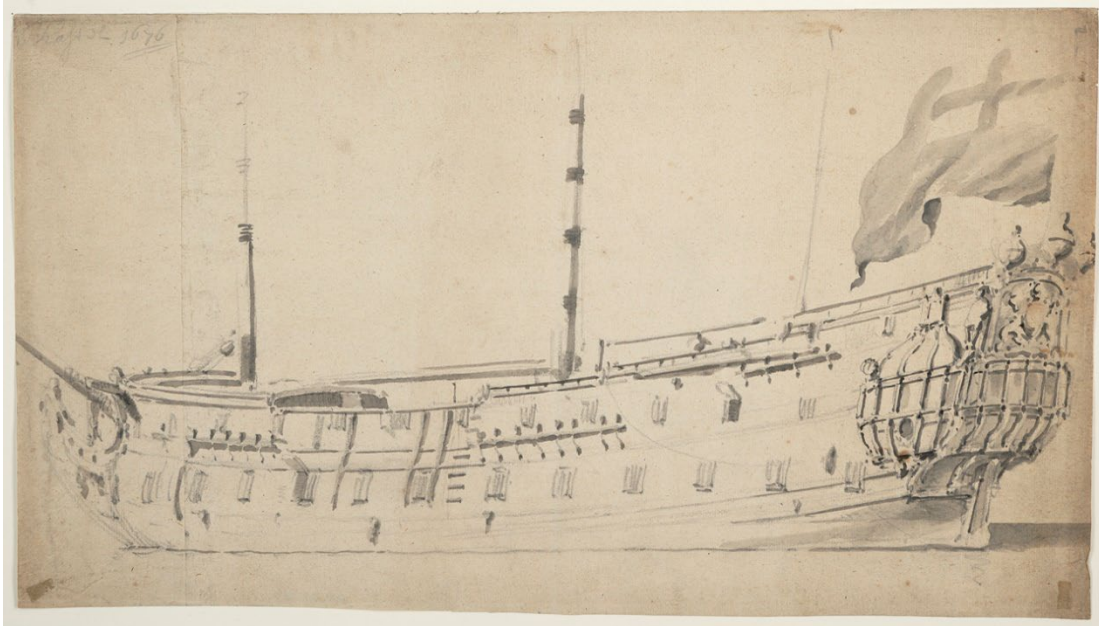


Figure 22: Portrait of Newcastle by Van de Velde the younger around 1676 (Image ID: PAG6235 © National Maritime Museum, Greenwich).

- 3.2.2. The ship was lost during the night of the Great Storm of November 26-27th 1703 while at anchor at Spithead outside Portsmouth Harbour. There were mixed reports of where the ship was lost. In Hepper's 'British Warship Losses in the Age of Sail' it states that the ship foundered at Spithead, with the loss of 193 crew and 40 saved (Hepper 1994, p. 23). Another states the ship was lost near Chichester (TNA ADM106/3120).
- 3.2.3. It was only relatively recently that the author found a series of documents referring to the wreck of *Newcastle*. One document describes the location of the wreck and where wreckage was washing up on the shore in Bracklesham Bay. In the document it states that wreckage from His Majesty's ships *Newcastle* and *Eagle Advice Boat* could be seen on the beach and that this was originating from the bow of *Newcastle* a little west of Bracklesham lane and eastwards towards the wreck of *Eagle Advice boat* (TNA ADM106/570/266). The location of this document has significantly refined the search area for the wreck.
- 3.2.4. From contemporary naval documents there is no doubt that *Newcastle* was totally wrecked on the Sussex coast at Bracklesham Bay. Owen Sutherland, the Purveyor at Portsmouth Dockyard, wrote to Commissioner Gifford describing what he had seen during his assessment of the wreckage of ships upon Bracklesham:

"mett with the most doleful spectacle, that ever mortal eyes behold, I have not yet strode above three miles along shore & so am informed I have not Seen the whole; but for the distance I have viewed, it is covered with wreck So thick that a man cannot sett a foot clear;

It is rare to see So much planke together, as will support two futtocks, and this generally thought to be y New Castle..."

He goes on to mention the immense loss of life associated with the wreck and the efforts to clear up the human debris scattered along the shoreline:

"...the people have for some days been employed in burying dead corps, they lay pile so thick that in some places, a man can hardly turn a horse clear of one without treading nn the another, som of which are so pittifully dash'd in pieces, that were it not for the distinction of fingers & toes, they would hardly be suspected to be parts of human bodys" (TNA ADM 106/570/231).

The latter point just goes to show how strong the forces of the storm were that not only did it destroy the hulls of the ships, but it battered and pulverised the bodies of the sailors washing ashore.

- 3.2.5. In addition to *Newcastle* and *Eagle Advice boat*, an unnamed 400 ton merchantman was also a total loss in Bracklesham bay, with no survivors. Another navy vessel, *Litchfield Prize*, went aground but was refloated, following guns being removed when the storm abated.
- 3.2.6. Salvage of the other wrecks occurred shortly after, resulting in Sutherland itemising the recoveries in his accounts. His accounts reveal 49 guns were recovered, along with loads of gunpowder, shot, gunners stores and rigging, but it is unclear whether these numbers are referring to recoveries from *Newcastle* or include the other ships, *Eagle Advice Boat*, *Litchfield Prize* and the merchantman (TNA ADM 106/570/266). This adds to the interest of finding the remains of the wreck of *Newcastle* because it will provide a better understanding of what was salvaged from the individual wrecks.
- 3.2.7. The position of *Eagle Advice Boat* has been known about for several decades and is in fact a site visited by members of the Hazardous Project Group (The group that dives the protected wreck of *Hazardous*, also in Bracklesham Bay). The whereabouts of the unknown merchantman is still a mystery and in looking for *Newcastle* it is quite possible that this wreck could be found too.

2023 Magnetometer survey

- 3.2.8. In April 2023 the author conducted a magnetometer survey with the aid of the Hazardous Project Group and their rib. The aim of this survey was to identify additional targets to ground-truth during the summer diving project. The survey area was chosen due to the description of the location of the wreck of *Newcastle* by Sutherland in which he states:

“The broken pieces of wreck of her Majesties Ships Newcastle and Eagle Advice Boat and one of the pitch boats; consisting of timber plus planks with the iron works therein; as the same lay then visibly upon and about the beach from Newcastle’s bow, a little to the west of Bracklesham lane and extending thence eastward as far as the said Eagle advice Boat.” (TNA ADM 106/570/266).

As such it was decided to survey an area close in shore from and in line with Bracklesham Lane - 1 km to the west. The width of the survey ranged between 100-200m (Figure 23).

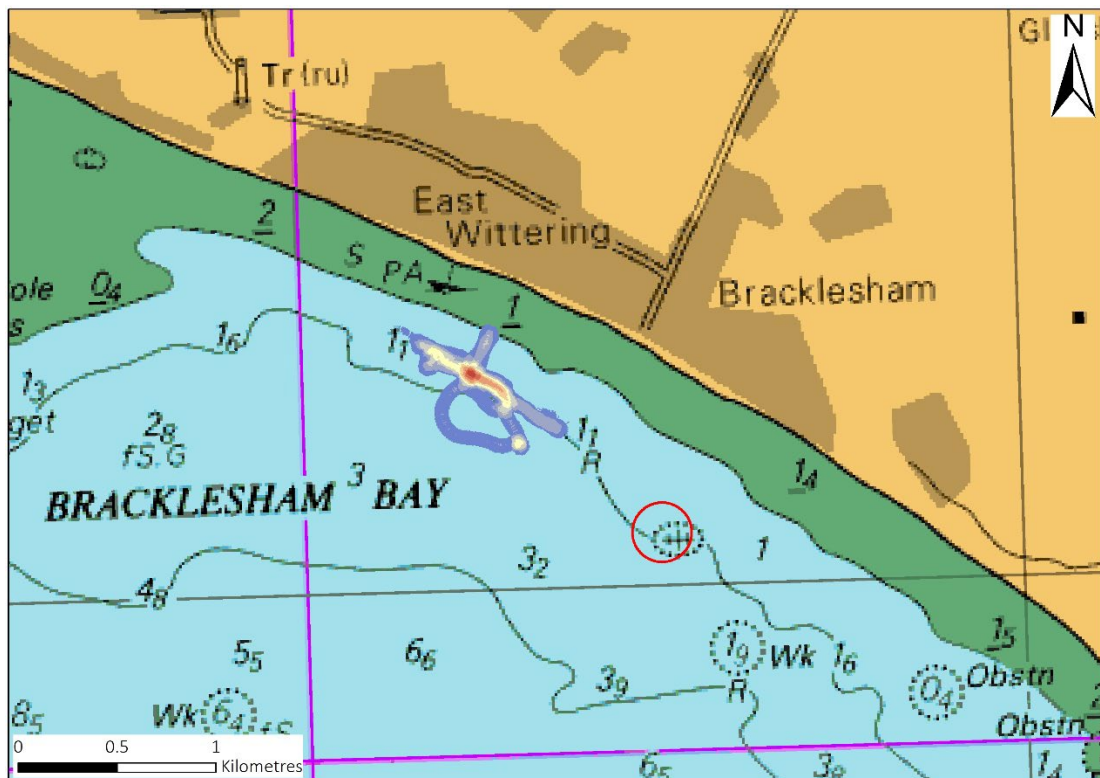


Figure 23: Showing the 2023 magnetometer survey. The red scale represents a large magnetic signature. The red circle is the designated wreck of Hazardous.

3.2.9. The survey identified a significant magnetic target plus a cluster of smaller ones. As such, these became primary targets for the 2023 diving. Other diving targets were chosen from the 2021 bathymetry.

2021 Multi-beam bathymetry

3.2.10. In 2021 MSDS Marine and Swathe Services conducted a multi-beam survey under the direction of the author. The survey area was approximately 3.3 km long by 350 m wide and ran east to west parallel to the shore (Figure 24). The centre of the survey area was roughly in line with Bracklesham Lane. Anomalies observed on the bathymetry were diver ground-truthed during the 2023 diving fieldwork.

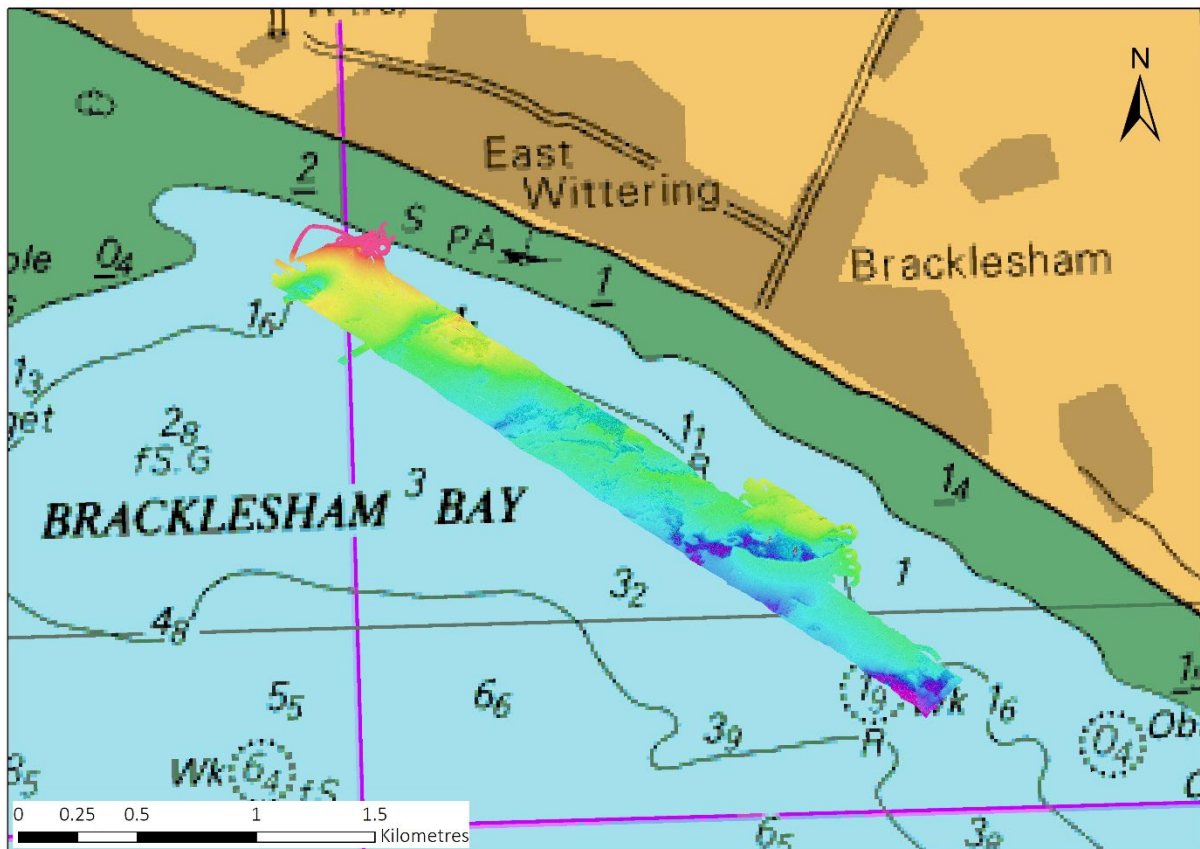


Figure 24: Showing the 2021 bathymetry.

2023 diving

- 3.2.11. Diving was conducted in Bracklesham Bay over a total of three days during the 14-16th June from the dive boat *Wight Spirit*. This time was shared with diving off Hayling Island and Chichester Harbour. For diving in this region of the eastern Solent *Wight Spirit* was based out of Southsea Marina and as such it was only a relatively short steam east towards Hayling and Bracklesham Bay. A total of 27 dives were undertaken by 13 divers, amounting to total dive time of 1,168 mins.
- 3.2.12. Calm seas and bright sunshine during the week of fieldwork led to ideal underwater conditions in the shallow waters of Bracklesham Bay. Underwater visibility was between 3-4 m each day and alongside the shallow depths meant it was ideal for the less experienced members of the team to learn new scientific diving skills, such as circular searches and metal detector searches (Figure 25).



Figure 25: Divers with Aqua Scan metal detectors. Diver on left has the smaller 8 in search loop and the diver on the right has the larger 15 in search loop.

3.2.13. A priority list of targets with positions, in latitude and longitude, were collated prior to diving and these targets were dived during the three days. A shot was dropped on the position of a target, buddy pairs descended to the bottom, clipped on a reel and conducted a circular search to locate the target (Figures 26 and 27).



Figure 26: Divers Dave and Cal getting ready to dive.



Figure 27: Divers Dave and Cal about to descend the shot line to locate the main magnetic target.

- 3.2.14. The largest and most promising magnetic target was dived first, and this was identified straight away by the divers. Unfortunately, it was not a cannon, anchor or pile of shot associated with an early 18th century warship, but it did have another military association. The target was in fact a large stockless anchor (Figure 28), with a long, concreted length of stud-link chain attached for several metres, which disappeared into the sandy seabed. Similar anchors and length of chain are found further offshore, which provided moorings for landing craft during the Second World War.
- 3.2.15. The anchor and chain could have been associated with Exercise Fabius III involving the Canadian forces. This was a D-Day invasion exercise where Canadian forces practised beach landings in Bracklesham Bay in preparation for landing on the beaches of Normandy (Figure 29).



Figure 28: Large stockless anchor, probably a relic from World War II training exercises in Bracklesham Bay associated with Exercise Fabius III.



Figure 29: Commander Glen Frankfurter captures North Nova Scotia Highlanders as they invade Bracklesham bay during Exercise Fabius III. The 9th Brigade men disembark from Landing Craft infantry (LCA) #135 (<https://mapleleafup.tumblr.com/post/84766169001/mlu70-4-may-1944-uk-invasion-exercise-cdn-navy>). Assessed 06/04/24).

- 3.2.16. The discovery of this anchor and chain, although not what we were hoping for, is an interesting and significant find. It adds to the existing Second World War archaeology of Bracklesham Bay, which has other significant sites such as a sunken Valentine tank further offshore; a Churchill tank on the beach; and an American landing craft tank (LCT), a few 100m east of the wreck of *Hazardous*. Together these provide the physical evidence for the war time exercises that were conducted here that perhaps the historical documents may not mention.
- 3.2.17. Unfortunately, the other magnetic targets in this area turned out to be a scatter of cast iron pipes, but at least it demonstrated that the magnetometer survey did detect actual magnet targets that could be verified by diver ground-truthing.
- 3.2.18. After all the magnetic targets were ground-truthed the team then moved onto the anomalies selected from the 2021 bathymetry. Once again divers descended a shot dropped on the position of the anomaly and conducted circular searches to locate the anomalies.

- 3.2.19. Sadly, none of the anomalies dived turned out to be associated with a site of a shipwreck, although some loose and disarticulated timbers were found, suggesting possible remains somewhere in the vicinity.
- 3.2.20. The most notable anomaly was confirmed as a large boulder, standing 1 m proud of the seabed, and therefore natural (Figure 30). Despite the disappointing results it was a good exercise for those members of the team who were learning new underwater search skills.

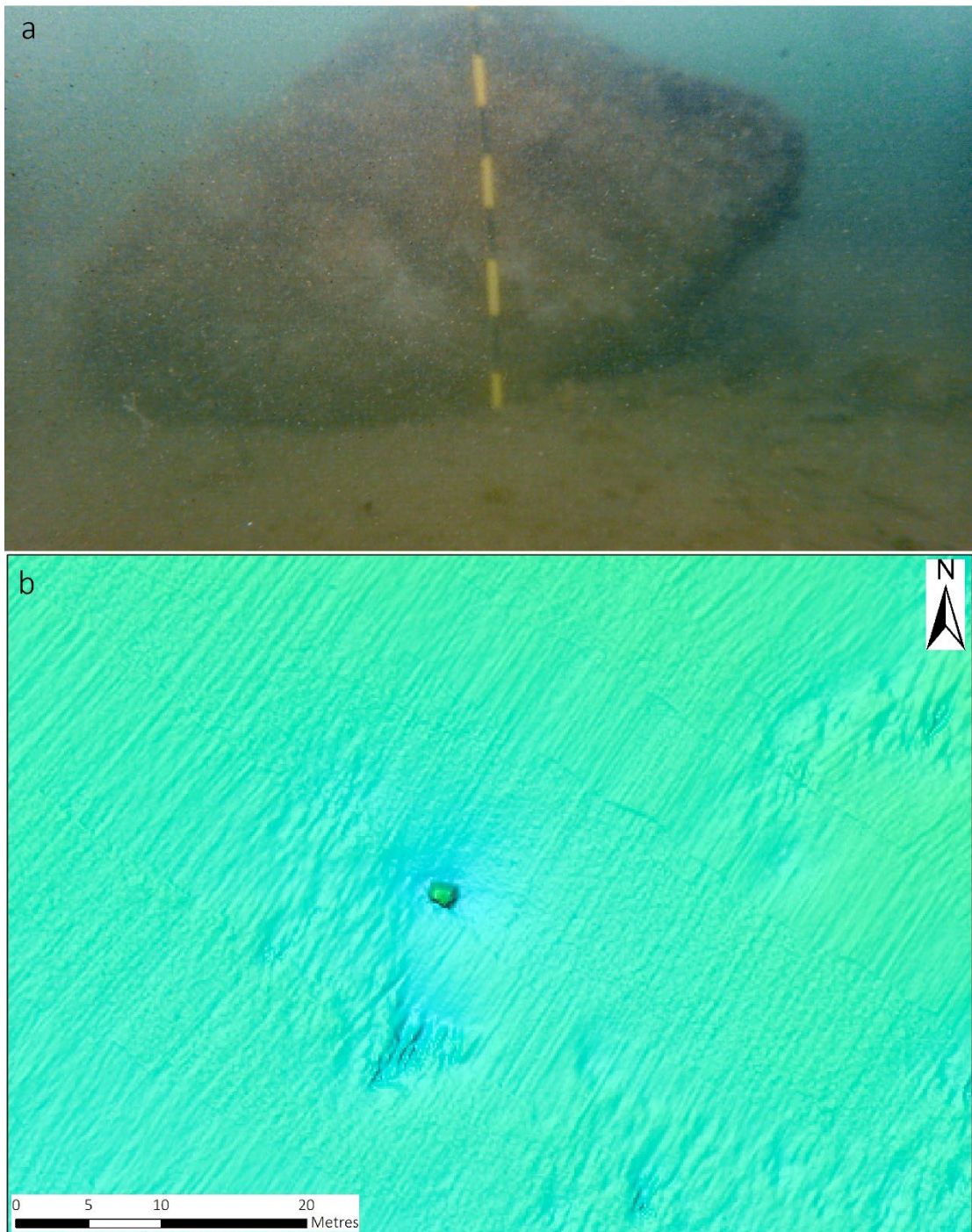


Figure 30; One of the bathymetry anomalies confirmed by diver ground-truthing as a natural boulder.

3.3. *Nassau* (Hayling area)

Historical background

- 3.3.1. *Nassau* was a 70-gun ship of the line constructed as part of the 1695 shipbuilding programme. The ship was built and launched at Portsmouth by Elias Waffe in 1699 (Winfield 2009, p. 76).
- 3.3.2. The ship was lost on the 30th October 1706 after going aground in the eastern Solent. A Court Martial found both the Captain and Master of the ship guilty of negligence and they were charged for the loss of the ship. However, within the Court Martial document there is conflicting evidence regarding the location of the wrecking. The Captain described going aground between the Horse and Dean Sands and the Master was stated as saying the ship went aground on the Bembridge Ledge (TNA ADM 106/5266). This has caused some confusion as Hepper in 'British Warship Losses in the Age of Sail' describes the loss of the ship being on Bembridge Ledge between the Dean and Horse Sands (Hepper 1994, p. 25).
- 3.3.3. Further research by the author within the National Archives has found several documents referring to the loss and subsequent salvage of the wreck. One document was in fact more specific in describing the location of the wreck. This document was a letter written on the 7th November 1706 by Commander Lee, reporting back to Portsmouth on the condition of the wreck. In this letter Commander Lee states 'she lying now as far as the mouth of Chichester haven.' (TNA ADM106/611/103).
- 3.3.4. Another letter written by Commissioner Isaac Townsend on the 11th November 1706 states:
" am sorry to tell you that we find her unrecoverable, her seams all open, Butheads started, decks blown up, and the ship so much thrown down to port, by the rapid tide, ebb sets out of Chichester Harbour directly on her broadside and has hove up a great bank of shingle against it that it is impossible for her ever to right." (TNA ADM106/614/251).
- 3.3.5. The wreck remained above water for several months after the wrecking and guns, anchors, cables and other stores were recovered from the wreck. On the 6th June 1707 it was reported that 55 guns were recovered from the wreck and 21 guns recovered from the wreck of the Hazardous. (TNA ADM106/625/145). *Nassau* could have had between 60-70 guns, there is therefore potential for 5-15 guns remaining on the seabed, along with other magnetic anomalies such as shot. We know from the archaeological investigations of the Hazardous, lost in Bracklesham bay, that considerable parts of the ship and numerous guns still survive despite the contemporary salvage operations. There is, therefore, a high potential for significant archaeological remains to survive on the site of *Nassau*.

3.3.6. The author has georeferenced a Murdoch McKenzie map dating from 1786, showing the location and orientation of the entrance of Chichester harbour (which differs from the current orientation), alongside multi-beam bathymetry downloaded from the Channel Coast Observatory (Figure 31). The bathymetry has identified several seabed anomalies in the region of the old approaches and entrance to Chichester Harbour, which warrant diver-ground-truthing to determine whether they are associated with the wreck of Nassau. These anomalies were the focus of the 2023 diving investigations.

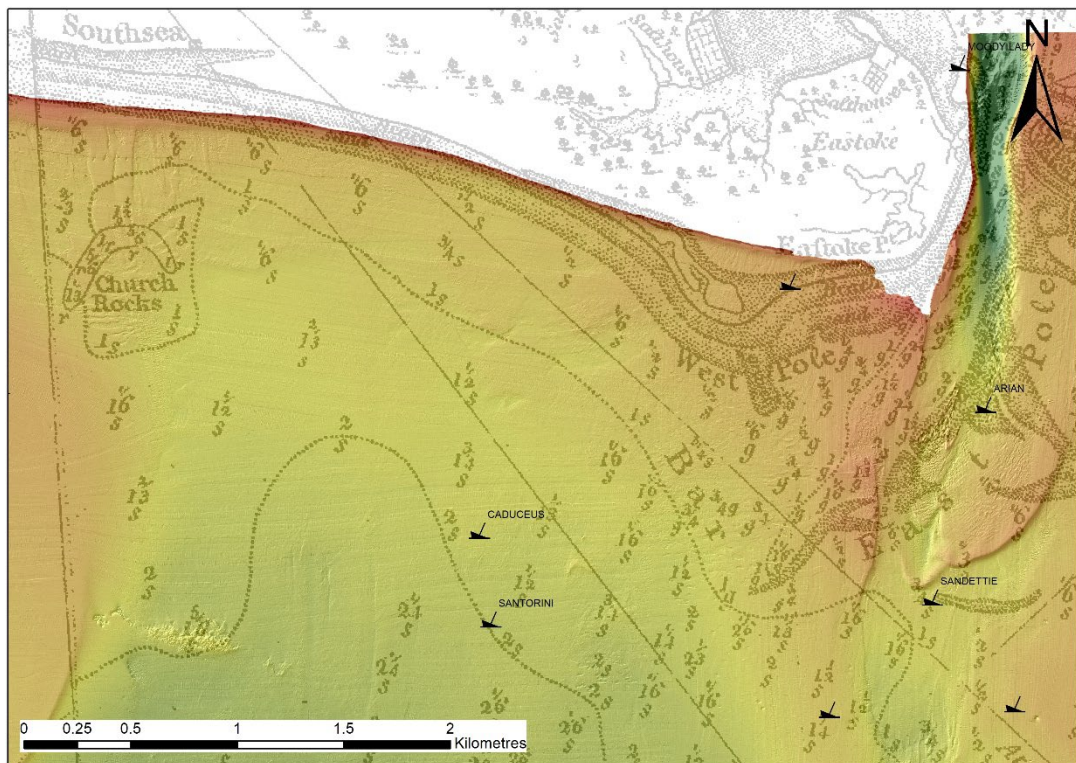


Figure 31: Showing the 1786 Murdoch Mackenzie chart and the location of the Chichester harbour along with CCO multi-beam bathymetry of the seabed in the region of the old approaches and entrance to the Chichester harbour.

2023 Diving

- 3.3.7. Diving was conducted over 1 day on the 16th June, in the area just west of the West Pole sand bank, off the east end of Hayling Island. A total of eight dives were conducted by eight divers amassing a total dive time of 186 minutes.
- 3.3.8. A total of four bathymetric anomalies were ground-truthed and all were found to be natural seabed features.

3.4. Potential wreck inside Chichester Harbour Entrance

Background

- 3.4.1. In 2020 the author was investigating the recovery of a wrought iron banded cannon with timber bed from Chichester harbour in 1996 and which is now in conservation at the Royal Armouries at Fort Nelson, Portsmouth. The size and type is similar to the type known as slings, which were found on the upper gundeck of *Mary Rose*.
- 3.4.2. The gun had been trawled up and dumped on a mud bank opposite Sparkes yacht club on Hayling Island. It was believed that a fisherman had found it and dumped it there. The site where it was dumped was dived by the Archaeological Diving Unit, but no site was found (Liscoe 1996, dive log). The ADU investigation did not get to the bottom of who dumped the gun or where it may have come from (Personal communication Steve Liscoe).
- 3.4.3. The author contacted Alex Hildred, curator of Ordnance at the Mary Rose Trust who suggested I talk with Nick Rule, son of Margaret Rule. To cut a long story short Nick knew an old oyster fisherman and it turned out that he was the fisherman that trawled up and dumped the gun. The fisherman took both Nick and I to the spot where he trawled up the gun and we recorded the position (Figure 32). The fisherman said he used to regularly snag other obstructions at the location and therefore this may not be an isolated find but a site of a shipwreck. A wrought iron gun with wooden bed is a type of weapon that was used from the late Medieval period and therefore finding a site has the potential to be very significant as late Medieval sites are extremely rare.

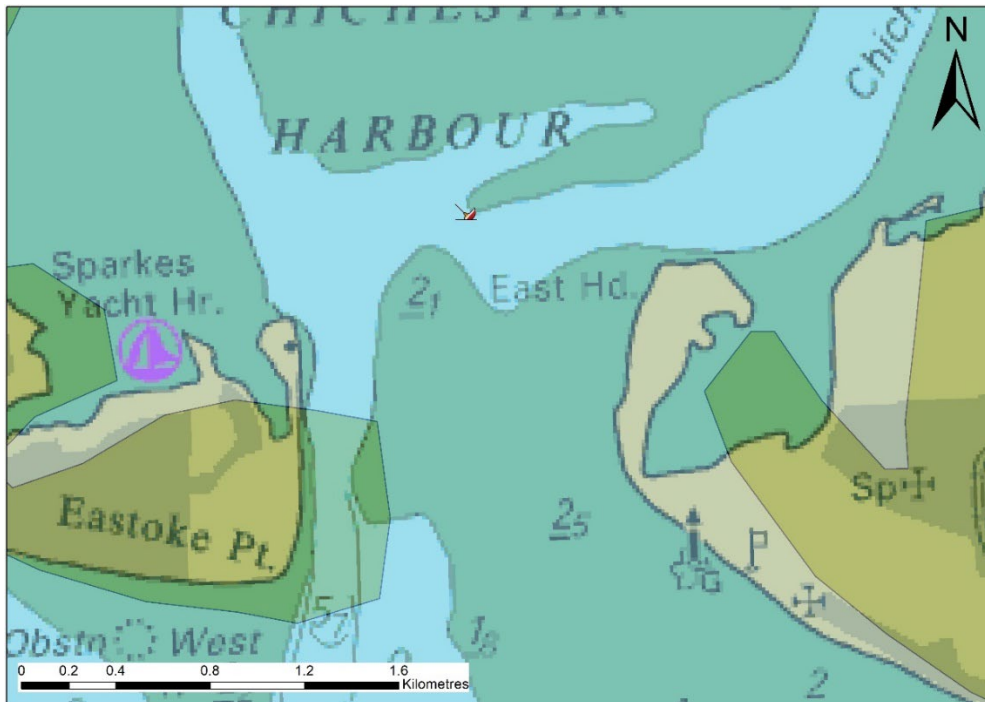


Figure 32: Showing position where the oyster fisherman said he found the wrought iron gun.

2023 Magnetometer survey

- 3.4.4. In the spring of 2023 the author returned to the position with the Hazardous Project Group to conduct a magnetometer survey. Very close to the position given by the fisherman a large magnetic target was found (Figure 33) and, as such, was added to the list of dive targets.

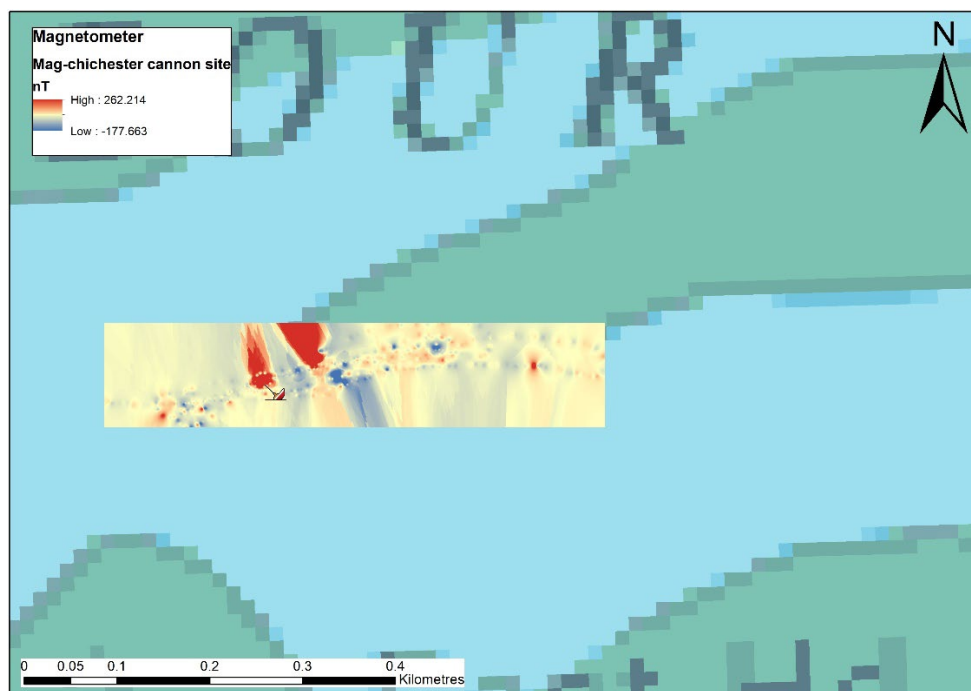


Figure 33: Showing the magnetometer survey inside Chichester Harbour in relation to the position of gun given by the fisherman.

2023 Diving

- 3.4.5. When the author contacted the Harbour Master to gain permission to dive, the Harbour Master said he believed there was a possible aircraft site close to our diving area and so there was a chance we may come across wreckage from a plane.
- 3.4.6. Diving in this part of the harbour is very tidal and there is only a very small window when the water is slack enough to dive. In fact, we found that slack water never came and that there was always a constant flow.
- 3.4.7. We dived the site that was close to the port channel marker called stoker buoy (Figure 34), over two short windows on the 14th and 15th June. A total of 12 individual dives were conducted by 10 divers amassing a total dive time of 310 minutes.
- 3.4.8. A shot was dropped at the location of the largest mag target and divers descended the shot to conduct circular searches (Figure 34). Strong bottom currents made circular searches difficult to complete, subsequently the shot was repositioned in several locations east and west of the original target. Divers then conducted line searches north and south across the tide.



Figure 34: Divers about to jump in near Stokers buoy.

- 3.4.9. On the first dive the divers described a clean gravel bottom, sloping up to the north and down to the south representing the north side of the channel. The divers came across a loose piece of aluminium, which they recovered.
- 3.4.10. On inspection of the piece of aluminium it was found to be sheet aluminium with rivets and sections of framing and, as such, it was consistent with a piece of aircraft fuselage (Figure 35). This was quite exciting as it confirmed what the Harbour Master has believed about this being close to a location of an aircraft. However, the divers had not located any more wreckage in the area of seabed that they searched, therefore further searches were necessary to find the actual site of the wreckage. The next pair of divers also returned the piece of fuselage back to the seabed.



Figure 35: Divers, Dave, Cal and Jack inspecting the piece of fuselage.

- 3.4.11. Subsequent dives did not locate any more aircraft wreckage but a large magnetic feature was discovered, which probably correlated to the large target picked up during the survey. It was a large steel tubular pile that was lying across the seabed. It was several metres long and appeared similar to many of the channel markers on either side of the channel.
- 3.4.12. Unfortunately, time ran out, and it was not possible to fully investigate the area further. It was disappointing that no evidence of a wooden wreck was located and that the main target was modern harbour debris. The positive is that we found evidence of plane

wreckage and that this area needs further investigating to confirm the location of an aircraft, but also to continue looking for a wooden shipwreck.

4. Project conclusions

4.1. Diving

- 4.1.1. Overall, the 2023 diving fieldwork must go down as a real success. The team managed to complete five consecutive days of diving in the region of the eastern Solent, accomplishing a total of 69 dives in which 2,468 minutes were spent underwater by 19 divers.
- 4.1.2. The team consisted of competent divers, diving appropriately to their qualifications but with a range of scientific diving experience. For those less experienced in conducting underwater search methods this project was a great opportunity for them to develop new skills in different seabed environments and conditions. For others they got to develop underwater excavation skills with the use of portable airlifts on a really challenging seabed environment at Spithead.
- 4.1.3. Most importantly, all diving was conducted to the highest standards and safely with no negative incidents.

4.2. Archaeology

- 4.2.1. After many years of research, followed by marine geophysical surveys and targeted diver investigations, we have achieved locating the wreck of the 70-gun warship *Edgar*, which blew up in Spithead in 1711. This was not an easy task, as McKee found with *Mary Rose*, very little, if at all, survives exposed but instead lies preserved below the surface of the extremely muddy seabed. In finding the wooden shoulder block and other timber structures, still in-situ, alongside the human remains, the team has found the tangible archaeological evidence to confirm the exact location of the wreck.
- 4.2.2. These finds may not seem much but when you consider that only three very gribbled ends of frames confirmed the location of *Mary Rose*, and those turned into half the ship under the mud, then one can imagine the potential of what lies at the site of *Edgar*.
- 4.2.3. Diving the mound in Area 2 was not random, it was targeted. Although only a shallow mound, it stood out above the surrounding seabed and had associated magnetic targets. With no obvious exposed features, the only way to prove this was the site was to dig test pits to locate buried archaeology. The chosen test pit was also not randomly placed, it was chosen through probing the mound to find the shallowest contacts to uncover. This led to the careful extraction and recovery of finds.

- 4.2.4. Now that the site has been confirmed as *Edgar* we need to establish how much of the ship survives under the mound and see if we can determine which part of the *Edgar* it is. To do this, high resolution sub-bottom surveys will be required.
- 4.2.5. It was disappointing not to find any remains associated with the wrecks of *Newcastle* and *Nassau* but, while searching, other wartime archaeology was located adding to the known archaeological record of Bracklesham Bay. We have also identified where the wrecks are not located and where to continue future marine geophysical and diver investigations.
- 4.2.6. The same can be said for the site inside the entrance of Chichester Harbour. Although we did not find our primary target, we did find evidence that a crashed aircraft may be in close proximity and that underwater searches should continue. Hopefully in the future we will be able to confirm what archaeology lies on the seabed in this area of Chichester Harbour.
- 4.2.7. BSAC clubs and members have had a long tradition in the exploration and discovery of historic shipwrecks and in rediscovering the wreck of *Edgar*, 179 years after the Royal Engineer divers, the Solent Warships project team have continued that tradition. Hopefully, this project will encourage BSAC divers of all levels to get involved in historic wreck research, exploration and discovery.

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6. Appendix

6.1. Divers

Divers	Club
Daniel Pascoe	SADSAC, NASAC
Jane Maddocks	SADSAC, NASAC
Lauren Tidbury	SADSAC
Phil Alcock	SADSAC
Jan Gillespie	SADSAC
Sara Hassan	NASAC
Dave Johnston	SADSAC, NASAC
Rodrigo Ortiz-Vazquez	SADSAC
Mark Hobbs	SADSAC
Felix Pedrotti	SADSAC
Heather Anderson	SADSAC
Cal Pols	SUSAC
Chris Birkhead	NASAC
Geoff Downer	NASAC
Tom Harrison	No club
Tom Cousins	Bournemouth Underwater & Marine Archaeology Diving
Dave Parham	Bournemouth Underwater & Marine Archaeology Diving
Keith Clark	NASAC
Henry Carter	NASAC

6.2. Dive boat invoice

Pascoe Archaeology

Wight Spirit Charters

20 Cherwell Gardens

Chandlers Ford

Hants

SO53 2NH

20 June 2023

Five day boat charter diving Ports mouth Harbour entrance, Bracklesham Bay and Chichester Harbour, from Monday 12 June 20123 to Friday 16 June 2023 inclusive.

One day at £650.00 per day	£650.00
Four days at £600 per day	£2400.00
VAT	£0.00
Total due	£3050.00