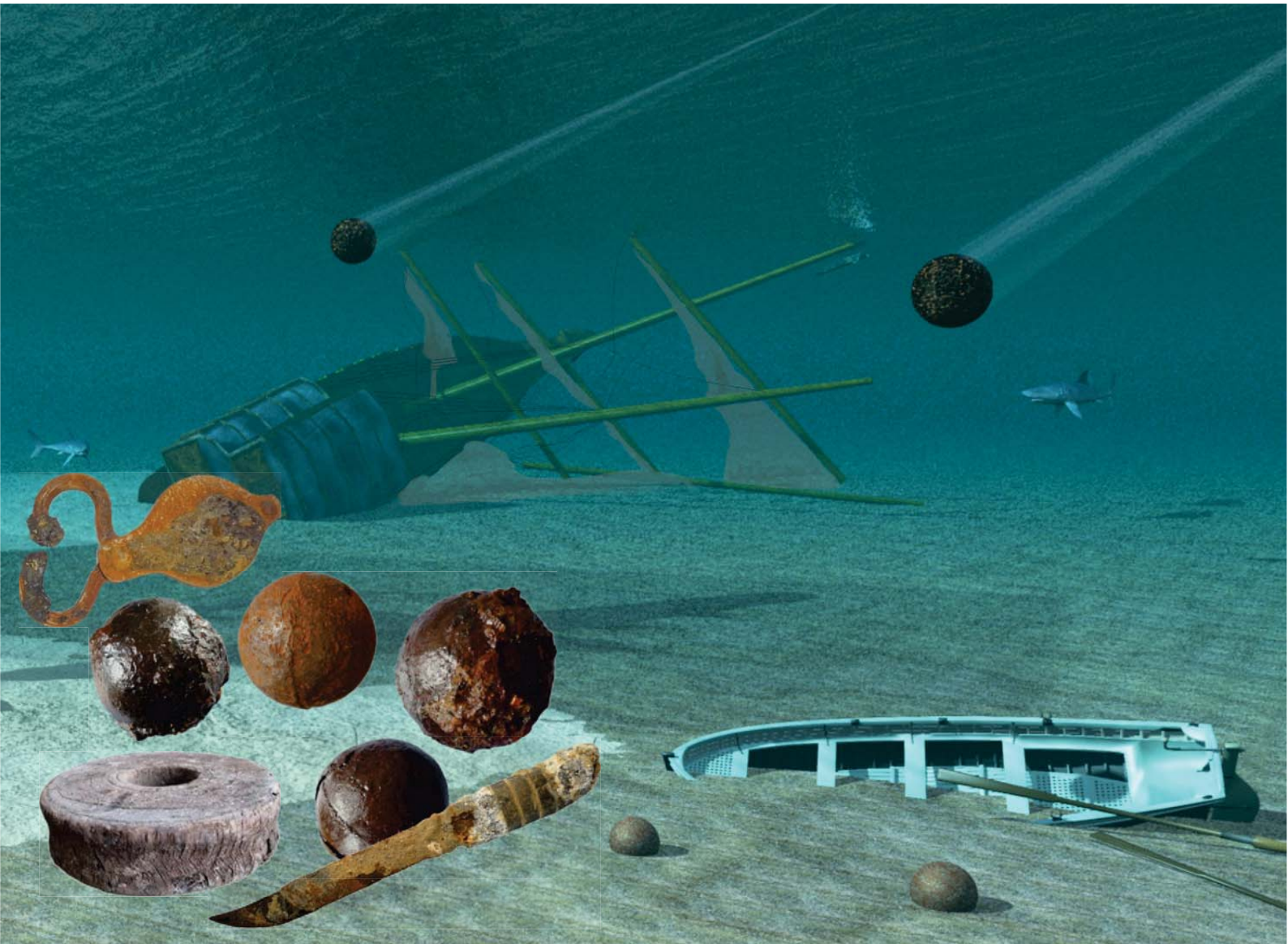


Protocol for reporting finds of archaeological interest

Annual Report to BMAPA 2011-2012



November 2012

Prepared by

Wessex Archaeology

British Marine Aggregate Producers Association,
The Crown Estate and
English Heritage

Protocol
for
Reporting Finds of Archaeological Interest

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Project Background

Every marine aggregate production area is studied intensively prior to the granting of a Marine Licence to dredge in order to protect our submerged heritage. Despite this level of scrutiny and assessment, it was recognised that artefacts are still likely to be present in dredged loads. In August 2005 Wessex Archaeology (WA) drafted a reporting protocol, on behalf of English Heritage (EH) and the British Marine Aggregate Producers Association (BMAPA), to protect these finds and the sites of archaeological importance that they may signify. In 2009 The Crown Estate (TCE) joined BMAPA as a funding partner, recognising the Protocol's role as an efficient and effective mitigation option to preserve our heritage.

Since 2006, BMAPA member companies have committed voluntarily to implement the Protocol across all existing operations, encompassing wharves, vessels and production Licence Areas. Under the Protocol, finds recognised within dredged loads, at wharves or on the seabed are reported to a Site Champion and then to a designated Nominated Contact who reports it to the curator. To expedite this process a Protocol Implementation Service run by WA was set up. WA is alerted to each new find through the dedicated reporting website of the Protocol Implementation Service.

The Protocol covers the full range of possible artefacts. The reporting of munitions, however, is subordinate to the appropriate health and safety procedures as detailed in the BMAPA

Guidance Note 'Dealing with Munitions in Marine Aggregates'. Some munitions may be of archaeological interest, such as cannonballs, although the majority of these are inert and therefore safe to report. Additionally, artefacts relating to military aircraft are frequently reported and these are considered with regard to an Annex to the Protocol published in February 2008 (both are available online or from WA).

WA is currently conducting some aspects of EH's role through the Protocol Implementation Service, although only where a find is deemed to be non-contentious and is unlikely to result in the creation of an exclusion zone. Finds that require a higher level of curatorial involvement are referred to EH in the first instance. Details of all dredged finds are reported to EH, BMAPA, TCE, the National Record for the Historic Environment (NRHE - previously the National Monuments Record), and the appropriate local Sites and Monuments Record (SMR) or Historic Environment Record (HER), Finds Liaison Officer for the Portable Antiquities Scheme (PAS), and Local Government Archaeology Officer (LGAO). All finds are also published on WA's website and the good work done by BMAPA companies with regard to the Protocol is made accessible through various dissemination programmes, conducted both by WA and by other organisations.

The Implementation Service has now completed its seventh year of operation and this annual report covers the period from 1st October 2011 to 30th September 2012.

BMAPA Company	Nominated Contact	Position
Brett Aggregates	Richard Fifield	Marine Resources Manager
Britannia Aggregates Ltd	Richard Fifield	Marine Resources Manager
CEMEX UK Marine	Graham Singleton	Resource and Systems Manager
DEME Building Materials Ltd	Frank Devriese	General Manager
Hanson Aggregates Marine Ltd	Nigel Griffiths Laura Humphries	Principal Resources Manager Resources Co-ordinator
Kendall Bros (Portsmouth) Ltd	Richard Kendall	Managing Director
Lafarge Aggregates Ltd	Malcolm Whittle	Marine Aggregates General Manager
Northwood (Fareham) Ltd	Tom Hills	Operations Manager
Norwest Sand & Ballast Ltd	Nick Brown	Site Supervisor
Tarmac Ltd	Andrew Bellamy Edward Skinner	Resources Manager Marine Resources Co-ordinator
Volker Dredging Ltd	Will Drake	Marine Resources Manager

Seven Years of the Protocol

The past seven years of the Protocol have demonstrated the success of this type of scheme as a mitigation option.

A total of 281 separate reports have been filed since October 2005 detailing over 888 individual finds. These range in date from the Palaeolithic to the 20th century, with some fossil discoveries that pre-date the Palaeolithic. The material discovered is varied, including peat, flint and prehistoric animal bones, maritime artefacts, material derived from aircraft and domestic debris. Some of these artefacts represent chance finds which, were it not for the work of the BMAPA companies, may not have been recovered and subsequently added to the marine archaeological record. Other finds may be indicative of significant sites of archaeological interest worthy of further investigation. The discovery of several cannonballs in material dredged from Licence Area 127 has proved of particular interest this year. The possibility that these may relate to particular naval battles has been explored in the Case Study on pages 10-11.

Over the past seven years the range and variety of material discovered by staff of BMAPA member companies has developed an archive of information about the marine historic environment. This archive is informing archaeological research and the planning of commercial development in specific regions, now and in the future. Details of all finds reported through the Protocol are uploaded to the NRHE and can be found in the reports for the previous six years which are available on WA's website.

WA consults with finds experts, both in-house and from external companies and organisations, to ensure that discoveries are identified accurately and the historical value of each object found is recognised. A full list of specialists consulted this year can be found on page 9.

As a mitigation option the Protocol has proven to be a successful procedure and this has been recognised by other marine industries. In 2010 TCE launched a Protocol for offshore renewables and an additional Protocol for the fishing industry is currently being trialled in Sussex. The combined protocols will lead to a better overall understanding of the heritage in British coastal waters and will help to protect evidence of our past during commercial work at sea.

The success of the Marine Aggregates Protocol over the past seven years has confirmed that such models are effective in protecting the marine heritage, especially when successfully completed using best practice by all parties involved. As the Protocol enters its eighth year we are confident that it will continue to add benefit to both public and professional audiences, and industry staff are highly commended for their dedication and enthusiasm.

Further information about the Protocol and the Implementation Service can be found at:

<http://www.wessexarch.co.uk/projects/marine/bmapa/index.html>



Raising awareness

Raising Awareness

WA operates an Awareness Programme to ensure that industry staff are aware of all aspects of the Protocol and to encourage its use. This has previously received three phases of funding from EH through the Aggregate Levy Sustainability Fund (ALSF). The fourth phase of funding, 2011-12, was provided via a joint partnership between BMAPA, TCE and EH. WA is currently in the process of applying for a fifth phase of funding for 2013-14 to be provided by this same partnership.

It is hoped that the 2013-14 programme will consist of:

- visits to wharves receiving aggregate from BMAPA companies
- visits to geophysical and environmental survey companies that service the industry
- four new issues of the 'Dredged Up' Newsletter in continuation from the programme's previous eleven issues. The aim of this bi-annual publication is to publicise the service and highlight recent finds.

Visits to Wharves and Vessels

Visits to wharves and vessels have been deemed crucial to provide staff with the knowledge and confidence to recognise and report archaeological material found amongst dredged loads. The majority of staff at wharves are well informed about the Protocol and reporting procedures. If the application for the 2013-14 phase of funding is successful, visits will provide Awareness training to new staff, particularly new Site Champions, along with refresher training for existing staff.

Priority for visits is given to wharves that have not received an Awareness visit recently as it is understood that WA may need to reinforce the messages from previous visits and provide further information and guidance, especially as it is likely that new staff will have joined the company. Visits have proved successful, often highlighting or clarifying any issues that BMAPA member company staff have experienced with the Protocol, leading to direct improvements in the programme,

and continue to highlight how vital the Awareness Programme is to the successful operation of the Protocol.

Visits to wharves, vessels and survey companies utilise a combination of formal and informal techniques, including presentations, artefact handling sessions, group discussions and one-to-one discussion, as appropriate to the circumstances and facilities.

Specific information is provided to staff regarding:

- the nature of the marine historic environment
- identifying typical marine finds and why they are archaeologically significant, using examples of finds already reported through the Protocol
- an outline of the Protocol and the responsibilities of staff under the Protocol
- advice for recording finds, including filling in the initial reporting form and recommendations for photographing finds
- handling, conserving and storing marine artefacts
- contacts for receiving additional advice on particular finds from local authorities or organisations
- legislation relating to archaeology on the seabed.

A new model for delivering Awareness visits has been trialled this year, at Tarmac UMD's Greenwich Wharf. WA staff delivered the Awareness presentation as part of a two-day safety event, reaching an audience of over 130 people. This method of providing Awareness information proved to be highly efficient and will be promoted to other companies and wharves in the future.

It is still the case that visits to ships prove difficult logistically to organise but all vessels have been sent an Awareness pack to keep them informed of what to look out for. Similarly, continental wharves receiving aggregate from British waters are informed of the Protocol via digital copies of the 'Dredged Up' newsletter.

If you would like to arrange an Awareness visit, or would like to receive more advice on finds and finds reporting, please contact WA via protocol@wessexarch.co.uk
You can also view the Awareness information pack, in English, Dutch and French, online at <http://www.wessexarch.co.uk/projects/marine/bmapa/docs.html>

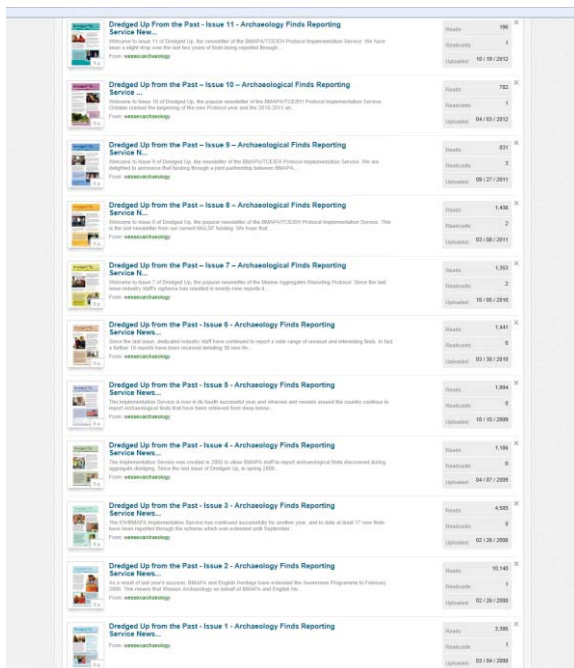
Newsletter

The 'Dredged Up' newsletter informs wharf and vessel staff of finds made and also gives staff an opportunity to see their own finds publicised. Since the 2010-2011 Protocol report two further issues of 'Dredged Up' have been published, the first in April 2012 and the second in October 2012.

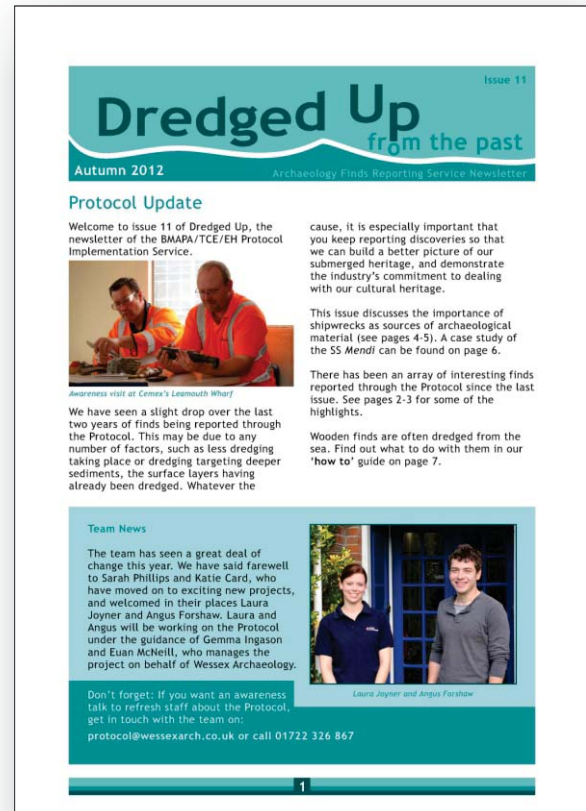
The newsletter is an excellent opportunity to recognise the work of BMAPA staff in ensuring the success of the Protocol. For example, 'Dredged Up 10' announced the winners of the 2010-2011 Finds Awards, acknowledging:

- Best Attitude by a Wharf - Tarmac's Greenwich Wharf
- Best Attitude by a Vessel - CEMEX's Sand Falcon
- Best Find - Cartwheel Penny discovered at Bedhampton Wharf

The enthusiastic response to 'Dredged Up' and the Protocol report shows that this material is read and enjoyed, playing an important part in the operation of the Protocol. It is also a useful way to inform industry staff of updates to the Protocol and Awareness Programme and about Protocol-related projects.



Back issues of Dredged Up can be accessed online at: <http://www.wessexarch.co.uk/projects/marine/bmapa/dredged-up>



The newsletter continues to be a useful tool for publicising the Protocol and the importance of the finds reported through the Implementation Service beyond those working in the marine aggregates industry. Copies are distributed by EH to a variety of other organisations, individuals and the general public.

Reports: Protocol

During the seventh year of operation WA received 36 reports through the Implementation Service. These reports encompassed 58 separate finds (see table below). Further details of each discovery are included in the wharf reports appended to this report.

In addition, two reports made at the end of the last reporting year were investigated and closed this year. The wharf reports for these are also included in this report.

Finds reports from 2010-2011 completed in the 2011-2012 reporting year

Report ID	Licence Area	Region	Wharf / Vessel	Description	No
CEMEX_0375	Unknown	Unknown	Northfleet Wharf	Gearing mechanism or mine detonator	1
CEMEX_0376	137	South Coast	Brighton	Battery and housing	1

Finds reports from the 2011-2012 reporting year

Report ID	Licence Area	Region	Wharf / Vessel	Description	No
Brett_0377	461/441	EEC/Humber	Cliffe	Rubber gas mask	1
Tarmac_0378	122/3	South Coast	Burnley	Iron and spoon	2
CEMEX_0379	360	East Coast	Sand Heron	Animal bones	5
CEMEX_0380	447	Thames Estuary	Sand Fulmar	Mammoth tooth	1
BRETT_0381	351	South Coast	Brett Aggregates Cliffe	Telescope or gun sight	1
Tarmac_0382a	122/3	South Coast	Burnley	Animal bone	1
Tarmac_0382b	122/3	South Coast	Burnley	Iron peg	1
Tarmac_0383	127	South Coast	Burnley	Cannonball	1
Tarmac_0384	127	South Coast	Burnley	Metal objects	3
Tarmac_0385a	127	South Coast	Burnley	Animal bone	1
Tarmac_0385b	127	South Coast	Burnley	Pottery fragment	1
Tarmac_0385c	127	South Coast	Burnley	Wood	1
Tarmac_0387	458	EEC	Greenwich	Fuel cap	1
Tarmac_0388	122/3	South Coast	Bedhampton	Animal bone	1
Tarmac_0395	Unknown	Unknown	Greenwich	Schermuly naval rocket line thrower	3
CEMEX_0396	N/A	EEC	Julie H/EMU Ltd	Stone bead	1
Tarmac_0397	127	South Coast	Burnley	Nine nails	9
Tarmac_0398	127	South Coast	Burnley	Two cannonballs	2
Tarmac_0399	Unknown	Unknown	Greenwich	Spoon	1
Tarmac_0400	447	Thames Estuary	Greenwich	Aircraft fragment	1
Tarmac_0401	458	EEC	Greenwich	Spoon	1
Tarmac_0402	127	South Coast	Greenwich	Long Branch Mk 4 rifle fragment	1
Hanson_0404	328/1	East Coast	Arco Adur	Single sheave snatch block	1
CEMEX_0405	360	East Coast	Sand Heron	Animal bone	1
CEMEX_0406a	447	Thames Estuary	Angerstein	Animal bone	1
CEMEX_0406b	447	Thames Estuary	Angerstein	Rifle	1
CEMEX_0407	447	Thames Estuary	Sand Fulmar	Animal bone	1
Hanson_0408	240	East Coast	Arco Arun	Fossil	1
Hanson_0409	Unknown	Unknown	Arco Arun	Unknown	1
Hanson_0410	240	East Coast	SBV Flushing, Netherlands	Mammoth tooth	1
Tarmac_0413	127	South Coast	Southampton	Cannonball	1
Tarmac_0414	127	South Coast	Southampton	Cannonball	1
Tarmac_0415	127	South Coast	Southampton	Cannonball	1
Tarmac_0416	127	South Coast	Bedhampton	Knife	1
Tarmac_0418	122/3	South Coast	Greenwich	Spoon	1
Tarmac_0419	447	Thames Estuary	Greenwich	Microphone hand set	1
Tarmac_0420	Unknown	Unknown	Erith	Wooden wheel	1
Tarmac_0423	430	East Coast	Ridham	Electrical device	1
Tarmac_0424	127	South Coast	Southampton	Cannonball	1
Tarmac_0426	127	South Coast	Southampton	Gas bottle	1

Specialists

Since the operation of the Protocol began, specialist advice has been sought from a number of experts in order to best interpret and understand the items discovered. The table below provides a list of all the specialists that were contacted during the 2011-2012 reporting year.

Specialists that we have contacted in the past but not during the past year are still included in WA's internal lists, but have been omitted from the table below.

Expert	Specialism	Institution/Organisation
Andy Currant	Ice age mammals	Collections Manager (Palaeontology), Natural History Museum
Bob Davis	Archaeological artefacts	Project Officer, Wessex Archaeology
Peter Elliott	Military aircraft	Senior Keeper for the Department of Research and Information Services, RAF Museum
Jonathan Ferguson	Ordnance and firearms	Curator of Firearms, Royal Armouries Museum
Lorrain Higbee	Animal bones	Zooarchaeologist, Wessex Archaeology
Rebekah Higgit	Naval artefacts	Curator of History and Science Technology, National Maritime Museum
Alan Jeffreys	Naval artefacts	Department of Exhibits and Firearms, Imperial War Museum
Matt Leivers	Maritime artefacts	Senior Finds Specialist, Wessex Archaeology
Euan McNeill	Maritime artefacts	Director of Coastal & Marine, Wessex Archaeology
Lorraine Mepham	Archaeological artefacts	Senior Manager (Finds and Archives), Wessex Archaeology
Richard Noyce	Royal Naval artefacts	Curator of Artefacts, Royal Naval Museum
John Roberts	Naval artefacts	Explosion! The Museum of Naval Firepower
Daniel Pascoe	Naval artefacts	Marine Archaeologist, Wessex Archaeology
Richard Sabin	Marine Mammals	Senior Curator, Department of Zoology, Natural History Museum
Graham Scott	Maritime archaeology and underwater fieldwork	Senior Archaeologist (Coastal and Marine), Wessex Archaeology
Michael Simms	Fossils	Curator of Palaeontology, Ulster Museum
Andy Simpson	Military aircraft	Curator, Aircraft and Exhibits Department, RAF Museum
Kevin Stratford	Maritime artefacts	Marine Archaeologist, Wessex Archaeology

Case Study: Cannonballs and Naval Battles in Area 127

One of the most abundant finds from the seventh year of the Protocol has been cannonballs. No fewer than seven cannonballs have been reported through the Protocol this year, all of which have been dredged from Licence Area 127, to the West of the Isle of Wight in the South Coast dredging region. These finds were reported by staff from Tarmac's Burnley Wharf in Southampton.

Cannonballs are one of several forms of munitions found on the seafloor, and can provide valuable information about maritime activities. A cannonball is a type of projectile shot from a firearm, the size of which requires it to be mounted on a support. Due to their robust design, cannonballs often survive on the seabed for a long period of time. Archaeologists may recover them from shipwreck sites, but it is unlikely that cannonballs not associated with a wreck would be found without marine aggregate extraction. The discovery of an isolated cannonball presents a challenge to the archaeologists, who have to examine the find outside of its original context. However, understanding the context, i.e. find location and associated material, can often provide important clues about how a cannonball came to be there.

In researching the possible origin of the cannonballs dredged from Licence Area 127, an area that has produced a further five cannonballs in previous years, it became apparent that the distribution of these munitions was of great significance. One of the ways in which cannonballs may be scattered on the seafloor is through being fired during battle. The South Coast dredging region has been the site of numerous naval conflicts since cannonballs were first used on board vessels in around 1340. Licence Area 127 itself has been the site of several battles, the most notable of which include the battle against the Spanish Armada in 1588 and the Battle of Portland in 1653.

The Spanish Armada was an impressive fleet of warships that sailed from Spain in 1588 with the intention of deposing Elizabeth I of England. This attack was part of the undeclared Anglo-Spanish war, an intermittent conflict that dominated



Invincible Armada

European politics in the 1580-90s. Philip II of Spain, supported by the Papacy, hoped to overthrow Elizabeth's Protestant regime and to end her privateering activities in the Atlantic and Pacific. The English and Spanish fleets met first at Plymouth, and proceeded to chase each other up the English Channel, through Area 127, expending large amounts of ammunition. The Armada was finally dispersed near Calais by an English fire-ship attack.

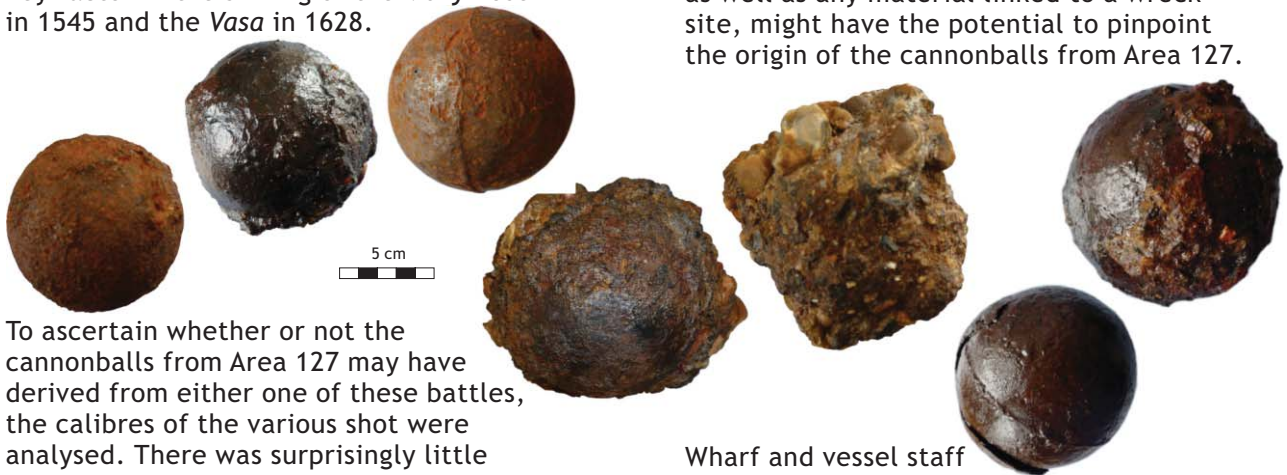
The Armada numbered 122 ships and the English fleet only 66 when they met in the Channel. Vessels on both sides carried considerable armaments. *Ark Royal*, the flagship of the British fleet, carried around 55 guns, ranging from heavy 60-pounders to lightweight guns like minions. *San Martin*, flagship of the Armada, was equipped with basilisks, fearsome cannons able to fire 160 lb shot, as well as many smaller guns.

Sixty-five years later, the Battle of Portland was fought in the same stretch of water. This battle took place during the first of the four Anglo-Dutch wars (1652-4), a conflict caused by disputes over trade rather than territory. The fleet of the Dutch Republic attacked the fleet of the Commonwealth of England off Portland, hoping to establish strategic supremacy over the English Channel; a popular merchant trade route. Both sides fought with 70-80 warships and, once again, a range of guns. Records tell us that the flagship of the Dutch fleet, *Brederode*, carried between 53-59 guns that included 36, 24, 18, 12 and 6-pounders.



De Vlieger, Brederode off Hellevoetsluis

It is not surprising that naval vessels deployed during the period of these two battles would have carried an array of guns. By 1500, guns were installed as the main method of launching projectiles from ships. However, there was no attempt to standardise armament on British naval vessels until the 1660s when Samuel Pepys initiated a new principle that the weight of the guns should be in proportion with the ship's tonnage. It has been suggested that the weight of additional heavy guns was a key factor in the sinking of the *Mary Rose* in 1545 and the *Vasa* in 1628.



To ascertain whether or not the cannonballs from Area 127 may have derived from either one of these battles, the calibres of the various shot were analysed. There was surprisingly little variation between the cannonballs, which ranged from 3" to 3.5" in diameter and 3.5 lbs to 5 lbs in weight. This suggests that these cannonballs were fired from medium cannons, such as sakers, which were used by the English throughout the 16th and 17th centuries. Henry VIII in particular amassed a large arsenal of sakers, using so much bronze to forge them that there was a world shortage of tin. Sakers were present on *Ark Royal* and similar cannons were recorded on *Brederode* and have been found on the wrecks of Armada ships. It is therefore possible that these cannonballs came to be on the seabed having been fired during either one of these naval battles.

However, if these cannonballs did arrive on the seabed in this way, it is surprising that only one particular size of shot has been recovered. As mentioned above, the vessels that took part in these battles carried guns of various sizes, and so would probably have fired a variety of shot. Therefore, it is perhaps more likely that the cannonballs arrived on the seabed through some other method. One possibility is that the cannonballs were used to weigh down cargo deposited at sea, which would have been marked with a buoy for collection at a later date. Another possibility is that these cannonballs were fired during military training. Such drills occurred regularly when a vessel was at sea and exercises may have concentrated on one particular gun each time. On the other hand, it could be that these cannonballs were present on a ship when it sank and that these objects are light enough to have been rolled away from the wreck by the current whereas heavier cannonballs have remained in place.

The discovery of further cannonballs from this area, particularly of a variety of sizes, as well as any material linked to a wreck site, might have the potential to pinpoint the origin of the cannonballs from Area 127.

Wharf and vessel staff are encouraged to continue reporting all objects that they discover during dredging, and in particular when reporting cannonballs to note their weight and diameter so that we are able to ascertain the calibre of the shot. We also ask that Nominated Contacts provide the vessel track plot for the day in which such finds are discovered to enable us to note any patterns of distribution that may further aid the discovery of an unknown wreck site. It is of the utmost importance that any future finds of archaeological interest discovered in this Licence Area are reported through the Protocol immediately as they may relate to significant episodes of Britain's maritime history.

Liaison and Accessibility

Details of each discovery have been sent to:

- Marion Page, NHRE and EH
- Ed Salter, EH Marine
- Mark Russell, BMAPA
- Mike Cowling, TCE
- Ian Selby, TCE

Details of discoveries regarded as wreck under the Merchant Shipping Act 1995 have been forwarded to the Receiver of Wreck. In 2011-2012 the following reports were deemed to represent items of wreck:

- Brett_0377
- Tarmac_0378
- CEMEX_0379
- CEMEX_0380
- Brett_0381
- Tarmac_0382
- Tarmac_0383
- Tarmac_0384
- Tarmac_0385
- Tarmac_0387
- Tarmac_0388
- Tarmac_0395
- Tarmac_0397
- Tarmac_0398
- Tarmac_0399
- Tarmac_0400
- Tarmac_0401
- Tarmac_0402
- Hanson_0404
- CEMEX_0406
- Tarmac_0413
- Tarmac_0414
- Tarmac_0415
- Tarmac_0416
- Tarmac_0418
- Tarmac_0419
- Tarmac_0420
- Tarmac_0423
- Tarmac_0424
- Tarmac_0426

In the seventh year of the Protocol, several discoveries were made relating to military wrecks or aircraft. The following reports were therefore forwarded to the Ministry of Defence (MoD):

- Brett_0377
- Brett_0381
- Tarmac_0387
- Tarmac_0395
- Tarmac_0400
- Tarmac_0402
- Hanson_0404
- CEMEX_0406
- Tarmac_0418
- Tarmac_0419
- Tarmac_0423
- Tarmac_0426

Although we have received a number of reports of artefacts relating to vessels, none of them relate conclusively to unknown and uncharted wreck sites. Consequently, no reports were forwarded to the United Kingdom Hydrographic Office (UKHO).

Finds information has been sent to the appropriate PAS Finds Liaison Officers, LGAO and SMR/HER in the county which is most appropriate for the discovery. In the case of a discovery where the original location is known, this will be that location's relevant PAS, LGAO and SMR/HER, while in the case of discoveries made at wharves, with no find location information, it is reported to the wharf's nearest PAS, LGAO and SMR/HER.

Further details of liaison and the dissemination of data to interested parties are included in the wharf reports appended to this report.

Discussion

Importance

During the 2011-2012 Protocol reporting year a total of 36 reports were made through the Implementation Service. These reports encompassed 58 separate artefacts.

To better understand the nature and distribution of archaeological material found during the 2011 - 2012 reporting year, finds have been mapped by distribution (page 14). This allows us to examine artefacts in their contexts, identify potential sites of archaeological interest and possibly predict which licences are likely to yield archaeological material in the future. This may aid future licence assessments within existing dredging regions.

During this, the seventh year of the Marine Aggregates Protocol, the value and importance of this form of mitigation has continued to be evident, not least from its adoption by other industries. Training industry staff to recognise and report archaeological material negates the need for costly archaeological watching briefs and helps to discharge licensing conditions. It is also an excellent example of good practice and protocols such as the Marine Aggregates Protocol are being recognised nationally and internationally as an effective method of protecting our seabed heritage.

Key Issues

The Protocol Implementation Service is a continually developing process that reflects feedback from the marine aggregates industry. This year has seen improvements in several key areas, whilst other issues requiring investigation have been brought to WA's attention to ensure that the Protocol runs smoothly. These are discussed below:

Market Conditions

As discussed in previous years, market conditions continue to limit aggregate dredging activity. However, this situation may be improving; The Crown Estate official offtake statistics show that the total tonnage of material dredged increased from 15.95 million tonnes in 2010 to 19.12 million tonnes in 2011 (The Crown Estate Licences, Summary of Statistics 2010 and 2011). In addition, although there has been a slight decrease in the number of reports filed this year (36 compared to 40 in 2010-11), the actual number of finds reported has increased from 49 in 2010-11 to 58. It is important to note, however, that archaeological material is not uniformly distributed on the seabed and some variation in the number of reports is expected every year, regardless of tonnage each year. Furthermore, since April 2011 the aggregate dredging industry has been limited to only working in areas that have been historically dredged since 1993 (when Electronic Monitoring Systems (EMS) were first established onboard vessels). This is the case for many Licence Areas, and as a result this effort to focus on these historic footprints may have resulted in fewer objects being retrieved, since less areas of 'new' seabed are being targeted.

Initial Reports

It is crucial that archaeological finds discovered amongst dredged loads are reported to Nominated Contacts and to WA promptly to ensure that sites of archaeological potential can be protected in active dredge areas.

There has been a slight decrease in the time taken to file reports from the 2010-2011 reporting year, with over a third of finds being reported to the Nominated Contact within one week of their discovery. Last year only one quarter of finds were reported within one week. Official guidelines drawn up at the inception of the Protocol state that finds should be reported to the Nominated Contact within two weeks of their discovery.



Location of discoveries 2011 - 2012

Timely reporting is crucial as it allows EH to identify and protect sites of archaeological importance on the seabed. Rarely, this may result in the creation of a temporary exclusion zone or a more permanent archaeological exclusion zone and where it does so, rapid reporting often means better locational information is available; thus any resulting exclusion zone will be smaller and have less impact on dredging activities.

Final Reports

Occasionally the Implementation Service takes longer than expected to produce and send final reports relating to dredged finds. Often this is due to a delay waiting for external specialists who give their time *gratis* to help us identify reported artefacts. When reports are prepared they are sent to Nominated Contacts to distribute to wharves and vessels as appropriate. If a find report has not been received, please contact the Implementation Service team (protocol@wessexarch.co.uk 01722 326 867) and we will gladly send out any reports that you may not have seen. All the wharf reports prepared this year are appended to this report.

Delays are also sometimes encountered while the Implementation Service seeks further information from industry staff about specific finds. Commonly this is in relation to cannonballs, which can only be identified if they are reported with their diameter and weight. When reporting any find, but particularly cannonballs, recording measurements, markings and any other information that you think might be relevant can dramatically speed up the reporting process. Despite this, reports from wharves and vessels are on the whole very informative and often need little clarification.

Photography

Photography has improved since guidance was issued on what makes an effective photograph in 'Dredged Up' issue 8 (available online). This guidance was reiterated in issue 11 in a guide detailing the initial steps to be taken when an artefact is discovered. The vast majority of photographs uploaded onto the Implementation Service console are now appropriately scaled, using either the scale issued or another identifiable object (a ruler, mobile phone or biro are good examples) and the majority of photos are detailed and well-focused. Where an appropriate scale is not included in the photograph, for example where a find is too big, please continue to list dimensions in the initial report, to help the Implementation Service to understand the scale of the find and speed up the reporting process.

Locational Information

This year has seen a continuation of the high standard of locational information provided by industry staff. Only four reports came from unknown dredging areas in the 2011-12 reporting year, compared to three in 2010-11 and eight in 2009-10. In addition, track plots have been provided for several finds, enabling Implementation Service staff to identify a more precise location of origin. WA understands that it is not always possible to identify the Licence Area for finds when they are found at a wharf. In these circumstances it is better to report the find with any available information (for example possible Licence Areas or possible dredging regions) than not to report at all. In the past finds have been reported for which no Licence Area could be identified (for example where finds were discovered some time after dredging or on a discharge pile) and WA have recorded these as being found at the discovering wharf.

Conservation

As discussed in last year's report, the Implementation Service sometimes receives requests for advice on how to conserve dredged finds. Archaeological material that has spent a significant amount of time underwater is prone to becoming very fragile when allowed to dry out. Archaeological conservators frequently encounter this problem and often the only methods of drying and preserving an object safely are time-consuming and costly. It is commendable that so many wharves are willing to preserve the material that is dredged and many take pride in displaying dredged finds at their facilities - a wonderful undertaking which not only keeps the Protocol at the forefront of company staff thinking but also demonstrates this aspect of the industry's responsible nature to others visiting the facility.

The Implementation Service has issued conservation advice through Awareness packs and through the 'Dredged Up' newsletter; issue 11 contained step-by-step instructions on how to conserve finds in the first instance. The best course of action remains to submerge any finds, that are still wet or damp when discovered, in water inside an airtight container. WA appreciates that for many wharves storing material in this fashion is not only awkward but also unsatisfying as it limits the opportunity to display material. For this reason, conservation will remain on the Implementation Service's agenda, to be discussed with EH and other parties where appropriate and any further advice will be disseminated to all parties via Nominated Contacts and Site Champions or through Dredged Up. In the meantime, if you have a find that you are concerned about, please contact the Implementation Service who will endeavour to advise the best course of action on a case-by-case basis.

Continental Wharves

In 2011 nearly one-third of aggregate dredged in British waters was delivered to continental Europe. The majority of this aggregate was from the East Coast, East English Channel and Humber regions (nearly 90%). Despite Awareness visits in 2010, no finds have been reported from continental wharves. It is difficult to enforce the reporting of finds from British waters on the continent and there was some reluctance from continental wharves to be involved in the Protocol, despite being encouraged to do so by BMAPA members when receiving material from UK Licence Areas. This requirement to report finds has been further strengthened by The Crown Estate's modification of their commercial Production Agreements during 2012. This clarified that any non-aggregate material recovered during the dredging process remain in the possession of The Crown, in their capacity as the owner of the seabed and its associated mineral resources. Ideally this stipulation will prompt continental wharves to report any future finds, and the success of which should become visible over the next reporting year, 2012-2013. In the meantime the Implementation Service will continue to keep communication channels open with continental wharves to provide assistance and encouragement for reporting any such future finds.

Artefact Patterns and Distributions

Since the Protocol began in 2005 the Implementation Service has received 281 individual reports encompassing over 888 finds. The quantity of finds reported allows us to identify and consider patterns of artefact distribution. This information is used to inform Licence Area renewals and applications. In addition, it is being used to inform other offshore archaeological projects, as the Implementation Service regularly receives requests for information about dredged finds from archaeologists working on other projects. Information about all finds dredged over the past seven years is available online on WA's website.

Distribution of Artefacts by Dredging Region

There are eight dredging regions around the UK:

- the Humber
- the East Coast
- the Thames Estuary
- the East English Channel
- the South Coast
- the Owers
- the South West
- the North West.

In the 2011-12 reporting year, a significant majority of finds have been retrieved from the South Coast region. This differs from recent years, where similar numbers of finds have been reported from the South Coast and East Coast regions. One possible explanation for the large number of finds from the South Coast region is the high volume of dredging that takes place here; in 2011, 3.92 million tonnes of construction aggregate were dredged from this region. However, 2011 saw even greater volumes dredged from both the East English Channel and East Coast regions, both of which reported fewer finds than the South Coast region. An increase in finds may indicate a potential site of archaeological importance and further cargoes should be carefully examined.

The least prolific regions in terms of finds reports are still the South West and North West regions, with no finds reported from these regions this year. As stated in previous reports, the South West and North West regions are targeted for sands and it is unlikely that archaeological material would pass through the screens used to grade dredged material before it enters the dredgers hold. 2011-12 has also seen a decrease in the number of finds reported from the Humber region. Only one find has been reported this year from this region, compared to six finds in 2010-11. This decrease is thought to be due to the nature of the distribution of archaeological finds, rather than a specific decrease in dredging in this region.

Distribution of Artefacts by Archaeological Typology

Palaeolithic Finds

Only two reports that are likely to date to the Palaeolithic period have been made during the 2011-12 reporting year. These finds (CEMEX_0380 and Hanson_0410) have both been identified as mammoth teeth. Several other animal remains have also been reported which may relate to this period. The Palaeolithic landscape is discussed in detail in the 2010-11 BMAPA Protocol Annual Report (available on WA's website).

One fossil was also reported via the Protocol in the last reporting year. Whilst fossils are not technically archaeological, they should still be reported as they have been used for adornment or decoration in the past, as they are today. There is no evidence to suggest that this year's fossil find (Hanson_0408) has been used in this fashion but it is possible that future finds may have been.

Cannonballs

Cannonballs are frequently reported through the Protocol and survive well at sea, probably due to their density and general stability if buried in sediment. During the 2011-2012 Protocol reporting year no fewer than seven cannonballs were reported from Licence Area 127 in the South Coast dredging region. These cannonballs are discussed in detail in the Case Study (see pages 10-11).

Aircraft

In the 2011-2012 Protocol reporting year there have been three new reports of finds that can be confirmed as relating to aircraft remains (Tarmac_0387, Tarmac_0400 and Tarmac_0419).

The majority of aircraft finds tend to be made in the South Coast and East Coast dredging regions, where there were heavy losses during World War Two. This is reflected in the 2011-12 finds, two of which originated in the Thames Estuary, and the third from the East English Channel. All three finds have been dated to World War II; Tarmac_0387 has been identified as the fuel cap from a German Luftwaffe plane, Tarmac_0400 appears to be part of a camera or landing light used during aerial reconnaissance, and Tarmac_0419 is a microphone headset that would have been used on board British planes such as the Vickers Wellington bombers.

Whilst the majority of aircraft remains have been discovered within the South and East Coast regions in the past, it is clearly important to remain vigilant when working in all dredging regions, as material from an aircraft crash may be found anywhere.



Location of finds relating to aircraft discovered over the past seven years

Maritime Artefacts

The 2011-2012 reporting year has seen four separate reports of structural material thought to originate from ships. Three of these originated in Licence Area 127, in the South Coast region, and included metal ship fittings (Tarmac_0384), several nails (Tarmac_0397) and a ship's timber with copper nails (Tarmac_0385). The fourth find, dredged from the East Coast region, has been identified as a single sheave snatch block of the type typically used to manoeuvre cargo and equipment on and off of vessels.

In addition to these, there were numerous reports of items thought to have come from ships or shipwrecks, including several spoons (such as Tarmac_0399 and Tarmac_0401) and the remains of a Schermuly naval rocket line thrower (Tarmac_0395), an invention that used rocket propulsion to throw a line from ship to shore or ship to ship.

The quantity of finds relating to vessels reported through the Protocol is not surprising, given Britain's long maritime history, and items from ships or shipwrecks can be expected in every UK Licence Area. Every area is carefully studied prior to the granting of the licence to dredge to ensure that no known sites of significant archaeological interest are likely to be disturbed. However it is always plausible that a new site will be discovered during the course of dredging work. It is for this reason that protocols such as this are in place and are proving to be an effective mitigatory option.

Post-War Debris

Several finds, including cutlery, an iron peg and a flat iron, were reported this year from Licence Area 122/3 in the South Coast dredging region. As discussed in the 2010-11 Annual Report, this Licence Area has previously revealed an assemblage of domestic debris which has been interpreted as domestic scrap or World War Two demolition debris deposited off the Isle of Wight. There is no official record of this occurring although the age of the material, where it can be ascertained, is consistent with this possibility. All finds, even those that may appear domestic, should be reported through the Protocol, as they may also be associated with a shipwreck.

Conclusion

The 2011-2012 reporting year has been affected by the continued poor economic conditions which have affected the construction industry as a whole over the past three years. Despite the very difficult economic climate, the number of finds being recognised and reported is still high and the work of BMAPA staff in protecting our submerged heritage should not be underestimated.

Reported finds give us an insight into a hidden world and allow us to study otherwise inaccessible places. By reporting archaeological finds through the Protocol, industry staff are not only satisfying licence conditions, but also playing an important role in protecting heritage for everyone. This is reflected in the continued requests for information about dredged finds received by WA to inform other offshore projects. In addition to this, the example established by the BMAPA Protocol is being recognised across other industries as they begin considering protocols as effective mitigatory options when working offshore.

We would like to thank everyone who has reported finds and protected our heritage in the 2011-2012 reporting year, and throughout the last seven years of Protocol reporting.

The Future

The Protocol Implementation Service continues to be run by WA and finds are reported regularly. If you have any questions about finds reporting and the Protocol, please contact WA via protocol@wessexarch.co.uk



CEMEX_0375: Gearing Mechanism or Mine Detonator

This item was discovered at CEMEX's Northfleet Wharf. It was reported by Adam Johnson in July 2011 and the original cargo and dredging area are unknown. Northfleet is based in Kent so it is likely to have come from one of the south coast regions.

When discovered this item was initially reported to Ministry of Defence (MOD) ordnance experts to eliminate it as a risk to health and safety at the wharf. Having been discharged by the MOD, it was then reported through the BMAPA Protocol.

This item was thought to be a mine detonator as it appears similar to several examples found by former Head of Wessex Archaeology's Coastal & Marine team Antony Firth. Images of the find were sent to the Royal Armouries Museum and The Imperial War Museum who were unable to identify the find. John Roberts, from Explosion! The Museum of Naval Firepower, circulated images of the item to Royal Naval Diving and Mine Clearance experts and to Explosive Ordnance Disposal (EOD) experts from the MOD. They were unable to confirm its identification but suggested that rather than having come from a mine, it might be part of a gearing mechanism to secure a watertight bulkhead on board a vessel.

The South Coast dredging regions are known to contain a wide range of ordnance and military remains dating from both the First and Second World Wars, as well as a wealth of maritime remains. As such, staff at wharves and on vessels are well trained to recognise munitions and ordnance. This find, if it is proved to come from ordnance, is to be expected given the large number of losses in the Channel during past conflicts. Staff at wharves and on vessels should continue to be vigilant, as staff at Northfleet were, for further finds of this nature. The reporting of potentially dangerous finds to the MOD for safety always takes priority over their reporting as archaeological artefacts and in this instance Northfleet followed the correct procedure perfectly. For more information on munitions in dredged loads see the guidance note (updated 2010) available from The Crown Estate's website. Any further information from specialists about this find will be reported as and when they become available.

Information about this discovery has been forwarded to:

- English Heritage
 - BMAPA
 - The Crown Estate
 - Ministry of Defence
 - The Finds Liaison Officer for Wiltshire (Portable Antiquities Scheme)
- The Receiver of Wreck
The National Monuments Record
The Historic Environment Record for Kent
The Local Government Archaeology Officer for Kent



CEMEX_0376: Battery and Casing

This item was discovered at Brighton Wharf and reported by Andy Roberts. It was reported in September 2011 having been found amongst cargo from Area 137 which lies to the west of the Isle of Wight, approximately 20km east of Ventnor.

This find was identified by staff at the wharf as a battery and its casing. It appears to have suffered a fair amount of damage and corrosion whilst submerged and may have been in the water for some time. The level of damage and the partial nature of the item makes identification difficult.

Images of this find were sent to staff in Wessex Archaeology's Coastal & Marine team. Firm identification was not possible but several theories were put forward. Stuart Churchley, one of Wessex Archaeology's experts in maritime archaeology, felt that the find was familiar but couldn't recall where he had seen one before. Steve Webster, Senior Manager in the Coastal & Marine team, thought that it looked like a homemade dive torch though the flanged sides might indicate that it has instead come from an aircraft or a small boat.

Several other finds have been made in Area 137 over the past 6 years of Protocol reporting but none are thought to be connected with this find. Two finds - a cannonball and a sherd of 19th century marmalade pot - are likely to be too early to be connected with this 20th century object. A fragment of aircraft was dredged in the 2009 – 2010 reporting year approximately 70 metres north-east of where this item originated but the two are not currently being linked.

Based on current evidence it is not possible to firmly identify this find. It is certainly 20th century in date and may have come from recreational divers in the area or may have fallen or been discarded from a boat. The area in which it was found is popular with shipping activity and so this find will be treated as an isolated find at this time. Should further finds be discovered in this area we may be able to firmly identify this item in the future and so all further finds from Area 137 should be reported in the usual fashion.

Information about this discovery has been forwarded to:

- English Heritage
- BMAPA
- The Crown Estate
- The Receiver of Wreck
- National Monuments Record
- The Historic Environment Record for the Isle of Wight
- The Local Government Archaeology Officer for the Isle of Wight
- The Sussex Finds Liaison Officer (Portable Antiquities Scheme)



Brett_0377: Gas Mask

This item was discovered by Ashley Wilkinson at Brett Aggregates Cliffe Wharf in Kent. It was not clear which cargo it came from but it was either dredged amongst material from Area 461 (approximately 53km South of Eastbourne) in the East English Channel or with material from Area 441 (approximately 66km East of North Somercotes) in the Humber region.

This find was correctly identified by the wharf as a gas mask. The metal fixings, glass lenses and straps have been lost to the sea but the recognisable rubber shape of the mask remains. Masks, helmets and cotton or sponge pads have been used to protect against gas in mining and polluted conditions for centuries but the modern gas mask was developed during the First World War to protect against chemical gas attacks. During the Second World War gas masks were issued to every British citizen to protect against gas attacks on the Home Front. This was thought necessary due to the extensive use of gas in WW1 however, fortunately, gas was never used to attack Britain during WW2. Masks were also issued to servicemen and there are many still in existence in museums, private collections and people's homes today.

Images of this mask, which bears a mark or serial number reading W.M 231 behind the 'nose' were sent to the Imperial War museum in London. Unfortunately a comprehensive list of the different types of gas mask produced is not available and so they were not able to conclusively identify this mask. The shape and size of the mask tells us that this mask was created for an adult and numerous similar masks dating to the Second World War exist in their collections.

The presence of rust around the eye holes suggests that the mask was intact when it entered the water and that the lenses have been lost during its time at sea. There are several scenarios that would account for its presence underwater. It may have been lost from a plane or from a ship or it may have been deposited at sea with domestic refuse after the war. Whilst it is plausible that a gas mask may have been taken on board a ship or a plane, aircraft were fitted with breathing masks for use during flight and a ship or plane would be an unlikely target for a gas attack. It may however have been part of someone's personal kit. Another scenario is that it was dumped at sea following a major event, such as the evacuation of Dunkirk, and has drifted to where it was discovered. No other contemporary finds have been dredged from either of the possible dredging areas but it may have been more likely to come from the EEC region, given the proximity to central Europe.

Information about this discovery has been forwarded to:

- English Heritage
- BMAPA
- The Crown Estate
- Ministry of Defence
- The Receiver of Wreck
- The National Monuments Record
- The Historic Environment Record for Sussex and Lincolnshire
- The Local Government Archaeology Officer for Sussex and Lincolnshire
- The Finds Liaison Officer (Portable Antiquities Scheme) for Kent



Tarmac_0378: Iron and Spoon

J. Jerromes found these items at Tarmac's Burnley Wharf in September 2011. They were discovered amongst aggregate from Licence Area 122/3 which lies in the South Coast dredging region, approximately 13km east of Sandown on the Isle of Wight.

These finds were found in Area 122/3 which lies in the South Coast region to the East of the Isle of Wight. This area has long been known to hold a spread of post-war rubble which is well evidenced by Protocol finds. These finds are likely to be part of the same spread.

Whilst the City of Portsmouth record office holds no record of the deposition of such a spread, it is likely that this material was dumped at sea to dispose of it after the Second World War. It is thought that a lot of the material has come from a domestic context – from people's houses – and it is thought to consist largely of blitz rubble. There is not currently any record of this material being dumped but given the heavy bombing suffered by cities on the south coast during WW2 this is a plausible hypothesis.



The spoon is one of several dredged from this region over the past six years of Protocol reporting. It is badly twisted and its melted appearance gives credence to the blitz rubble theory. Little more can be said about its age or manufacture as it is a fairly common design used from the 20th century to the current day.

The iron is a flat iron – the precursor to the electric iron. This type of iron would be heated on a stove, hot plate or in a fire before being used to press clothing. It was common to have two or more such irons in use at any one time – one pressing clothing and the other warming ready for use when the first cools. These irons were used extensively in the late 19th and early 20th centuries and many exist in museums and private collections. Many are still kept in houses where they may be ornamental or used as a paper weight or door stop due to their weight. The handle of this example is missing and it is badly corroded – as can be expected from an item made of iron that has been submerged in salt water. It is probable that this find was deposited at a similar time to the spoon as part of a spread of rubble. It is possible though that both of these finds come from a vessel and it is important that further finds from this area are reported lest the spread of rubble is masking a site of archaeological potential such as a shipwreck.

Information about this discovery has been forwarded to:

- English Heritage
- BMAPA
- The Crown Estate
- The Receiver of Wreck
- The National Monuments Record
- The Historic Environment Record for Hampshire
- The Local Government Archaeology Officer for Hampshire
- The Hampshire Finds Liaison Officer (Portable Antiquities Scheme)



CEMEX_0379: Animal Bones

Ian Mackay found these bones while on board the *Sand Heron* in October 2011. They were found in material dredged from Licence Area 360 which lies in the East Coast dredging region, approximately 19 km east of Lowestoft.

Lorrain Higbee, animal bone specialist at Wessex Archaeology, and Andy Currant from the Natural History Museum have studied images of these bones and have suggested tentative identifications for them. They are all animal bones but they represent a range of different species. From left to right they are currently thought to be: a horse's tooth or a beaver's cheek tooth, the vertebrae of an ichthyosaur, a piece of deer antler, an unidentified bone fragment and the tibia of a large mammal.

The oldest of these is likely to be the Ichthyosaur vertebrae. Ichthyosaurs were giant marine reptiles which became extinct around 90 million years ago, long before the other animals represented here had evolved. This bone, which is heavily fossilised, is likely to have been on the seafloor for a very long time and it is possible that it has moved some distance from its original site of deposition by successive geological processes.

The other bones are likely to date from the Palaeolithic or Old Stone Age. During the Old Stone Age (970,000 – 10,500 years before present) there were several ice ages during which the area currently dredged as Licence Area 360 was exposed as dry land. During these times deer, horses and other animals such as mammoths would have been able to live in the area that is currently submerged.

During the past six years of Protocol reporting, CEMEX have reported several finds of Palaeolithic animal remains from Licence Area 360. These include an elephant's atlas (CEMEX_0284), a mammoth bone (CEMEX_0340) and a fossilised deer antler (CEMEX_0341). In the south of the area there is also an eroding peat layer (CEMEX_0039) which formed when plants and organic material rotted without oxygen at the end of the last ice age. These and other finds from the East Coast dredging region as a whole are being used to enhance our understanding of our submerged heritage and this information is being used to inform commercial work offshore.

Staff on board the *Sand Heron* are commended for noticing, identifying and retrieving these finds from amongst a cargo of aggregate on board vessel.

Information about this discovery has been forwarded to:

- English Heritage
- BMAPA
- The Crown Estate
- The National Monuments Record
- The Historic Environment Record for Norfolk
- The Local Government Archaeology Officer for Norfolk
- The Norfolk Finds Liaison Officer (Portable Antiquities Scheme)



CEMEX_0380: Mammoth Tooth

N. Coombs discovered this tooth on board the *Sand Fulmar* in November 2011. It was dredged from Licence Area 447 in the Thames Estuary dredging region approximately 19km east of Walton-on-the-Naze.

Andy Carrant, Curator of Mammals at the Natural History Museum identified this tooth as having come from a mammoth. There are many different species of mammoth and Andy suggested that this example may have come from *Mammuthus meridionalis* – an early species which lived from 2.5 million to 100,000 years ago.

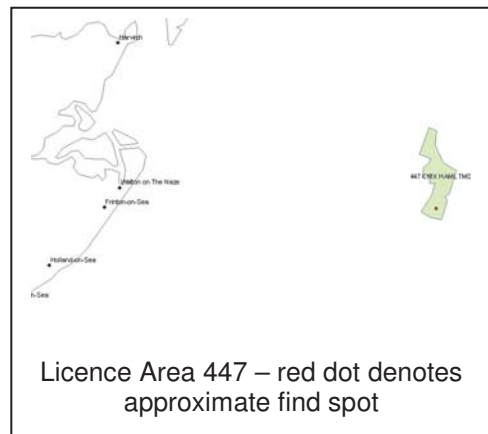
This is the second tooth reported through the Protocol to be positively identified as coming from *meridionalis* – the first was reported in 2009 and was found on board the *Sand Falcon* during work in the East Coast region (CEMEX_0265).

Mammuthus meridionalis is also known as the southern mammoth which was one of the largest species of mammoth – the more commonly known woolly mammoth being one of the smallest species. Studies of mammoth teeth that have been discovered on archaeological sites have revealed a distinct difference between the teeth of the southern mammoth and the later steppe and woolly mammoths. The southern mammoth appears to have teeth adapted to eating leaves from trees or shrubs. In contrast the woolly and steppe mammoths appear to have adapted to graze on grasses growing closer to the ground. This evolutionary change is thought to be due to a change in climatic conditions as the temperature dropped and savannah was replaced with grassland.

Finds such as this one add to our understanding of how climatic changes influenced species movement and development, and increases our knowledge of submerged prehistory.

Information about this discovery has been forwarded to:

- English Heritage
- BMAPA
- The Crown Estate
- The National Monuments Record
- The Historic Environment Record for Essex
- The Local Government Archaeology Officer for Essex
- The Essex Finds Liaison Officer (Portable Antiquities Scheme)



Brett_0381: Possible Tank Gun Sight



In November 2011, Ashley Wilkinson discovered this find at Brett Aggregates Cliffe Wharf. It was dredged by DEMA *Victor Horta* with aggregate from Licence Area 351, which lies approximately 20km east of Shanklin, Isle of Wight.

The identification of this find has been quite tricky due to the degraded nature of the find. Photographs of this find were shown to a wide range of specialists including Rebekah Higgitt, curator of History of Science and Technology at the National Maritime Museum; Jonathan Ferguson, curator of firearms at the Royal Armoury Museum; curatorial staff at the Tank Museum and Alan Jeffreys, senior curator of Social History at the Imperial War Museum.

A detailed description was provided by the wharf staff. The object has a heavy steel body with possible stainless steel mounting rings top and bottom. The wider end of the object has flecks of white paint on the outside, around the end, the internal and external fine threads visible. Looking down that same end the lens is still present. The narrow end of the object is misshapen, perhaps due to the circumstances of its disposition on the seafloor or its recovery during the aggregate extraction process. When held up to the light it is possible to see straight through, but unclear to see if either direction is magnified. There were no visible markings or serial numbers.

Unfortunately formal identification of this find has not been possible despite the excellent description above. Suggestions include a tank gun site or some kind of naval artefact. The tank museum said that it bears similarities to the Sherman tank's 75mm gun sight but they have numerical gradings/markings on the lens, which this find does not appear to have.

In the Eastern Solent not far from Area 351, a site was investigated in 2008 by Southsea SAC. The site, which is spread over 6km, consists of the remains of two Centaur CS IV tanks, two D7 armoured bulldozers, a jeep and other military equipment, which sank en-route to Normandy in 1944 as part of the D-Day landings. Although the tanks at this site are different to those suggested by the Tank Museum, both carried a 75mm gun. The Sherman was an American tank used by US Army and Marine Corps, as well as Allied nations, whilst the Centaur IV was a British tank. More information about this site can be found at: <http://www.hwtma.org.uk/landingcraft>

Cliffe Wharf staff should be commended for their full and detailed description and photographs of the find. Although Brett_0381 is currently considered to be an isolated find it may relate to a shipwreck and further discoveries from Licence Area 351 could shed light on activities in this area. Staff working with aggregate from this area should remain vigilant for future finds and report them promptly through the Protocol.

Information about this discovery has been forwarded to:

- English Heritage
- BMAPA
- The Crown Estate
- Ministry of Defence
- The Receiver of Wreck
- The National Monuments Record
- The Historic Environment Record for Hampshire
- The Local Government Archaeology Officer for Hampshire
- The Finds Liaison Officer (Portable Antiquities Scheme) for Kent

Tarmac_0382: Animal bone and iron nail



In January 2012, N. C Sait discovered these finds at Burnley Wharf, Southampton. They were found in material dredged by the City of Chichester in Licence Area 122/3 in the South Coast region, approximately 13km east of Sandown on the Isle of Wight.

These finds were discovered in Licence Area 122/3, which lies in the South Coast region to the East of the Isle of Wight. Wessex Archaeology's Zooarchaeologist Lorrain Higbee identified the animal bone as the right pelvis bone of a cow. It is not possible to determine age. The reason that this animal bone ended up in the water is unknown and there are no obvious butchery marks evident from the photograph. There are several possible ways it could have entered the water including as refuse from a ship, as domestic waste from shore or a carcass washed out to sea.

It is also possible that this bone is from an animal that lived and died at a time when areas of the North Sea were dry. This last occurred during the Palaeolithic when, between approximately 70,000 and 12,000 years ago, Ice Age conditions locked water into ice sheets.

In addition, this area has long been known to hold a spread of post-war rubble, evidenced through Protocol finds. It is possible that the iron nail/peg is part of the same spread. Whilst the City of Portsmouth record office holds no record of the deposition of such a spread, it is likely that this material was dumped at sea to dispose of it after the Second World War. It is thought that a lot of the material has come from a domestic context – from people's houses – and it is thought to consist largely of blitz rubble.

However equally this iron nail could come from a shipwreck in the area, or been lost over board. It is important that finds are continued to be reported so that we can build up a picture of the maritime history of this Licence Area.

Information about this discovery has been forwarded to:

- English Heritage
- BMAPA
- The Crown Estate
- The Receiver of Wreck
- The National Monuments Record
- The Historic Environment Record for Hampshire
- The Local Government Archaeology Officer for Hampshire
- The Finds Liaison Officer (Portable Antiquities Scheme) Hampshire



Tarmac_0383: Cannonball

In January 2012, J. Jerromes discovered this cannonball at Burnley Wharf, Southampton. It was found in material dredged by the *City of London* in Licence Area 127, approximately 20km southeast of Bournemouth in the South Coast region

This cannonball is approximately 3 inches in diameter, it is thought that this was probably fired from a gun known as a Saker, based on previous identifications of cannonballs reported through the Protocol.

The term saker was used from the 16th century and various versions of sakers were used by the English, Venetian merchantmen, the French and the Spanish Armada. The Saker family of guns existed in many different sizes but usually had a bore of between 3½ and 4 inches. This cannonball is perhaps slightly smaller but the cannonballs we have discovered, through the Protocol, are rarely uniform in size, despite the aim at the time that they become standardised.

It is very difficult to be precise about positively and conclusively identifying cast-iron round shot, remembering also that the objects will suffer quite considerable weight loss and shape during the underwater corrosion process.

Cannonballs may indicate that a skirmish of some kind may have occurred there and could even indicate the presence of a shipwreck. From the medieval period onwards the English Channel has played host to all kinds of naval warfare, with engagements leading to shipping losses by many different European nations.

Licence Area 127 was close to several recorded battles including Spanish Armada engagements to the south of the Isle of Wight. Other cannonballs have been found in this area (Tarmac_0312, Tarmac_0314, Hanson_0345, UMD_0224 and UMA_0077) therefore it is important that any finds discovered here are reported via the Protocol to help shed further light on this region.

Information about this discovery has been forwarded to:

- English Heritage
- BMAPA
- The Crown Estate
- The Receiver of Wreck
- The National Monuments Record
- The Historic Environment Record for Dorset
- The Local Government Archaeology Officer for Dorset
- The Finds Liaison Officer (Portable Antiquities Scheme) for Hampshire

Tarmac_0384: Spoon and metal fragments



In February 2012, J. Jeromes discovered these finds at Burnley Wharf, Southampton. They were found in material dredged by the *Sand Weaver* in Licence Area 127, approximately 20km southeast of Bournemouth in the South Coast region

These finds were found in material dredged from Licence Area 127, where there has already been found a range of post medieval and modern material reported, including various finds in 2012.



With the exception of the spoon, it has been difficult to identify these metal finds. It is thought that they are related to a ship or boat, rather than aircraft. The find in the third photograph has the numbers AWP 1472 stamped into it and appears to be an electrical connector, although its exact use remains unclear.

The finds may be indicative of a shipwreck or shipwrecks, or could be material lost overboard. It is important that finds like these are always reported. While we cannot tell a lot about the individual finds themselves, accumulatively they can begin to tell a story about the maritime history in this area.

Information about this discovery has been forwarded to:

- English Heritage
- BMAPA
- The Crown Estate
- The Receiver of Wreck
- The National Monuments Record
- The Historic Environment Record for Dorset
- The Local Government Archaeology Officer for Dorset
- The Finds Liaison Officer (Portable Antiquities Scheme) Hampshire

Tarmac_0385: Fragments of pottery, bone and wood



In February 2012, N. C. Sait discovered these finds at Burnley Wharf, Southampton. They were found in material dredged by the *Sand Weaver* in Licence Area 127, approximately 20km southeast of Bournemouth in the South Coast region

Lorraine Mepham, Wessex Archaeology's (WA) Senior Post Excavation Manager, identified the fragment of pottery as post-medieval. This means it could date from 1540 to 1900. It was not possible to date it further.

WA's bones expert Lorrain Higbee identified the animal bone as a distal radius shaft, probably from a cow. Again, it was not possible to date the bone further. The reason that this animal bone ended up in the water is unknown and there are no obvious butchery marks evident from the photograph. There are several possible ways it could have entered the water including as refuse from a ship, as domestic waste from shore or a carcass washed out to sea. It is also possible that this bone is from an animal that lived and died at a time when areas of the North Sea were dry. This last occurred during the Palaeolithic when, between approximately 70,000 and 12,000 years ago, Ice Age conditions locked water into ice sheets. Finds like these are important to report as they can provide information about the distribution of animals, the use of animals or the diet of sailors in the past.

Daniel Pascoe, Marine Archaeologist at WA, identified the nails in the fragment of timber as copper. This metal was commonly used in shipbuilding, which could suggest that this is wood from a boat or ship. It could possibly be a fragment of a strake from a clinker made boat.

There has been a range of post medieval and modern material found in Licence Area 127. These include cannonballs, fragments of modern pottery and a brass lamp. The finds may be indicative of a shipwreck or shipwrecks, or could be material lost overboard. The majority of these finds were discovered on the wharfs in the surrounding area and so we do not have information about where the objects came from on the seabed. It is important that finds like these are always reported. While we cannot tell a lot about the individual finds themselves, accumulatively they begin to tell a story about the maritime history in this area.

Information about this discovery has been forwarded to:

- English Heritage
- BMAPA
- The Crown Estate
- The Receiver of Wreck
- The National Monuments Record
- The Historic Environment Record for Dorset
- The Local Government Archaeology Officer for Dorset
- The Finds Liaison Officer (Portable Antiquities Scheme) Hampshire



Tarmac_0387: Fuel Cap

In October 2011, Paul Scrace discovered this fuel cap at Greenwich Wharf. It was found in material dredged by the *City of Westminster* in Licence Area 458, 40km south of Hasting in the East English Channel dredging region.

This photograph was shown to Andy Simpson at the RAF Museum. It was identified as a Daimler Benz fuel filter cap from a World War II German Luftwaffe aircraft. It was probably common to a number of aircraft so it is not possible to identify the actually aircraft it came from.

This is the first aircraft discovery in Licence Area 458; however, there has been one other WWII aircraft discovery within the East English Channel dredging region, a fragment of a Hurricane Hawker.

On the seafloor, in regions around the southern and eastern coast of the UK, you can find evidence for the Battle of Britain, and other air skirmishes during World War II. The finds in East English Channel represent losses for both sides of the battle.

When an aircraft ditches it can break up over some distance spreading the wreck across the seafloor. It is important that any further aircraft remains are reported as it could identify the location of a previously unknown wreck crash site.

Crashed aircraft are particularly important to archaeologists. Not only do they offer a unique form of evidence for the historical development of flight, but they also often relate to the profound changes in warfare which marked the 20th Century. Moreover, all crashed military aircraft are protected by law under the Protection of Military Remains Act 1986. The discovery of aircraft remains is thus incredibly important, particularly as aircraft crash sites may contain human remains.

Information about this discovery has been forwarded to:

- English Heritage
- BMAPA
- The Crown Estate
- The Receiver of Wreck
- MoD
- The National Monuments Record
- The Historic Environment Record for East Sussex
- The Local Government Archaeology Officer for East Sussex
- The Finds Liaison Officer (Portable Antiquities Scheme) London



Tarmac_0388: Animal Bone

In February 2012, Stephen Smith discovered this animal bone at Bedhampton Wharf. It was found in material dredged by the *City of Chichester* in Licence Area 122/3, which lies in the South Coast dredging region, approximately 12km east of Sandown on the Isle of Wight.

Lorrain Higbee, Wessex Archaeology's Zooarchaeologist, identified this animal bone from this photograph as a proximal femur of a cow.

The reason that this animal bone ended up in the water is unknown and there are no obvious butchery marks evident from the photograph. There are several possible ways it could have entered the water including as refuse from a ship, as domestic waste from shore or a carcass washed out to sea.

It is also possible that this bone is from an animal that lived and died at a time when areas of the North Sea were dry. This last occurred during the Palaeolithic when, between approximately 70,000 and 12,000 years ago, Ice Age conditions locked water into ice sheets.

Finds like these are important to report as they can provide information about the distribution of animals, the use of animals or the diet of sailors in the past.

Information about this discovery has been forwarded to:

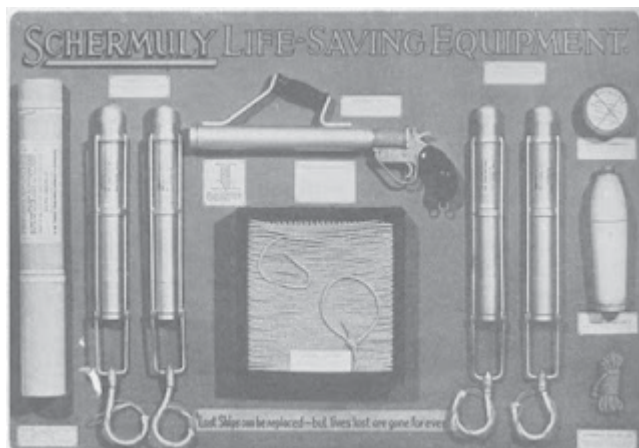
- English Heritage
- BMAPA
- The Crown Estate
- The Receiver of Wreck
- The National Monuments Record
- The Historic Environment Record for Hampshire
- The Local Government Archaeology Officer for Hampshire
- The Finds Liaison Officer (Portable Antiquities Scheme) Hampshire



Tarmac_0395: Remains of Schermuly naval rocket line thrower

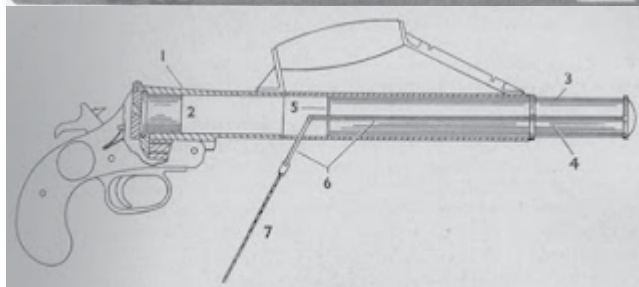
In February 2012, Mark Hillier discovered these remains at Greenwich Wharf, London. They were found in a blend of three cargoes, therefore it was not possible to identify their original location on the seafloor.

These metal tubular objects and several munitions were discovered at Greenwich wharf and assessed through the wharf's munitions procedure. The person who assessed these finds identified them as the remains of several Schermuly naval rocket line throwers.



In maritime history, the difficulties of getting a rescue rope to the ship has been a problem. In the 19th century several people tried to invent a rescue line that propelled itself, initially using gunpowder, with varying degrees of success.

William Schermuly, a British inventor, explored the possibility of using rocket propulsion to throw a line. In the 1920s he invented and put into production the line gun. The line gun was particularly easy to use, as shown by Schermuly allowing his 8 year old grandson to demonstrate it to the British Parliament.



It was very successful for throwing a line from shore to ship, or ship to ship. By the time William Schermuly died in 1929, it became compulsory for any vessels over 500 tons to carry line throwers. The company was carried on by his sons and produced many other rocket based products, such as grappling hooks, rescue apparatus and flares during World War II.

These were discovered in a blend of cargoes from several dredging regions. Despite the location these finds being unknown, they are still very interesting.

Information about this discovery has been forwarded to:

- English Heritage
- BMAPA
- The Crown Estate
- The Receiver of Wreck
- Military of Defence
- The National Monuments Record
- The Finds Liaison Officer (Portable Antiquities Scheme) London



CEMEX_0396: Stone Bead

In November 2011 John Pye of EMU Limited found this tiny stone bead. It was recovered from a sample collected using a Hammon grab during a regional benthic survey on behalf of dredging companies with licences in the East English Channel region. It is not associated with a specific Licence Area.

This very small find, measuring approximately 5mm in diameter, was shown to Lorraine Mepham, finds specialist at Wessex Archaeology.

Having previously seen photographs of this find, Lorraine originally thought that the bead may have been made of glass because of the uniform shape. However, on closer examination of the find inspection she believes that it is stone. Lorraine is unable to confirm whether this find was used as a decorative bead. It may have either been specifically manufactured for this purpose or utilised because of its naturally suitable shape. Unfortunately due to the lack of contextual information associated with this find and no other associated material we cannot confirm whether it was definitely used by people.

The earliest examples of beads date to the Palaeolithic period (approximately 970,000 to 10,500 years before present) with examples made from seashells. The archaeological record indicates that beads of stone became more common in the Neolithic period (400 to 2400 BC). Whilst it has not been possible to date this find, stone beads similar in style and size to this example were popular during the Roman and Saxon periods.

If this bead was deposited during the Roman or Saxon periods it may have come from a vessel that was travelling across the channel, or it may have been washed down river and out to sea from a terrestrial site.

Staff at EMU Limited should be congratulated for reporting such a small find.

Information about this discovery has been forwarded to:

- English Heritage
- BMAPA
- The Crown Estate
- The National Monuments Record
- The Historic Environment Record for Sussex
- The Local Government Archaeology Officer for Sussex
- The Finds Liaison Officer (Portable Antiquities Scheme) Wiltshire



Tarmac_0397: Nine Assorted Nails

J Jerromes discovered these nails at Burnley Wharf in February 2012. They were dredged by the *City of Chichester* from Licence Area 127, which lies approximately 19km southeast of Bournemouth, Dorset.

Photographs of this assemblage of iron fastenings were shown to Bob Davis, Finds Specialist at Wessex Archaeology.

There is a variety of styles within the assemblage. Some are 'L' shaped or hooked slightly on the top or head and some are traditional round heads and or pyramidal heads. The L-shaped ones may have been used to fix wooden carpenters joints and the normal ones are used to 'spike' timbers together. The overall size of them is interesting. With the larger examples to the right of the photograph, approximately 200mm in length, with a shank diameter of around 14mm, and the nail second from right in the photograph appears to have been sheared off $\frac{3}{4}$ the length of the shank.

It is plausible to assume from the condition of the nail assemblage, that two or three may have been used on a wooden vessel, while the others were potentially spares. From the dimensions it would be tentatively suggested that all these fastenings could have been used on a vessel of the size of a small ship, and it is unlikely they were used on the same vessel. It is also important to note that the general condition of the nails appears good, possibly representing the likelihood of the assemblage being buried within sediments rather than exposed on the seabed. However, complete iron fastenings are rarely discovered from shipwreck sites from later than the 18th century as they have nearly always corroded away.

Some of these may have been machine made, especially the middle one, but Bob can't be certain from looking at the photograph. However, the far right nail appears to be a cut nail from sheet metal. There is a difficulty in correctly identifying the originating countries and industries for this type of finds.

Iron nails are known to have been used by as far back as the ancient Romans and Britons, with some experts suggesting the Chinese had developed the technique of fastening timber components using iron fastenings even centuries earlier.

Similar items have also been recovered from Licence Area 127 (Hanson_0345, Tarmac_0315, and UMA_0176). Large numbers of fastenings in a single area could indicate the presence of a shipwreck where the wooden timbers have rotted away. However they may also relate to the construction industry and may have been lost from a ship cargo.

Staff working in Area 127 should remain vigilant for further finds, which may shed light on this area off the Dorset coast.

Information about this discovery has been forwarded to:

- English Heritage
 - The Crown Estate
 - The National Monuments Record
 - The Local Government Archaeology Officer for Dorset
 - The Finds Liaison Officer (Portable Antiquities Scheme)
- BMAPA
The Receiver of Wreck
The Historic Environment Record for Dorset

Tarmac_0398: Two Cannonballs



M. Smith discovered these two cannonballs at Tarmac's Burnley Wharf in February 2012. They were dredged by *Sand Weaver* from Licence Area 127, which lies approximately 19km southeast of Bournemouth, Dorset.

The origins of cannonballs are often difficult to identify because the similar styles were used by different countries. Cannonballs can arrive on the seafloor in several ways. They may have been fired from a gun during a conflict or naval battle either between vessels or even from shore to vessel. They may have been deposited in the sea to weigh down cargo or other items, and secured to a buoy for later retrieval, this is called lagan. Cannonballs were also used to weigh down burials at sea to ensure they sank to the seabed.

The cannonball pictured right measures 3.5 inches in diameter and weighs 5.07lb (2.3kg). It was likely fired from a type of gun called a saker. The saker family of guns existed in many different sizes but usually had a bores of between 3½ to 4 inches. Sakers were used from the 16th century until the early 18th century. They were used by the English, Venetian merchantmen, the French and the Spanish Armada.

The second cannonball, left, measures 3 inches in diameter and weighs 3.527lb (1.6kg). For its size it is surprisingly light and may have been a shell, or hollow projectile, that was filled with shot, gunpowder or shrapnel and lit with a fuze to cause maximum damage when striking a target. From the diameter of the cannonball it was likely to have been fired from a saker as well.

Although these finds do not appear to be associated with any other material, such as ship wreck timbers, Licence Area 127 has yielded several cannonball finds via the Protocol over the years including Hanson_0345, Tarmac_0314, Tarmac_0312, UMD_0224 and UMA_0077. Licence Area 127 is close to several recorded battles including Spanish Armada battles to the south of the Isle of Wight.

As more finds from Licence Area 127 are reported via the Protocol we can learn more about the maritime activities in this region.

Information about this discovery has been forwarded to:

- English Heritage
- BMAPA
- The Crown Estate
- The Receiver of Wreck
- The National Monuments Record
- The Historic Environment Record for Dorset
- The Local Government Archaeology Officer for Dorset
- The Finds Liaison Officer (Portable Antiquities Scheme)

Tarmac_0399 and _0401: Spoons



These spoons were discovered at Greenwich Wharf in January 2012. Tarmac_0401 (right) was found by Fred Evans. It was recovered from material dredged by the *City of Westminster* from Licence Area 458, which lies approximately 41km southeast of Eastbourne. Tarmac_0399 (left) was discovered by Paul Scrace, however the licence area is unknown.

Photographs of these finds were shown to Lorraine Mephram, finds specialist at Wessex Archaeology. Interestingly both are round-bowled and presumably soup spoons.

Tarmac_0399 (see right) is engraved on the handle with the letters THPS, which Greenwich wharf rightly identified would likely stand for Trinity House Pilot Ship. The number '4' is engraved on the same side. On the reverse is written Alpacca, which is the trade name of a white alloy (containing copper, nickel, zinc and tin, but not silver); it was first formulated in Germany in the early 19th century.



Tarmac_0401 also has an engraving on the reverse "Nickel Silver". Nickel silver was often the base for silver-plated cutlery. The stamp also states it was made in Sheffield, England (see below left). Sheffield was the main area, outside of London, for the production of cutlery from 1600 and still produces cutlery today.



Both spoons have been broadly dated by Lorraine to 19th or 20th centuries and are likely to be isolated finds, perhaps lost overboard from a vessel travelling in the East English Channel (Tarmac_0401) or around the coast of Britain (Tarmac_0399). The spoon may also be associated with a shipwreck and vessels working in Licence Area 458 should remain vigilant for future finds, which may shed more light on maritime activities this region.

Information about this discovery has been forwarded to:

- English Heritage
- BMAPA
- The Crown Estate
- The Receiver of Wreck
- The National Monuments Record
- The Historic Environment Record for Sussex
- The Local Government Archaeology Officer for Sussex
- The Finds Liaison Officer (Portable Antiquities Scheme) London



Tarmac_0400: Aircraft Fragment

Paul Scrace discovered this object at Greenwich wharf in January 2012. It was recovered from amongst aggregate dredged by the *City of Westminster* from Licence Area 447, which lies in the Outer Thames region.

Photographs of this find have been shown to archaeological divers and finds specialists at Wessex Archaeology; however, it remains a slight mystery.

On the side of this find is German wording, see right, which, due to the condition of the find, is incomplete. However, translation of the partial text suggests that this find could be related to the remains of an aircraft. The first word "*Flugzeuge*" is German for aircraft; with "*Hersteller: Ca...*" translating to Manufacturer Ca... The German manufacturer that best fits with "Ca" is Carl Zeiss AG, which manufactured photographic and other optical equipment.



Peter Elliott from the RAF Museum says that it may be part of a camera or perhaps a landing light, but it is likely to be from an aircraft. It is possible that this is part of a camera mounted on an aircraft for obtaining aerial photographs perhaps as part of reconnaissance during World War Two.

The seabed around the coast of England represents one of the richest sources of aircraft wrecks in the world, however the location of many of these wrecks still remain a mystery. We know, for example, that 935 aircraft were lost off the Sussex coast between 1939 and 1945 but only the locations of a few are known. There have been many reports of aircraft remains via the Protocol, mostly reports of isolated fragments, but in 2007 over 300 fragments of a German JU 88 were discovered in Licence Area 430, in the East Coast.

Wessex Archaeology completed a project entitled Aircraft Crash Sites at Sea in 2008, which looks at some of the known aircraft sites at sea as well as producing specialist guidance for the marine aggregates industry on how to deal with finds of this nature. For more information about aircraft remains on the seafloor check out our project pages:

<http://blogs.wessexarch.co.uk/aircraftcrashsitesatsea/>

Staff working with aggregate from Licence Area 447 should remain vigilant for further finds relating to aircraft, which may shed further light on this find and aviation activities in this area.

Information about this discovery has been forwarded to:

- English Heritage
- BMAPA
- The Crown Estate
- Ministry of Defence
- The Receiver of Wreck
- The National Monuments Record
- The Historic Environment Record for Essex
- The Local Government Archaeology Officer for Essex
- The Finds Liaison Officer (Portable Antiquities Scheme) for London

Tarmac_0402: Rifle Fragment



This rifle fragment was discovered by Paul Scrace at Greenwich wharf. It was dredged by either the *City of Westminster* or *City of London* in December 2011 with aggregate from Licence Area 127, which lies off the west coast of the Isle of Wight.

This find was correctly identified by the wharf staff as part of a rifle. Photographs of this find were shown to Bob Davis, finds specialist at Wessex Archaeology. He confirmed it as a Long Branch rifle fragment, probably part of the breech (bolt action).

There is engraved lettering on the side of the fragment (see right), which is quite difficult to read due to the degraded nature of the find. "LONG BRANCH" can be made out on the side of the barrel with "No. 4 Mk 1" written above. In the 1930s, the Long Branch company, based in Canada, developed and manufactured this gun, which was known as the Lee-Enfield Rifle No.4 Mk 1* (see below). It was first manufactured in 1939. During the Second World War, Enfield no longer manufactured rifles; instead, they manufactured the new Bren machine gun.



Around one million of these rifles were made in Canada and bore similarities to their British equivalent the Mk. IV Swift rifle, although they were around 1/5 of the cost (Source: oldbritishguns.com).



© oldbritishguns.com

The deposition of World War Two debris is known around the Isle of Wight with domestic debris and scrap often reported via the Protocol. This rifle may be part of that assemblage. It is also possible that this rifle was lost from a vessel; either lost overboard or as debris from a shipwreck. Vessels operating in this area should remain aware of any future finds that may indicate the presence of a shipwreck.

Thanks to Greenwich wharf for contributing to the identification of this find through their research taken from oldbritishguns.com (January 2011).

Information about this discovery has been forwarded to:

- English Heritage
- BMAPA
- The Crown Estate
- Ministry of Defence
- The Receiver of Wreck
- The National Monuments Record
- The Historic Environment Record for Hampshire
- The Local Government Archaeology Officer for Hampshire
- The Finds Liaison Officer (Portable Antiquities Scheme) London

Hanson_0404: Single Sheave Snatch Block



Darryl Mason discovered this find in March 2012 on board *Arco Adur*. It was found within a cargo of aggregate dredged from Licence Area 328/1, which lies off the coast of Great Yarmouth.

Photographs of this find were shown to Daniel Pascoe and Graham Scott from Wessex Archaeology's dive team.

Dan identified it as a single sheave snatch block, which is a single grooved wheel spinning around an axis, see right. Blocks were used all over vessels, usually found hanging from the rigging, to assist with manoeuvring cargo or equipment around or off/on a vessel.



When cargo was hooked onto the snatch block the hooks may have closed to secure the rope. When the load was released, e.g. when a cargo was laid on the deck or in the hold, then the hooks would have parted to allow the ropes to be easily removed. This find almost certainly dates to the 20th century.

Britain has a rich maritime history and for thousands of years boats and ships have been navigating its coast for the purposes of transportation of cargo and people, defence, fishing and recreation. Until the industrial revolution at the end of the 19th century, ships were the fastest way to transport cargo around the country.

Area 328/1 has only yielded one other find reported via the Protocol, a World War One shell timing device (Hanson_0105). It is possible that this find is related to a vessel, perhaps sunk during one of the World Wars, the cause of many a wreck around the coast of Britain. However, it may be an isolated find lost overboard during rough weather and seas.

Vessels working in this Licence Area should remain vigilant for further finds, which may be able to shed light on maritime activities in this region perhaps even giving a context to this find.

Information about this discovery has been forwarded to:

- English Heritage
- BMAPA
- The Crown Estate
- Ministry of Defence
- The Receiver of Wreck
- The National Monuments Record
- The Historic Environment Record for Norfolk
- The Local Government Archaeology Officer for Norfolk



CEMEX_0405: Animal Bone

In April 2012, Andrzej Giersztundwiz discovered this find aboard *Sand Heron*. It was amongst material dredged from Licence Area 360 in the East Coast dredging region, approximately 20km northeast of Lowestoft.

A photograph of this find was shown to Lorrain Higbee, Wessex Archaeologist's Zooarchaeologist, who identified the bone as a horse metapodial, most probably a metacarpal. This means it is a foot bone, from the front leg of a horse. The age of the bone is unknown.

The reason that this animal bone ended up in the water is unknown and there are no obvious butchery marks evident from the photograph. There are several possible ways it could have entered the water including as refuse from a ship, as domestic waste from shore or a carcass washed out to sea.

It is also possible that this bone is from an animal that lived and died at a time when areas of the North Sea were dry. This last occurred during the Palaeolithic when, between approximately 70,000 and 12,000 years ago, Ice Age conditions locked water into ice sheets.

There has been several animal bone finds from this Licence Area including mammoth remains, which do date to this period. There have been no discoveries of man-made finds from this period in the Licence Area, such as the Palaeolithic stone tools found in nearby Licence Area 240. Man-made finds such as these, combined with discoveries of ancient animal bones, could identify an ancient landscape where people once lived before the sea levels rose. It is therefore important to continue to report any discoveries of animal bones in this area and be vigilante for evidence of stone tools. You can download Wessex Archaeology's "working with Flint" guidelines using this link below, which provide information on identifying stone finds:-

http://www.wessexarch.co.uk/files/Learning/pdf/activity_sheet_flint.pdf

Information about this discovery has been forwarded to:

- English Heritage
- BMAPA
- The Crown Estate
- The National Monuments Record
- The Historic Environment Record for Norfolk
- The Local Government Archaeology for Norfolk
- The Finds Liaison Officer (Portable Antiquities Scheme) Norfolk



CEMEX_0406a and 406b: Animal Bone and Machine Gun Fragment

Gary Vidler or Martin Keeble discovered these objects at Angerstein wharf in April 2012. They were recovered from amongst aggregate dredged by *Sand Falcon* or *Sand Fulmar* from Licence Area 447, which lies in the Outer Thames Estuary dredging region.

Photographs of the animal bone (right: CEMEX_0406a) were shown to Lorrain Higbee, Senior Zooarchaeologist at Wessex Archaeology, who identified the item as a horse metacarpal.

The reason that this animal bone ended up in the water is unknown and there are no obvious butchery marks evident from the photograph. It may be related to refuse from a ship, domestic waste from shore or a carcass washed out to sea. It is also possible that this bone is from an animal that lived and died at a time when areas of the North Sea were dry. This last occurred during the Palaeolithic, between approximately 70,000 and 12,000 years ago, when Ice Age conditions locked water into ice sheets. Finds like these are important to report as they can provide information about the distribution of animals, the use of animals or the diet of sailors in the past.



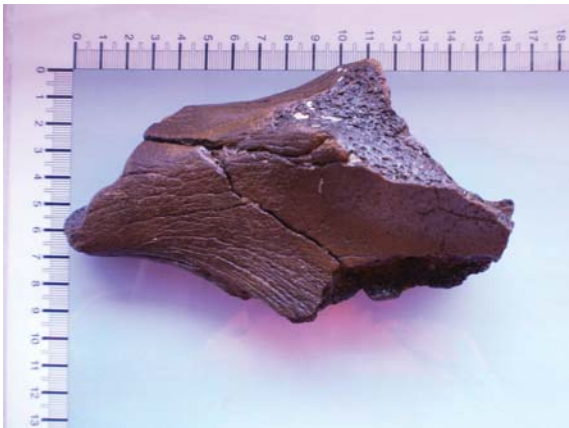
Photographs of the machine gun fragment (above: CEMEX_0406b) were shown to Jonathan Ferguson, Curator of Firearms at the Royal Armouries Museum, who identified the object as the barrel extension (bottom) and bolt (top) from a Browning machine gun. This particular object would most likely have been used during World War II (WWII), and could be from either the .30 calibre model used by the US in the Boeing B-17, or the .303 model used by the British in both the Spitfire and Hurricane. Long slots were cut into the guns used by the air service in order to reduce their weight and increase the rate of fire.

The reason that this machine gun fragment ended up in the water is most likely due to a plane crash during WWII. Many aircraft remains dredged from the sea originate from WWII due to the huge number of wartime losses during this period. Of the planes shot down around Britain very few have a known location.

Finds such as this one that have been reported through the Protocol are extremely important in furthering our understanding of WWII plane losses. Other aircraft remains have been found in Area 447 and Tarmac staff should remain vigilant for further material, which could include aircraft fragments or ordnance, which will help shed light on aviation activities during the War.

Information about this discovery has been forwarded to:

- English Heritage
- BMAPA
- The Crown Estate
- Ministry of Defence
- The Receiver of Wreck
- The National Monuments Record
- The Historic Environment Record for Essex
- The Local Government Archaeology Officer for Essex
- The Finds Liaison Officer (Portable Antiquities Scheme) for London



CEMEX_0407: Animal Bone

In May 2012, Neil Coombs reported this animal bone discovered on board the *Sand Fulmar*. It was discovered in material dredged in License Area 447, which lies in the Thames Estuary dredging region approximately 19km east of Walton-on-the-Naze.

Lorrain Higbee, Wessex Archaeology's Zooarchaeologist, identified this animal bone from this photograph as a fragment of cattle pelvis.

The reason that this animal bone ended up in the water is unknown and there are no obvious butchery marks evident from the photograph. There are several possible ways it could have entered the water including as refuse from a ship, as domestic waste from shore or a carcass washed out to sea.

It is also possible that this bone is from an animal that lived and died at a time when areas of the North Sea were dry. This last occurred during the Palaeolithic when, between approximately 70,000 and 12,000 years ago, Ice Age conditions locked water into ice sheets.

Finds like these are important to report as they can provide information about the distribution of animals, the use of animals or the diet of sailors in the past.

Information about this discovery has been forwarded to:

- English Heritage
- BMAPA
- The Crown Estate
- The National Monuments Record
- The Historic Environment Record for Essex
- The Local Government Archaeology Officer for Essex
- The Finds Liaison Officer (Portable Antiquities Scheme) Essex



Hanson_0408: Echinoid Fossil

In June 2012 Mark Morley discovered this fossil on board the Arco Arun, while dredging material in Licence area 240, 8 miles off Great Yarmouth in the East Coast dredging region.

Photographs of this discovery suggest that it is an Echinoid fossil, once a sea urchin. It is unlikely that this discovery is archaeological.

The name “Echinoid” derives from the Greek “echin”, which means spiny referring to the protective spines of sea urchins. These are common sea creatures, both in the past and today.

Their first appearance in the fossil record occurs in the geological era referred to as the Cambrian, around 530 million years ago. They quickly diversified into lots of different types. They started becoming abundant during the Mesozoic (250 million years ago) and diversified further during the Jurassic (210 to 145 million years ago). An expert palaeontologist or ecologist may be able to identify what specific species this fossil and possibly date it.



A Sea Urchin (Courtesy of Wikicommons)

There is no evidence to suggest that this discovery is archaeological, this would require that there is evidence that it has been used or adapted by humans. It could in fact be older than the period of time humans have lived on the planet.

However, it is interesting that fossil echinoids have attracted attention since well back into human prehistory, sometimes taking on a religious or magical significance. For example, echinoids, often replaced by flint, are common fossils in the Cretaceous Chalk of England and would have been familiar yet mysterious objects to humans digging for flints to make into tools.

Due to discoveries made through the protocol Licence Area 240 is known as a submerged prehistoric landscape, where people once lived during the Middle Palaeolithic Period (200,000 to 300,000 years ago). It is more likely, however, that this discovery relates to the time when this area has been under water.

Fossils are often adapted and used by humans, for example as beads in jewellery, and it is important that anything that could relate to the human past of this area is reported. Please continue to report any finds that could be archaeological, particularly from Licence Area 240.

You can get more information from

<http://www.discoveringfossils.co.uk/echinoids.htm>

http://www.nhm.ac.uk/nature-online/earth/fossils/fossil-folklore/fossil_types/echinoids.htm

Information about this discovery has been forwarded to:

- English Heritage
- BMAPA
- The Crown Estate



Hanson_0409: Unknown Object

In July 2012 G. Price discovered this object onboard the *Arco Arun*. Unfortunately the dredging area is unknown.

This object was shown to multiple specialists in order to try and identify what it may be. The responses varied considerably, with thoughts being that it could be a cannonball or meteorite.

Whilst the size and shape of the object suggest that it could be a cannonball, the colouration and indentations on the surface of the object suggest that it is not.

Cannonballs are normally a darker colour, often with red concretions covering the surface. This occurs as the metal of the cannonball reacts with the sea water

Cannonballs can arrive on the seafloor in several ways. They may have been fired from a gun during a conflict, either between vessels or from shore to vessel. They may have been deposited in the sea to weigh down cargo or other items, and secured to a buoy for later retrieval.



Tarmac_0424: Cannonball showing red concretions and surface.



Bassikounou meteorite © Wikimedia Commons

One of the other objects that this may be is a meteorite. On falling the earth meteorites form a fusion crust which forms a shiny dark grey layer around the object. It also appears to have *Regmaglypts* on its surface, thumb shaped imprints caused by rapid air flow as it falls through the atmosphere.

While the object appears to have this crust layer, specialists believed the object to be too rounded to be a meteorite as they are often angular. In order to confirm what this object is further tests would need to be conducted to confirm what it is made of, as meteorites are magnetic and quite dense.

While we have not been able to identify this particular object, similar objects may turn out to be of archaeological importance. Hanson staff should remain vigilant for other objects which may give an insight into past activities of the region.

Information about this discovery has been forwarded to:

- English Heritage
- BMAPA
- The Crown Estate



Hanson_0410: Mammoth Tooth

In July 2012, Danny Reibbitt reported this mammoth's tooth, discovered at SBV Flushing Wharf, Netherlands. It was discovered in material dredged by the *Arco Arun* in Licence Area 240, approximately 13km east off the coast of Great Yarmouth in the East Coast dredging region.

This find was discovered on the Reject Pile at Hanson's SBV Flushing wharf while the cargo of aggregate was being discharged from the *Arco Arun*.

At present, mammoth tooth fossils occur from the Wolstonian ice age (380,000 to 130,000 years ago) to the end of the Devensian ice age (c.10, 000 years ago) but there are few dated examples. It is not currently possible to ascertain a date for these teeth.

It is highly significant as it was discovered amongst material from Licence Area 240, which has been the site of a major archaeological investigation. This investigation began after the discovery of 75 flint tools and Palaeolithic animal remains amongst material dredged from this licence in 2008. The finds from Area 240 were reported through the Protocol and have attracted the attention of the international media.

During the last 2.5 million years, known as the Pleistocene on the geological timescale, there have been numerous cold periods, called 'glacials', separated by warmer periods called 'interglacials'. During colder periods, large continental ice sheets covered much of Britain and most of the North-west European Peninsula. At these times sea levels were low and large expanses of land, now forming the seabed of the North Sea and the English Channel, were available to humans and animals. Human occupation usually occurred at the beginning and end of a glacial period when the climate was warmer, but sea levels were still quite low. During warmer phases the glaciers melted and sea levels rose. The results of the Licence Area 240 investigation has revealed a submerged prehistoric landscape, dated to the Middle Palaeolithic Period (200,000 to 300,000 years ago), where people and animals once lived.

Whilst the site of the 2008 discoveries is now protected by an exclusion zone, there is still great potential for significant remains to be found in the rest of the Area 240, and indeed the East Coast region itself, as demonstrated by this artefact. As further discoveries are reported and mapped, it may be possible to identify meaningful patterns in the distribution of finds, which not only has the potential to locate previously unknown submerged prehistoric landscapes, but also may ultimately contribute to our understanding of the marine historic environment.

Information about this discovery has been forwarded to:

- English Heritage
- BMAPA
- The Crown Estates
- The National Monuments Record
- The Historic Environment Record for Norfolk
- The Local Government Archaeology Officer for Norfolk
- The Finds Liaison Officer (Portable Antiquities Scheme) for Norfolk

Tarmac_0413 and 0414: Two Cannonballs



M. Smith and N.C. Sait discovered these two cannonballs at Tarmac's Southampton Wharf. Tarmac_0413 was discovered in April 2012 in material dredged by *Arco Dee* and Tarmac_0414 was found in material dredged by *Sandweaver*, both came from Licence Area 127, which lies in the South Coast dredging region, approximately 19km southeast of Bournemouth, Dorset.

The origins of cannonballs are often difficult to identify because similar styles were used by different countries. Cannonballs can arrive on the seafloor in several ways. They may have been fired from a gun during a conflict or naval battle either between vessels or even from shore to vessel. They may have been deposited in the sea to weigh down cargo or other items, and secured to a buoy for later retrieval, this is called lagan. Cannonballs were also used to weigh down burials at sea to ensure they sank to the seabed.

The cannonball pictured left (Tarmac_0413) measures 3 inches in diameter and weighs 3.527lb (1.6kg), and the cannonball on the right (Tarmac_0414) is 3 inches in diameter and weighs 3.96lbs (1.8kg). These are both quite light for the size and are similar to another cannonballs recently reported from this License Area (for example Tarmac_0398). These may have been a shell, or hollow projectile, that were filled with shot, gunpowder or shrapnel and lit with a fuse to cause maximum damage when striking a target.

From their diameters, it is likely that the cannonballs were fired from sakers. The saker family of guns existed in many different sizes but usually had a bore of between 3½ to 4 inches. Sakers were used from the 16th century until the early 18th century. The English, Venetian merchantmen, the French and the Spanish Armada, used them.

Although these finds do not appear to be associated with any other material, such as shipwreck timbers, Licence Area 127 has yielded several cannonball finds via the Protocol over the years including recent finds by Tarmac. Licence Area 127 is close to several recorded battles including Spanish Armada battles to the south of the Isle of Wight. As more finds from Licence Area 127 are reported via the Protocol we can learn more about the maritime activities in this region.

Information about this discovery has been forwarded to:

- English Heritage
- BMAPA
- The Crown Estate
- The Receiver of Wreck
- The National Monuments Record
- The Historic Environment Record for Dorset
- The Local Government Archaeology Officer for Dorset
- The Finds Liaison Officer (Portable Antiquities Scheme) Hampshire



Tarmac_0415: Possible Cannonball

J. Jerromes discovered this object at Tarmac's Southampton wharf in July 2012. It was recovered from amongst aggregate dredged by the *City of London* from Licence Area 127, which lies in the South Coast dredging region, approximately 19km southeast of Bournemouth, Dorset.

Southampton wharf suggested that this concreted lump of metal is a cannonball. It is 3 inches wide, similar to several cannonballs reported recently by this wharf from material dredged from Licence Area 127. It is therefore probable that this is a cannonball, but without breaking it open or undertaking an x-ray, and based only on the image above we cannot confirm this interpretation.

The red colouration confirms that this is an iron object. In addition, the concretion suggests that this object has been in the water for some time. The recent discoveries of cannonballs in this Licence Area have been provisionally identified by the diameter as having been fired from a saker. The saker family of guns existed in many different sizes but usually had a bore of between 3½ to 4 inches. Sakers were used from the 16th century until the early 18th century. The heavy concretion could indicate that this object has been underwater for several centuries, supporting this interpretation.

Although this find does not appear to be associated with any other material, such as shipwreck timbers, Licence Area 127 continues to yield cannonball finds via the Protocol. As mentioned in previous wharf reports, Licence Area 127 is close to several recorded battles including Spanish Armada battles to the south of the Isle of Wight. Extra vigilance should be taken to identify further discoveries that could indicate any wreckage that may have occurred through the firing of these cannonballs.

Information about this discovery has been forwarded to:

- English Heritage
- BMAPA
- The Crown Estate
- The Receiver of Wreck
- The National Monuments Record
- The Historic Environment Record for Dorset
- The Local Government Archaeology Officer for Dorset
- The Finds Liaison Officer (Portable Antiquities Scheme) Hampshire



Tarmac_0416: Knife

In April 2012, G. Cooper discovered this knife at Bedhampton Wharf. It was found in material dredged by the Arco Dee in Licence Area 127, approximately 20km southeast of Bournemouth in the South Coast region.

A photograph of this knife was shown to Bob Davis, Archaeologist at Wessex Archaeology. Bob has suggested that this knife could be a boning knife for butchery.

Boning knives are typically used in food preparation, particularly for removing bones from poultry, meat and fish. They tend to feature a narrower blade than other kitchen/butcher knives, to make precision boning easier, and the blade is kept extremely sharp to that it can cut cleanly through fibrous tissue. The handle may be of varying length but the blade is generally between 12 cm and 17 cm.

The knife is 25.5 cm long, with a blade length of 16cm. The blade is most likely to be formed of stainless steel, and the handle may be bone. We have been unable to ascertain a date for the knife, although it is most likely of post medieval to modern date based on its condition.

The reason that this knife ended up in the water is unknown. It is likely to be an isolated find, perhaps lost overboard from a vessel travelling in the south coast region. The knife may also be associated with a shipwreck and Tarmac vessels working in Licence Area 127 should remain vigilant for future finds, which may shed more light on maritime activities in this region.

Information about this discovery has been forwarded to:

- English Heritage
- BMAPA
- The Crown Estate
- The Receiver of Wreck
- The National Monuments Record
- The Historic Environment Record for Dorset
- The Local Government Archaeology Officer for Dorset
- The Finds Liaison Officer (Portable Antiquities Scheme) for Hampshire



Tarmac_0418: Spoon

In May 2012, Neil Clancy discovered this spoon at Greenwich wharf, London. It was discovered in material dredged in License Area 122/3, which lies in the South Coast region, approximately 13km east of Sandown on the Isle of Wight.

Lorraine Mepham, find's specialist at Wessex Archaeology examined photographs of the spoon. We think it dated to World War II.

Lorraine suspected that the serial number "2871227" (right) was a regimental number. The number falls into a block allocated to the 1st battalion of the Gordon Highlanders. This is supported by the letters above, which we now think are "1 GOR". The numbers were allocated prior to World War II, but it is likely that this is a World War II army issue spoon.

The hallmark identified Gladwins as the manufacturers. Gladwin Limited operated at the Embassy Works in Rockingham Street, Sheffield, between 1923 and 1951. 'NS' stands for 'nickel silver', but we do not know what the other marks "H" and arrow may indicate.

The Gordon Highlanders formed in 1794 and fought in both World War I and World War II, in 2006 they merged with other Scottish infantry regiments to form the Royal Regiment of Scotland.

In WWII, the 1st and 5th battalion of the Gordon Highlanders were the 51st Highland Infantry Division during the Battle of France in 1940, but were trapped and forced to surrender at Saint-Valery-en-Caux. They reformed and continued to fight during WWII, including the battle for Normandy in 1944.

This spoon may indicate the wreck site of a WWII military ship or be refuse from a ship embarking from the South Coast to Europe with infantry. It is most likely the later as given military records it is unlikely it is from an unknown shipwreck of this date.

Information about this discovery has been forwarded to:

- English Heritage
- BMAPA
- The Crown Estate
- The Receiver of Wreck
- MOD
- The National Monuments Record
- The Historic Environment Record for Hampshire
- The Local Government Archaeology Officer for Hampshire
- The Finds Liaison Officer (Portable Antiquities Scheme) London



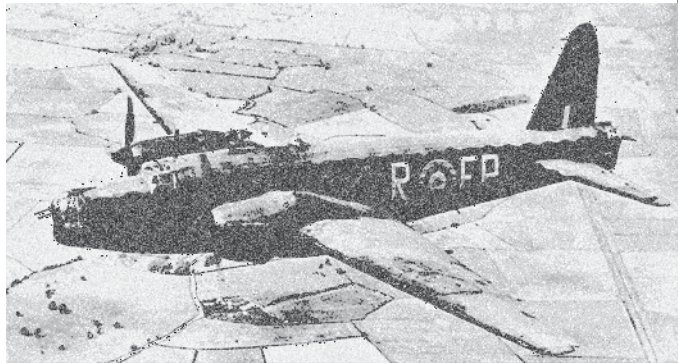


Tarmac_0419: Microphone Hand Set

In March 2012 Terry Clancy discovered this microphone hand set at Greenwich Wharf. It was found in material dredged by the *City of Westminster* in Licence area 447, which lies in the Thames Estuary dredging region approximately 19km east of Walton-on-the-Naze.

Photographs of this find were shown to Andy Simpson, Curator at the Royal Air Force Museum (RAF), who identified the find as a British Army microphone hand set of wartime vintage. This type of hand set would have been used in early marks of Vickers Wellington bombers, allowing Bomb Aimers to communicate with the pilot.

The Vickers Wellington bomber was built in greater numbers than any other British bomber during World War II, being the only British bomber to be produced for the entirety of the war. It was also one of the first RAF aircraft to attack Germany in September 1939. The strength of the Vickers Wellington meant that it could sustain large amounts of damage and still return safely to base. The adaptability of the plane meant that it was also used as a torpedo carrier and submarine killer in Coastal Command, as well as doing airborne minesweeping, transportation and training exercises.



Vickers Wellington Bomber 1941 ©Wikimedia Commons.

The reason that this discovery ended up in the water is most likely due to a plane crash into the sea during World War II. Many aircraft remains dredged from the sea originate from World War II due to the huge number of wartime losses during this period. Of the planes shot down around Britain very few have a known location. This is demonstrated by the fact that 1,380 aircraft are estimated to have been lost whilst on outward or inward operational flights by Bomber Command, yet in 2008 there were only 418 known maritime aircraft crash sites recorded in the National Monuments Record (Wessex Archaeology 2008: 19).

Finds such as this one, which have been reported through the Protocol, are extremely important in furthering our understanding of WW2 plane losses. This is not the only evidence of aircraft to have been found in Area 447 and it is highly probable that further remains will be found in the area. Tarmac staff should remain vigilant for further material, which could include aircraft fragments or ordnance, which will help shed light on aviation activities during the War.

Two examples of these microphone hand sets can be found in the RAF Museum collection.

Information about this discovery has been forwarded to:

- English Heritage
- BMAPA
- The Crown Estate
- Ministry of Defence
- The Receiver of Wreck
- The National Monuments Record
- The Historic Environment Record for Essex
- The Local Government Archaeology Officer for Essex
- The Finds Liaison Officer (Portable Antiquities Scheme) for London

Wessex Archaeology (2008): Aircraft Crash Sites at Sea: A Scoping Study. Archaeological Desk-based Assessment.



Tarmac_0420: Wheel

In March 2012, Barry Gould discovered this wheel at Erith wharf. It was found in marine aggregate dredged but we do not have a location for its discovery.

The wharf interpreted this discovery as a wooden wheel. Wessex Archaeology staff examined photographs of the find and came to the same conclusion.

The wooden wheel is quite small in dimension it is 170mm in diameter with a 50mm diameter hole in the middle and is 47mm thick. It could be from a child's toy, indicated by the tyre tread effect on the wood. Alternatively this find could be a sheave, which is a grooved wheel used to assist manoeuvring cargo or equipment on or off a vessel. With the markings on the side of it being due to wear and tear as opposed to deliberate markings.



We cannot tell exactly what this wheel came from and how it ended up being discovered with marine aggregate material. The wheel may have ended up in water through disposal or could be due to a shipwreck. There is, however a lack of locational information to help identify any further information about this discovery.

Random finds like this should always be reported, even if there is little that we can tell about them, as additional information may become known in the future.

Information about this discovery has been forwarded to:

- English Heritage
- BMAPA
- The Crown Estate
- The Receiver of Wreck
- The National Monuments Record
- The Finds Liaison Officer (Portable Antiquities Scheme) London



Tarmac_0423: Electrical Device

In August 2012, Garry Phillips discovered this device at Ridham Wharf. It was found in material dredged by the City of Westminster in Licence Area 430, in the East Coast dredging region.

This find was identified by staff at the wharf as an electrical device. Images of this object were shown to several specialists. Firm identification was not possible but a theory was put forward by Bob Davis, Archaeologist for Wessex Archaeology, who suggested that the object could be a component of an explosive device.

The rubber sealing rings and small lug fittings around the device suggest that this component would have been fitted into a larger cylindrical object. A sprung retaining ring visible inside the device holds a battery component in place. The electrical connectors visible in the image appear to be waterproof.

Staff at the wharf reported that the battery inside is marked with the inscriptions 'naval' and 'MOD'. Richard Noyce, Curator of Artefacts at the Royal Naval Museum, pointed out that this suggests that the device can be dated to post-1964, when the Ministry of Defence was formed.



At present this object appears to be an isolated find, that may have fallen or been discarded from a boat. Several other finds have been reported from Licence Area 430 in recent years but none are thought to be connected with this object. Tarmac staff working in this Licence Area should remain vigilant for future finds, which may shed more light on maritime activities in this region.

Information about this discovery has been forwarded to:

- English Heritage
- BMAPA
- The Crown Estate
- The Receiver of Wreck
- The Ministry of Defence
- The National Monuments Record
- The Historic Environment Record for Suffolk
- The Local Government Archaeology Officer for Suffolk
- The Finds Liaison Officer (Portable Antiquities Scheme) for London



Tarmac_0424: Cannonball

M Smith discovered this object at Tarmac's Southampton wharf in August 2012. It was recovered from amongst aggregate dredged by the *City of Chichester* from Licence Area 127, which lies in the South Coast dredging region, approximately 19km southeast of Bournemouth, Dorset.

Tarmac staff at Southampton Wharf identified this find as a cannonball. The origins of cannonballs are often difficult to identify because similar styles were used by different countries over several centuries. The concretion on this cannonball suggests that it has been in the water for some time.

The cannonball measures 3" in diameter and weighs 2.11kg. This is very similar in size and weight to several other cannonballs reported from Licence Area 127 in recent years.

The diameter of this cannonball suggests that it may have been fired from a saker. The saker family of guns existed in many different sizes but usually had a bore of between 3½ to 4 inches. Sakers were used from the 16th century until the 18th century by the English, French, Spanish and Italians.



Cannonballs can arrive on the seafloor in several ways. They may have been fired from a gun during a conflict, either between vessels or from shore to vessel. They may have been deposited in the sea to weigh down cargo or other items, and secured to a buoy for later retrieval. Cannonballs have also been used to weigh down burials at sea to ensure they sank to the seabed.

Although this find does not appear to be associated with any other material, such as shipwreck timbers, Licence Area 127 continues to yield cannonball finds via the Protocol. As mentioned in previous wharf reports, Licence Area 127 is close to several recorded battles including Spanish Armada battles to the south of the Isle of Wight. Extra vigilance should be taken to identify further discoveries that could indicate any wreckage that may have occurred through the firing of these cannonballs.

Information about this discovery has been forwarded to:

- English Heritage
- BMAPA
- The Crown Estate
- The Receiver of Wreck
- The National Monuments Record
- The Historic Environment Record for Dorset
- The Local Government Archaeology Officer for Dorset
- The Finds Liaison Officer (Portable Antiquities Scheme) Hampshire



Tarmac_0426: Gas Bottle

N C Sait discovered this object at Tarmac's Southampton wharf in August 2012. It was recovered from amongst aggregate dredged by the *City of Chichester* from Licence Area 127, which lies in the South Coast dredging region, approximately 19km southeast of Bournemouth, Dorset.

This object was identified by Tarmac staff at Southampton Wharf as a section of a gas bottle. Photographs of this find were shown to Euan McNeill, Director of Coastal and Marine, and Kevin Stratford, Marine Archaeologist, at Wessex Archaeology who have confirmed that this is correct.

Markings are visible on the valve of this high pressure cylinder (see right). Staff at the wharf deciphered some of these markings as the following (brackets have been used to denote only partially visible lettering):

'6D(A)83(M)N (2)5311... M(N)VC 10/43 (C)TCO21'

The figures '(C)TCO21' may suggest that this tank contained either carbon dioxide or oxygen when it was produced. It is also possible that the figures '10/43' may refer to the date of manufacture, meaning that the gas bottle was produced in October 1943.



This object is likely to have come from either a vessel or an aircraft. The location of the find in the South Coast dredging region and the date of manufacture mean that there is a strong probability that it is from a World War II (WWII) aircraft. The seabed on the southern coast of England is a rich source of aircraft wrecks, the locations of many of which are still a mystery. For example, it is known that 935 aircraft were lost off the Sussex coast between 1939 and 1945, but the locations of only a few are known.

If this gas tank is from a WWII aircraft, then the level of rust suggests that it was produced by the British, who used steel, rather than the Germans who used aluminium. Compressed gas was used for breathing and in fire extinguishers on WWII aircraft, as well as in braking systems and machine guns.

Although this object appears to be an isolated find, vessels working in Licence Area 127 should remain vigilant for further finds related to aircraft crash sites. Thanks to Southampton Wharf for accurately reporting the detail on this find.

Information about this discovery has been forwarded to:

- English Heritage
- BMAPA
- The Crown Estate
- The Receiver of Wreck
- The Ministry of Defence
- The National Monuments Record
- The Historic Environment Record for Dorset
- The Local Government Archaeology Officer for Dorset
- The Finds Liaison Officer (Portable Antiquities Scheme) Hampshire



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