

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

Protocol for Reporting Finds of Archaeological Interest

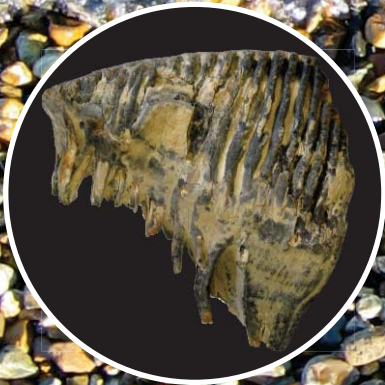
Annual Report to BMAPA 2013-2014

November 2014

Prepared by  
Wessex Archaeology



Issue 15  
**Dredged Up**  
from the past  
Autumn  
2014



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## Protocol for Reporting Finds of Archaeological Interest

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## Project background

The Protocol protects archaeology found during aggregate dredging, whether it is encountered on the seabed, on a dredging vessel or at a wharf after a cargo is landed.

Archaeological investigation takes place in every marine aggregate production area as part of the licence application process. Using geophysical and geotechnical survey, and analysis of available records, archaeologists identify and protect known and suspected sites of interest within aggregate extraction regions. Even after this level of investigation, unidentified sites and stray artefacts will be found with dredged loads. In response to this, a Protocol was proposed to define a framework through which such material could be reported, investigated and, crucially, protected.

Wessex Archaeology drafted the Protocol in 2005 on behalf of English Heritage and the British Marine Aggregate Producers Association (BMAPA).

BMAPA member companies have adopted the scheme voluntarily since 2006, though adherence to the Protocol has now become a formal condition of consent for new marine licences. When a find is encountered, it is reported through a Site Champion to a Nominated Contact who alerts the Implementation Service, currently operated by Wessex Archaeology.

The Protocol has been overwhelmingly successful, with over 1,100 finds reported since its inception. These range from Palaeolithic handaxes to military aircraft and maritime losses.

### Addendums to the Protocol

The Protocol is a blanket safety-net for artefacts and sites of all types and from all periods. Whilst the system implemented nearly a decade ago is still operating effectively, two key addendums have been drafted to complement it. These relate to munitions and aircraft.

The health and safety of those handling marine aggregate is paramount and where munitions are dredged the priority is that they are identified and assessed by appropriate experts. The BMAPA and The Crown Estate Guidance Note '*Dealing with Munitions in Marine Sediments*' details the correct procedures for treating suspected munitions. Ordnance of archaeological interest can be reported when confirmed safe and free from explosive.

An Annex to the Protocol was published in February 2008 in response to the discovery of significant aircraft remains. Aircraft Crash Sites at Sea gives additional advice including defining the actions of the Site Champion, Nominated Contact and the Implementation Service in the event of suspected aircraft finds being made.

Both documents are available online:

#### **Dealing with Munitions in Marine Sediments** -

[http://www.thecrownestate.co.uk/media/101148/dealing\\_with\\_munitions\\_in\\_marine\\_sediments.pdf](http://www.thecrownestate.co.uk/media/101148/dealing_with_munitions_in_marine_sediments.pdf)

#### **Aircraft Crash Sites at Sea** -

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

English Heritage remain the curator for heritage in England though Wessex Archaeology is currently conducting some aspects of English Heritage's role in respect of the Protocol 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 English Heritage in the first instance.

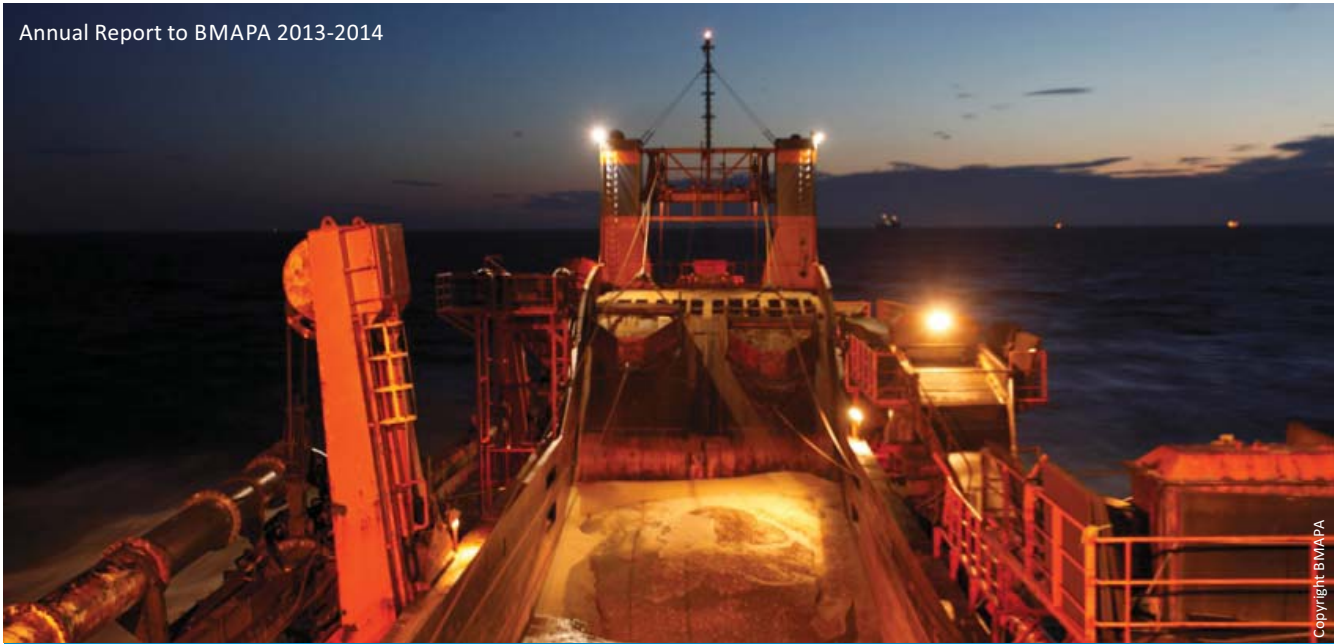


The Implementation Service has now completed its ninth year of operation and this annual report covers the period from 1st October 2013 to 30th September 2014.

## Access

Planning conditions relating to archaeology are placed on developments for the public benefit, which encompasses a duty to publicise results accordingly.

Details of all dredged finds are reported to: English Heritage; BMAPA; The Crown Estate; the National Record of the Historic Environment (NRHE – previously the National Monuments Record); and the appropriate local Sites and Monuments Record (SMR) or Historic Environment Record (HER), the Finds Liaison Officer for the Portable Antiquities Scheme (PAS), and the relevant Local Government Archaeology Officer (LGAO). All finds are also published on Wessex Archaeology's website and in the annual report, and the good work done by BMAPA companies with regard to the Protocol is made accessible through various dissemination programmes conducted both by Wessex Archaeology and by other organisations, including the Protocol awareness programme which produces Dredged Up.



To aid the smooth running of the Protocol, communication between Wessex Archaeology and BMAPA member companies is facilitated by a Nominated Contact for each company, as detailed below.

BMAPA Company	Nominated Contacts	Position
Brett Aggregates Ltd	Richard Fifield	Marine Resources Manager
Britannia Aggregates Ltd	Richard Fifield	Marine Resources Manager
CEMEX UK Marine Ltd	Graham Singleton Joseph Holcroft Samantha Bevan	Resource and Systems Manager Licence Manager GIS and Licence Co-ordinator
DEME Building Materials Ltd	Christophe Matton Tom Janssens	Marine Resources Manager General Manager
Hanson Aggregates Marine Ltd	Nigel Griffiths Chris Popplestone	Principal Resources Manager GIS and Resources Co-ordinator
Kendall Bros (Portsmouth) Ltd	Richard Kendall	Managing Director
Northwood (Fareham) Ltd	Tom Hills	Operations Manager
Norwest Sand & Ballast Ltd	Nick Brown	Site Supervisor
Lafarge Tarmac Ltd	Andrew Bellamy Edward Skinner	Resources Manager Marine Resources Coordinator
Volker Dredging Ltd	Will Drake	General Manager



## Nine years of the Protocol

During the ninth year of operation, 79 individual finds as diverse as machine guns and mammoth teeth have been reported through the Protocol. These have been added to a database of over 1,100 finds reported since the launch of the scheme in 2005.

The support of the marine aggregate industry has been overwhelming, especially as the Protocol was in operation during several years of decreased demand for aggregate due to an uncertain economic climate that constrained construction activities across the country. Despite a reduction in the amount of aggregate dredged during this period, reporting standards were maintained and significant archaeological finds have continued to be reported through the Protocol.

The basic model, that staff are empowered through awareness training to recognise and report material during work on site, is a cost-effective mitigation option for protecting our fragile and finite heritage. The marine aggregates industry has demonstrated this effectively over the last decade. The Protocol established, tested and successfully implemented by members of the British Marine Aggregate Producers Association has been adapted for use by several other industries, including offshore renewables and fishing, and Wessex Archaeology also run scheme specific protocols based on this model for developments in the UK.

During 2013 the total area of seabed licensed for aggregate dredging increased by 28km<sup>2</sup> to 739km<sup>2</sup>, up from 711km<sup>2</sup> in 2012. Growth was seen in both the East English Channel region, where the area licensed for extraction saw a 7.63km<sup>2</sup> increase, and the South Coast region, which increased by 52.72km<sup>2</sup>. Conversely other regions saw a decrease in the size of licensed area.

The granting of new licences brings new seabed areas into operation that have not been dredged previously. The potential for archaeology within these areas is high as previously undisturbed seabed layers may hold evidence of our past. Wessex Archaeology would urge anyone working with aggregate from new licence areas to be vigilant and to book awareness training if necessary.

As we enter the tenth year of Protocol operation we look forward with anticipation to what the following twelve months will bring.

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

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

To contact the Implementation Service email [protocol@wessexarch.co.uk](mailto:protocol@wessexarch.co.uk) or phone **01722 326 867**



## Legal responsibilities

Whilst adherence to the Protocol is voluntary unless included as a condition of licensing, adherence to Acts of Parliament is mandatory and a legal requirement. The Protection of Military Remains Act 1986 provides statutory protection for military aircraft and designated vessels lost during military service. The Merchant Shipping Act 1995, amongst other things, protects the rights of the owners of wreck. Other Acts that may be relevant include the Protection of Wrecks Act 1973, the Treasure Act 1996 and the Ancient Monuments and Archaeological Areas Act 1979. When finds are reported through the Protocol, the Implementation Service can advise on legal issues and support reporting to the Receiver of Wreck and the Ministry of Defence.



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.

## Raising awareness

The current phase of awareness work is funded by a tri-partite agreement between BMAPA, The Crown Estate and English Heritage, and implemented alongside the Protocol by Wessex Archaeology.

The awareness programme:

- empowers industry staff to recognise and report archaeology through in-person training delivered during awareness visits to wharves receiving aggregate from BMAPA companies;
- raises awareness of the scheme amongst third parties working on behalf of the industry, such as geotechnical and environmental survey companies;
- produces the 'Dredged Up' newsletter. The aim of this bi-annual publication is to publicise the service and highlight recent finds. The most recent issue, issue 15, was printed in October 2014.



## Visits to wharves and vessels

Since the 2012-2013 annual report was published, visits have been made to wharves in Shoreham and Essex and to Fugro EMU's offices in Southampton and Portsmouth. Visits were undertaken to wharves in Kent in November 2014.

These informal training sessions are key to the success of the scheme. As well as delivering the training, the visits allow Wessex Archaeology to maintain contact with wharves and vessels, boost interest in the scheme and promote it to new and existing staff.

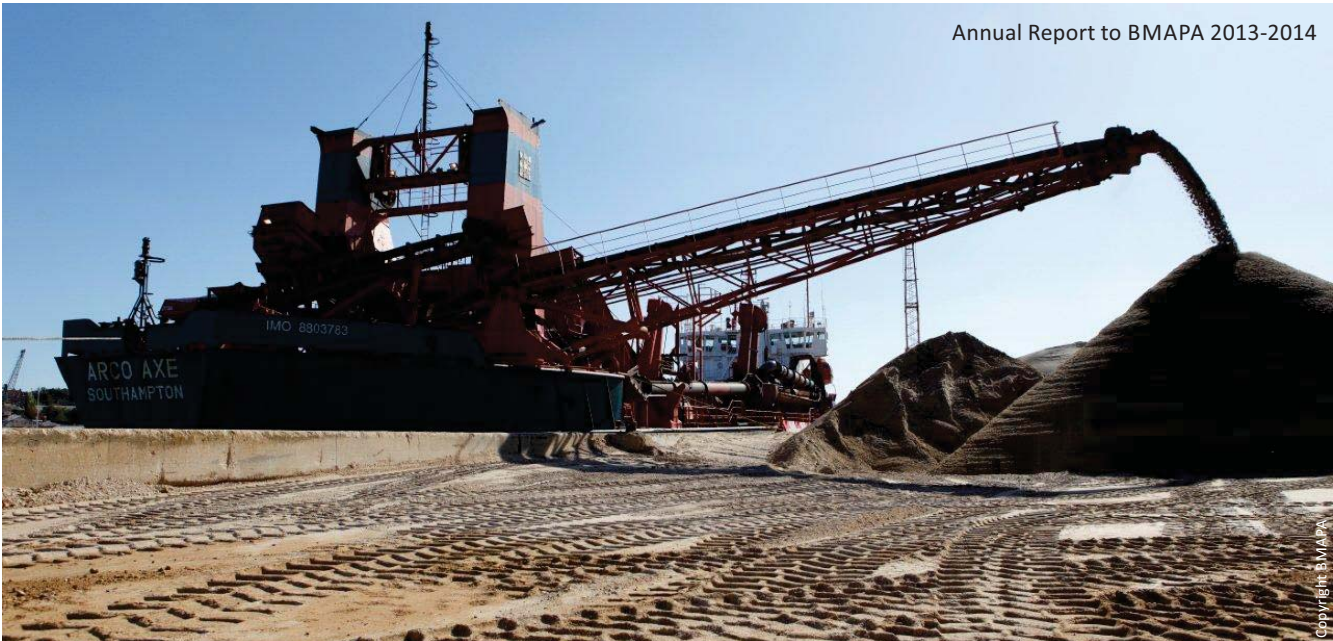
During a visit, specific information is provided regarding:

- 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;
- the basic remit 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.

Visits have been undertaken this year to British wharves receiving marine aggregate. Contact has been maintained with wharves, vessels and Continental wharves through the annual report and the Dredged Up newsletter. Ships regularly report material through the Protocol, suggesting a good awareness of the scheme despite the lack of in-person awareness.

If you would like to arrange an awareness visit, or would like to receive more advice on finds and finds reporting, please contact Wessex Archaeology via [protocol@wessexarch.co.uk](mailto:protocol@wessexarch.co.uk)

You can also view the awareness information pack, in English, Dutch and French, and read past issues of Dredged Up, online at <http://www.wessexarch.co.uk/projects/marine/bmapa/docs.html>



## Newsletter

The bi-annual 'Dredged Up' newsletter has celebrated its 15th issue which focused on military losses to commemorate the centenary of the start of the First World War. The newsletter, which is printed and available online, reaches a wide audience to promote the operation of the Protocol and provide a positive showcase for the industry's activities. It is also an important tool for raising and maintaining awareness by publicising dredged finds and publishing the winners of the annual finds awards.

Two issues were produced during the 2013-2014 reporting year, following 13 issues printed during previous phases of awareness work. Copies are distributed not only to wharves, vessels and BMAPA member companies but also through English Heritage, Wessex Archaeology and The Crown Estate to a variety of other organisations, individuals and the general public. Previous and current issues of the newsletter are available online <http://www.wessexarch.co.uk/projects/marine/bmapa/dredged-up>

## Finds Awards

To recognise examples of good practice by industry staff, BMAPA sponsors a series of annual finds awards. The awards recognise the performance of individual wharves and ships in delivering the requirements of the Protocol. Winners are nominated by Wessex Archaeology and approved by BMAPA and English Heritage.

The 2012–2013 Finds Awards were made to:

- Lafarge Tarmac's Burnley Wharf, Southampton - Best Attitude by a Wharf
- Hanson Aggregates Marine Ltd. *Arco Arun* - Best Attitude by a Vessel
- Lafarge Tarmac for the discovery of a pewter syringe at Bedhampton Wharf, deemed to be 2012-2013's Best Find

More details about the latest finds awards are available in Dredged Up 14.



## Reports: Protocol

During the ninth year of operation Wessex Archaeology received 53 reports through the Implementation Service. These reports encompassed details of 79 separate finds. Further details of each discovery are shown below and included in the wharf reports appended to this report.



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### Finds reported in 2013 – 2014

Report ID	Licence Area	Region	Wharf / Vessel	Description	No.
LTM_0498	395/1	Isle of Wight	Bedhampton	Aircraft remains	1
LTM_0499	395/1	Isle of Wight	Bedhampton	Fork	1
CEMEX_0501	360	East Coast	Northfleet	Animal bone	1
LTM_0502	254	East Coast	Greenwich	Cannonball	1
Hanson_0504	240	East Coast	<i>Arco Arun</i>	Sounding lead	1
LTM_0505	430	East Coast	Greenwich	Cannonball	1
LTM_0506	430	East Coast	Greenwich	Brass key – art deco design	1
CEMEX_0508	430	East Coast	Northfleet	Possible treenail	1
CEMEX_0509	319	East Coast	Northfleet	Pulley block	1
LTM_0510	296	East Coast	Ridham	Bolt	1
LTM_0511	127	Isle of Wight	Bedhampton	Hydraulic ram	1
LTM_0514	127	Isle of Wight	Burnley	Hatch cover	1
LTM_0515	395/1	Isle of Wight	Burnley	Propeller blade – aircraft remains	1
LTM_0516	395/1	Isle of Wight	Burnley	Cogged spindle - aircraft engine part	1
LTM_0517	395/1	Isle of Wight	Burnley	German aircraft engine part	1
LTM_0518	395/1	Isle of Wight	Burnley	Cannonball – potential bar shot	1
LTM_0520	395/1	Isle of Wight	Burnley	Iron artefact	1
LTM_0522	395/1	Isle of Wight	Burnley	Potential aircraft remains	2
LTM_0523	395/1	Isle of Wight	Burnley	Circular metal object – aircraft remains	1
LTM_0524	395/1	Isle of Wight	Burnley	Metal object – aircraft remains	1
LTM_0526	395/1	Isle of Wight	Bedhampton	Lamp wick mechanism	1
LTM_0527	127	Isle of Wight	Burnley	Glass bead	1
LTM_0528	395/1	Isle of Wight	Burnley	Aircraft remains	3
LTM_0529	395/1 or 127	Isle of Wight	Bedhampton	Animal bone	1
LTM_0530	395/1	Isle of Wight	Burnley	MG 131 machine gun, ammo clip and ferrous finds	8
Hanson_0531	366/367	East English Channel	<i>Arco Arun</i>	Hinge	1
CEMEX_0532	251	East Coast	Northfleet	Support or brace	1
Hanson_0533	240	East Coast	<i>Victor Horta</i>	Mammoth tooth	1
Brett_0534	351	Isle of Wight	Ipswich	Iron and brass finds	2
LTM_0535	127	Isle of Wight	Burnley	Bullets	6
LTM_0536	127	Isle of Wight	Burnley	Screws	2
LTM_0537	127	Isle of Wight	Burnley	Concretions – probable cannonballs	2
LTM_0538	395/1	Isle of Wight	Burnley	Driving band	1
LTM_0539	395/1	Isle of Wight	Burnley	Aircraft fragment	1
LTM_0540	458/464 or 430	East English Channel or East Coast	Greenwich	Torpedo component	1
Hanson_0542	240	East Coast	<i>Arco Dijk</i>	Ship's timber	1
LTM_0543	351	Isle of Wight	<i>City of Chichester</i>	Metal collapsible step	1
LTM_0544	395/1	Isle of Wight	Burnley	Aircraft remains	2
Hanson_0545	372/1	Isle of Wight	Dagenham	Ammonite fragments	3
Hanson_0546	401/2	East Coast	<i>Arco Arun</i>	Cylindrical iron find	1
LTM_0548	460	East English Channel	Ridham	Connecting rod	1
CEMEX_0551	458	East English Channel	Northfleet	Potential aircraft fragment	1
LTM_0556	127	Isle of Wight	Burnley	Cannonball	1
LTM_0557	395/1	Isle of Wight	Burnley	Aircraft remains	6
LTM_0559	127	Isle of Wight	Burnley	Water pump from a General Motors vehicle	1
LTM_0560	127	Isle of Wight	Burnley	Lever face plate	1
LTM_0561	127	Isle of Wight	Burnley	Probable smoke mortar round	1
LTM_0562	127	Isle of Wight	Burnley	Brass latch	1
LTM_0563	395/1	Isle of Wight	Burnley	Metal disk with numbers	1
LTM_0564	395/1	Isle of Wight	Burnley	Ceramic floor tile	1
LTM_0565	395/1	Isle of Wight	Burnley	Aircraft fragment	1
LTM_0566	447	Thames	Greenwich	Browning M2 machine gun bolt	1
LTM_0567	447	Thames	Greenwich	Tokarev TT-33 pistol	1



## Specialists

Wessex Archaeology consults with heritage experts, both in-house and from external companies and organisations, to ensure that discoveries are identified accurately and the archaeological value of each object is understood. The table below provides a list of all of the specialists that gave advice during the 2013-2014 reporting year. Specialists that we have contacted in the past but not during this operational year are still included in Wessex Archaeology's internal lists, but have been omitted from the table below. We are very grateful to all of the specialists who have assisted in the identification of Protocol finds over the last nine years.

Expert	Advice given concerning	Institution/Organisation
Cathie Barnett	Wood	Wessex Archaeology
Norman Bonney	Ordnance	Former lieutenant colonel Royal Army Ordnance Corps
Pip Brewer	Mammoth remains	Natural History Museum
Dave Budd	Vehicle mechanics	Previously of Wessex Archaeology
George Burgess	Torpedoes	Royal Navy Submarine Museum
Ewen Cameron	Military aircraft	RAF Museum
Paolo Croce	Maritime artefacts	Wessex Archaeology
Bob Davis	Archaeological artefacts	Wessex Archaeology
Jonathan Ferguson	Firearms and ordnance	Royal Armouries Museum
Toby Gane	Maritime artefacts	Wessex Archaeology
Nicholas Hall	Ordnance	Royal Armouries Museum
Lorrain Higbee	Animal bone	Wessex Archaeology
Representatives from Klintberg & Way	General Motors vehicle components	Klintberg & Way
Professor Adrian Lister	Mammoth remains	Natural History Museum
Phil Magrath	Cannonballs	Royal Armouries Museum
Euan McNeill	Maritime artefacts	Wessex Archaeology
Lorraine Mepham	Archaeological artefacts	Wessex Archaeology
Sue Nelson	Archaeological artefacts	Wessex Archaeology
Trevor Parker	Ordnance	The Ordnance Society
Graham Scott	Maritime artefacts	Wessex Archaeology
Dave Welch	Firearms and ordnance	Ramora UK







LTM\_0566



Brett\_0349 Tarmac\_0402 LTM\_0530

- 0349 - Brett rifle
- 0402 - Tarmac rifle
- 0530 - LTM MG 131 machine gun
- 0566 - LTM Browning machine gun bolt

## Case study

### Firearms and machine guns

Gunpowder was invented in China in the 9th century and the first crude versions of what might be called a firearm followed shortly afterwards, in the tenth century. Gunpowder reached England by the thirteenth century and early cannon are recorded being used in the mid-fourteenth century. Successive technological development led to the creation of smaller weapons such as hand-held cannon, which eventually evolved into muskets, pistols, rifles and modern semi-automatic and automatic weapons.

The invention of firearms revolutionised the way war was fought. Prior to this, combat would have been conducted, out of necessity, at close range, with hand weapons such as swords, pikes and halberds delivering blows onto the enemy. Arrows could be used over a distance but they reach their targets with less energy than a bullet can, giving them less destructive impact. Firing arrows also takes a great deal of training, skill and above all strength, especially when a longbow is used. Firing a gun, however, sadly requires none of these, and the invention of firearms helped to level the theatre of war.

Evidence of conflict – from the Spanish Armada to the World Wars - lies on our seabed and is regularly recovered during dredging for marine aggregates. Cannonballs and bullets record the use of projectile weapons, whilst the remains of sunken ships and downed aircraft tell of the men and machines lost during war. Firearms, including pistols and rifles, and machine guns, have also been reported, including three found within the 2013-2014 reporting year. Part of a German MG 131 machine gun was brought ashore in January 2014 and the remains of a Browning M2 machine gun was recovered in September. Amongst the same cargo as the M2 was a Tokarev TT-33 pistol.

The Browning M2 .50 calibre machine gun bolt, which was dredged from Area 447 in the Thames Estuary region and delivered to Greenwich Wharf, dates to the Second World War. This American gun was fitted to combat aircraft such as the P-51 Mustang fighter and the B-17 bomber. It also had a naval role and was used on board vessels operating in British waters. In the same cargo was a pistol which has been identified as a Russian Tokarev TT-33. Developed in Soviet Russia as an improvement on the earlier TT-30 pistol, the TT-33 was considered a reliable semi-automatic weapon. Production ceased in Russia in 1954 but variants based on the TT-33 were produced by Soviet bloc countries after this date, and versions are reportedly still in use today in North Korea and Bangladesh.



LTM\_0530

A second machine gun was also reported this year – a German MG 131. This weapon, found amongst material from Area 395/1 which was delivered to Burnley Wharf, dates to the Second World War and, in common with the Browning M2, was fitted to aircraft, though the MG 131 being a German weapon would have been fitted to a *Luftwaffe* aircraft such as the Junkers Ju 88.

The two machine guns have potentially reached the seabed through the downing of the aircraft they served. Researcher Ross McNeill, cited in Wessex Archaeology's *Aircraft Crash Sites at Sea*<sup>1</sup> project report, has identified over 11,000 RAF losses at sea occurring between the outbreak of war in 1939 and 1990. Add to this the number of aircraft of other nationalities lost in British waters, and we can see that the potential resource of downed aircraft offshore is huge. The locations of aircraft that fell at sea are not well recorded, despite work to enhance records of their locations, and finds relating to them are likely to continue to be made during aggregate dredging.

The TT-33 pistol is more intriguing and how it reached the seabed is not known. It may have been carried as personal kit and lost or otherwise deposited at sea. It is clearly a long way from Russia, where it was made, or Germany where it may have been used in combat. One theory put forward is that it may have been dropped over board from a ship by someone at the end of its use, potentially at the end of the Second World War.

These are not the first guns to be dredged and reported through the Protocol – an MG 15 magazine was found amongst aircraft wreckage from the east coast in 2007, rifles were found in 2010 and 2011, and part of a .30 calibre Browning machine gun was dredged in 2012. Two further pistols have also been recovered – part of a First World War Webley Mark VI in 2009 and a Vis or Radom pistol dredged from Area 296 in 2008.

Dredged weapons and munitions will continue to enhance our understanding of the war at sea in conflicts, both recent and historic.

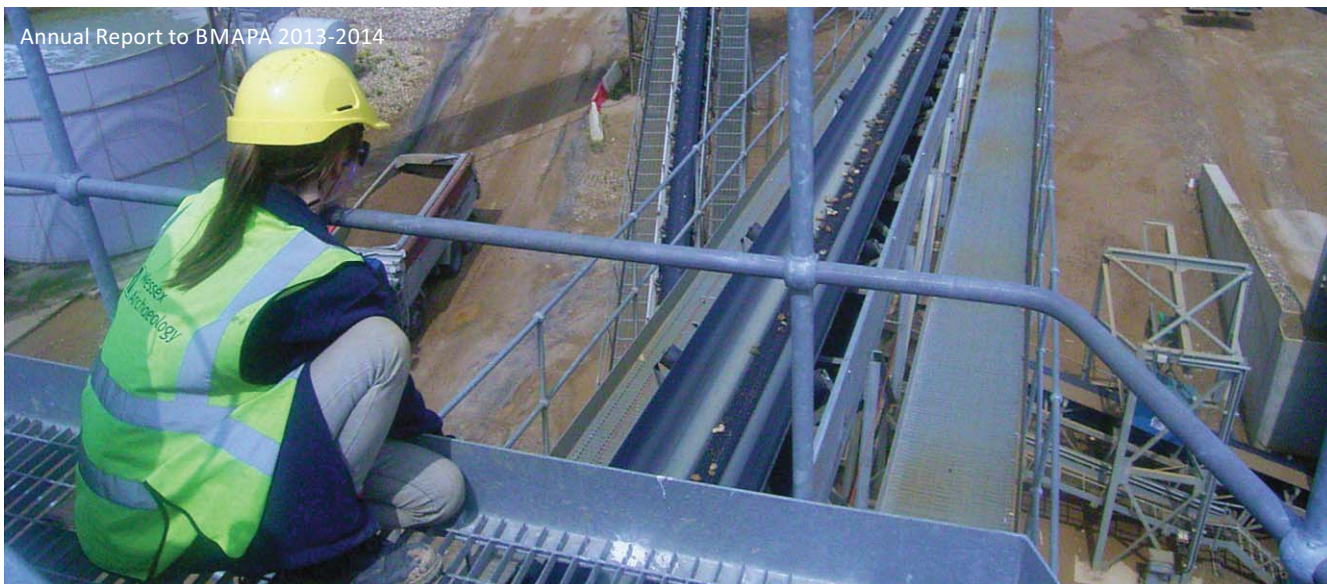


0297 - Tarmac Webley pistol  
0197 - UMA Vis or Radom pistol  
0567 - LTM Tokarev TT-33 pistol  
0530 - LTM MG 131 machine gun

1. Wessex Archaeology, 2008, *Aircraft Crash Sites at Sea: A Scoping Study*, Archaeological Desk-based Assessment, Unpublished report WA Ref:66641.02

Health and safety is paramount when handling munitions and ordnance found amongst marine aggregate. The BMAPA and The Crown Estate Guidance Note 'Dealing with Munitions in Marine Sediments' details the correct procedures for treating suspected munitions. Ordnance of archaeological interest can be reported when confirmed safe and free from explosive.

[http://www.thecrownestate.co.uk/media/101148/dealing\\_with\\_munitions\\_in\\_marine\\_sediments.pdf](http://www.thecrownestate.co.uk/media/101148/dealing_with_munitions_in_marine_sediments.pdf)



Work on this important site of European archaeology continues and we will continue to update you through the Dredged Up newsletter.

## Case study

### Area 240 handaxe update

In 2008 78 handaxes were found amongst aggregate from Area 240 which lies in the East Coast region, off the coast of Norfolk. They were delivered to SBV Flushing in Holland where they were recognised and collected by a local archaeologist and reported through the Protocol.

These finds are incredible. The quantity of material is significant, as 78 handaxes from one licence area suggests a clear site of Palaeolithic (Old Stone Age) activity, and the condition of some of the handaxes – described by archaeologists as 'fresh' - suggest that they have not been moved or rolled on the seabed. They have potentially lain undisturbed for a quarter of a million years and the layer they were removed from is highly likely to hold further evidence about this distant time.

Hanson Aggregates Marine Ltd. implemented an archaeological exclusion zone over part of Area 240 in order to protect any further remains on the seabed, and Wessex Archaeology has been investigating both Area 240, and the wider East Coast dredging region to better understand the finds and how we can protect Palaeolithic material during aggregate dredging.

Since 2008, Area 240 has been subject to a variety of different survey techniques including geophysical survey to map the seabed and the layers below it, and geotechnical survey including coring. Archaeologists have undertaken experimental watching briefs out on a dredger and further investigation of material from East Coast licences has occurred through a programme of wharf monitoring .

This involves visually inspecting the coarse fraction of cargoes from specific areas within licence areas when they are landed to identify and collect flint tools, animal bones and any other artefacts that might be amongst the aggregate. Several wharves receiving material from the East Coast have played host to archaeologists over the last three years. By doing this we are hoping to test several hypotheses about the archaeological potential of the East Coast dredging region including:

- Whether Palaeolithic material is only recovered from one layer – referred to as 3B – and not from other surrounding layers.
- If Palaeolithic material is concentrated in discrete areas within this layer.
- Whether the artefacts from the Palaeolithic found within 3B have remained *in situ* and not been moved or rolled until they were dredged.

Wessex Archaeology would like to thank all of the wharf and vessel staff that have had archaeologists on site for your help and support. The finds from Area 240 have received international acclaim and the handaxes won the 2008 British Archaeological Award for Best Archaeological Discovery.



## Liaison and accessibility

Details of each discovery have been sent to:

- Mark Russell** - British Marine Aggregate Producers Association
- Marion Page** - National Record of the Historic Environment, English Heritage
- Mike Cowling** - The Crown Estate
- Ian Selby** - The Crown Estate
- Mark Wrigley** - The Crown Estate

Details of discoveries regarded as wreck under the Merchant Shipping Act 1995 have been forwarded to the Receiver of Wreck. In 2013–2014 the following reports were deemed to represent items of wreck:

- |               |               |               |
|---------------|---------------|---------------|
| • LTM_0498    | • LTM_0522    | • LTM_0543    |
| • LTM_0499    | • LTM_0523    | • LTM_0544    |
| • CEMEX_0501  | • LTM_0524    | • Hanson_0546 |
| • LTM_0502    | • LTM_0526    | • LTM_0548    |
| • Hanson_0504 | • LTM_0527    | • CEMEX_0551  |
| • LTM_0505    | • LTM_0528    | • LTM_0556    |
| • LTM_0506    | • LTM_0530    | • LTM_0557    |
| • CEMEX_0508  | • Hanson_0531 | • LTM_0559    |
| • CEMEX_0509  | • CEMEX_0532  | • LTM_0560    |
| • LTM_0510    | • Brett_0534  | • LTM_0561    |
| • LTM_0511    | • LTM_0535    | • LTM_0562    |
| • LTM_0514    | • LTM_0536    | • LTM_0563    |
| • LTM_0515    | • LTM_0537    | • LTM_0564    |
| • LTM_0516    | • LTM_0538    | • LTM_0565    |
| • LTM_0517    | • LTM_0539    | • LTM_0566    |
| • LTM_0518    | • LTM_0540    | • LTM_0567    |
| • LTM_0520    | • Hanson_0542 |               |

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) in the 2013-2014 reporting year.

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 the PAS, LGAO and SMR/HER closest to the dredging area. In the case of discoveries made at wharves where the dredging area is unknown they are reported to the PAS, LGAO and SMR/HER nearest to the wharf.

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

In the ninth 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:

- LTM\_0544
- LTM\_0498
- LTM\_0511
- LTM\_0515
- LTM\_0516
- LTM\_0517
- LTM\_0522
- LTM\_0523
- LTM\_0524
- LTM\_0528
- LTM\_0530
- LTM\_0539
- CEMEX\_0551
- LTM\_0557
- LTM\_0565



## Discussion



### Importance

53 individual reports were raised during the 2013-2014 reporting year, comparable to last year's 52 reports. The Implementation Service expects around 50 reports a year and the figures from the last two reporting years demonstrate a recovery from the drop to 36 reports seen during the 2011-2012 year, which was marred by economic uncertainty.

Without the recognised framework of a reporting Protocol, these finds – which this year have been as diverse as treenails and torpedo components – may not have been protected and investigated. The seabed within dredging regions has the potential to hold incredibly significant archaeological remains, such as the Palaeolithic finds from Area 240 investigated on page 10, and the marine aggregate industry is leading the way to their protection with the implementation of a Protocol.

### Key issues

The Protocol has not been rewritten since its inception and has only had minor addendums with relation to the handling of specific finds appended to it, demonstrating how robust and effective the scheme put in place nine years ago was. Despite this, during each year of Protocol implementation minor operational situations are recognised and the service adapts to meet these needs. This year the following points have been raised for discussion.

#### ***Newly licensed seabed area***

The total area of seabed licensed for aggregate extraction increased in 2013 by 28km<sup>2</sup> with increases in the total licensed area of both the South Coast and East English Channel regions. Where this increase represents a licence that has not previously been dredged, or which has not been dredged recently but which has been re-licensed, there is high potential for the recovery of archaeological material. All aggregate extraction areas are subject to archaeological investigation before the start of dredging but discoveries are likely to be made despite this, hence the implementation of a Protocol. Previously undisturbed seabed, or seabed in areas that has not recently been dredged, has greater potential to hold material that may be archaeologically significant and teams working with cargoes from these areas should remain vigilant. Awareness training is available to support staff.

#### ***Pictures/slide shows***

Most of the finds reported through the Protocol are investigated only by study of the photographs provided by the wharves and vessels making the discovery. The Implementation Service has previously issued advice on taking effective photographs and a photographic scale is included in the Protocol awareness pack, available online and from Wessex Archaeology.

The clarity of photographs has been raised as a concern in previous annual reports. The Implementation Service is very pleased to report that photographic standards are now universally high, as is the level of information on specific finds provided by the finders. Some wharves now provide a short slideshow of images, with associated annotations about size, scale or important features, and others provide annotated images or PDF documents, both of which are much appreciated.



### ***Timely reporting***

Finds that are deemed to be wreck – those that have come from a ship or aircraft – must be reported to the Receiver of Wreck within 28 days of their removal from the seabed. This is a legal requirement that exists regardless of the presence of a Protocol. The Implementation Service assists in this reporting by generating the relevant report and disseminating it. The rapid reporting of finds is important in order that the Implementation Service can generate and issue the report before the expiration of the 28 day period.

The rapid reporting of finds is also archaeologically important. Some finds may require specialist conservation (and the sooner this process begins the higher the chance of the protection and continued survival of the artefact) whilst other finds may be indicative of a further site of significance. Reporting finds promptly after their discovery will help to protect such sites and finds on the seabed. Reporting speed has improved greatly from previous years and most finds are now being uploaded onto the reporting console in a timely manner after their discovery.

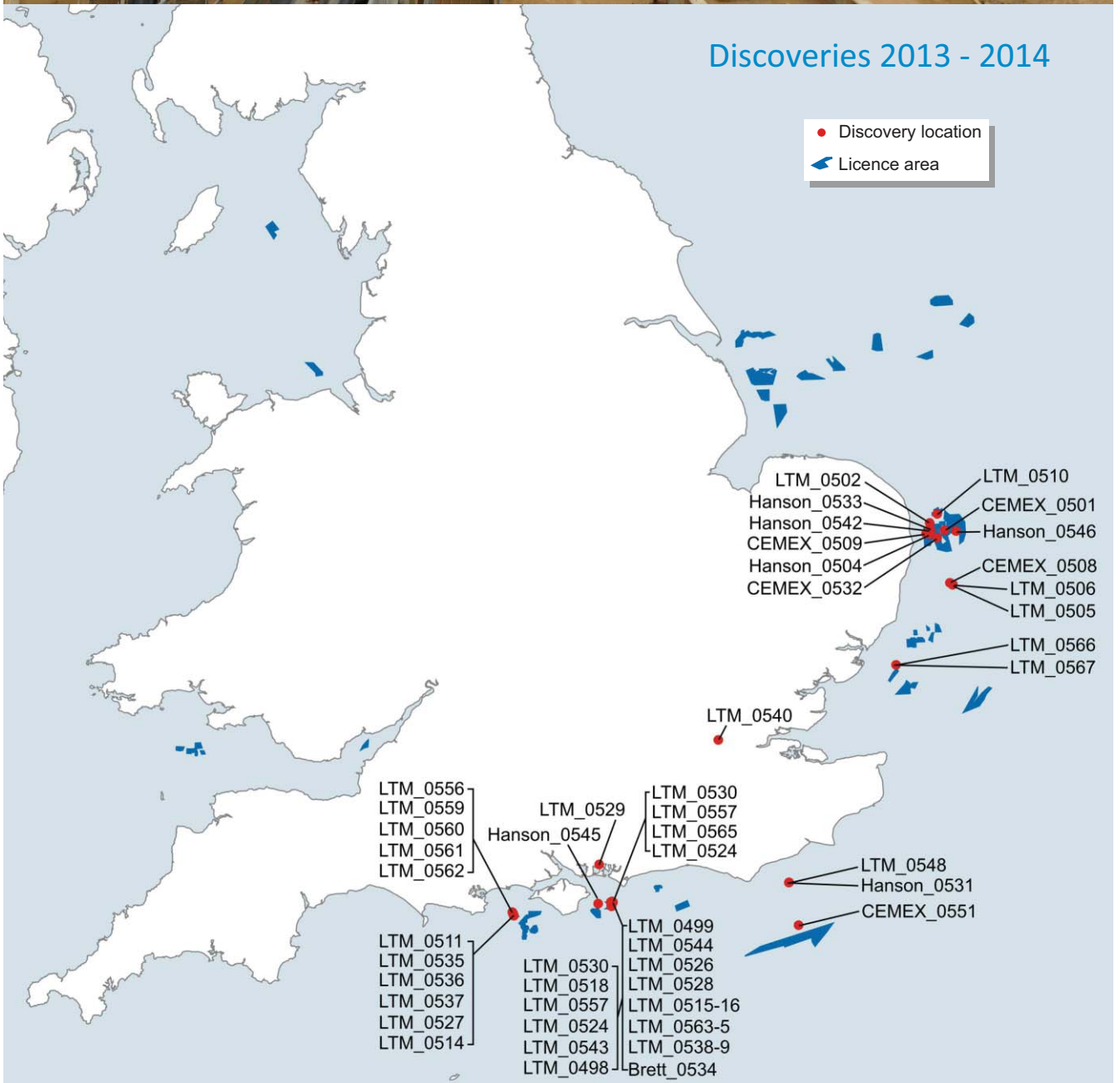
### ***Staffing at WA***

New staff are joining the Protocol Implementation Service team at Wessex Archaeology. Peta, Paolo and Hanna, all experienced marine archaeologists, join Gemma and Andrea in implementing the scheme. Any question or query can be directed to any member of the team, either directly or via [protocol@wessexarch.co.uk](mailto:protocol@wessexarch.co.uk). This email address contacts every member of our staff equipped to handle Protocol enquiries and we are very happy to help and advise via email, over the phone or in-person through awareness training.

### ***Regions with nil return***

There were no reports of finds amongst material dredged from the North West, South West or Humber regions during the 2013-2014 Protocol year. Both the North West and South West regions are targeted for sands and screens fitted to the dredgers prevent larger objects (typically >5-10mm) from entering the hold, likely accounting for the lack of archaeological reports from these regions. The Humber region however has previously yielded archaeological material, though no reports have been received from this region since the 2011-2012 reporting year.

This is potentially due to a prolonged drop off in the tonnage of material dredged from the Humber region - 1.53 million tonnes of construction aggregate was dredged from the region in 2013 and 1.45 million tonnes in 2012, compared to 2.18 million tonnes in 2011 and 2.62 million tonnes in 2010. It could also be attributed to the percentage of construction aggregate from this region delivered to Continental wharves (61% in 2013). Whilst the Protocol applies to material dredged from British licences and delivered to wharves on the Continent, there may still be obstacles preventing the regular reporting of material by Continental wharves. Finally, it could be due to a lack of awareness training for northern wharves in the UK, who last requested a visit by the Awareness team in 2008 and who received just over a quarter (26%) of the aggregate dredged from the Humber region in 2013.



## Artefact patterns and distribution

Archaeology is not distributed on the seabed in an even fashion and some regions will have greater potential for archaeological material to be present than others. The quantity of material will be dependent on various factors including the activity that has contributed material culture to the seabed (as some activities will be more likely to deposit material remains than others), taphonomic processes (e.g. the processes governing the burial and decay of archaeological material) and the origin and nature of the geological deposits being targeted and the type of dredging activity taking place. For example, it is estimated that 90% of the material used by people during the Stone Age was organic which will have long since biodegraded, so even in an area of high Palaeolithic activity archaeological remains may not be abundant. Conversely, regions that hold Second World War material will have a high level of archaeology given that ships and aircraft, weapons and ammunition are constructed from metal which is highly durable.

Considering finds on a regional basis is therefore helpful only as an overview, to provide a general picture of the finds from each region over a year. This can be helpful when considering future licence applications within existing dredging regions. Highlighting patterns can identify potential sites of archaeological interest and possibly predict which licences are likely to yield archaeological material in the future.

### 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;
- South Coast – Owers Bank;
- South Coast – Isle of Wight;
- The South West;
- The North West.

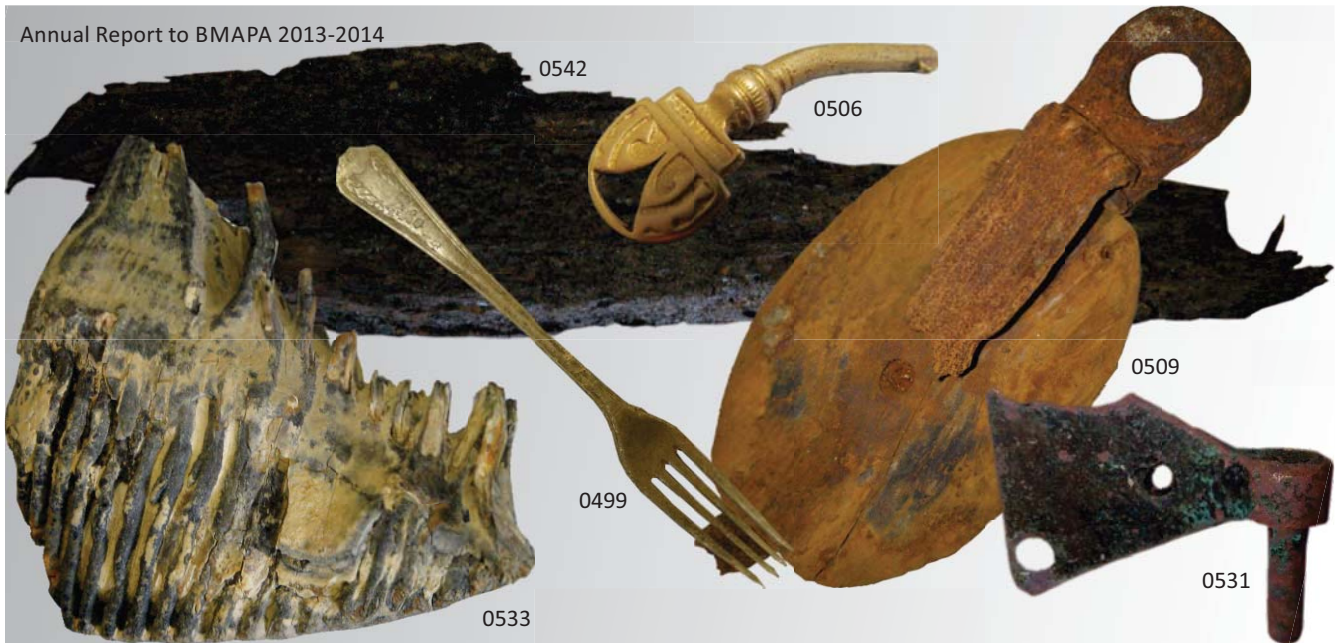
In the 2013-2014 dredging year a trend established in previous years has continued, with the majority of finds originating from the South Coast Isle of Wight region. This year 66% of the reports raised with the Implementation Service detailed finds from this region and 32 out of the 35 reports from this region refer to material from Areas 395/1 and 127. The South Coast region (Isle of Wight and Owers combined) yielded 3.4 million tonnes of construction aggregate in 2013, 23% of the total tonnage dredged across all regions. A known spread of post-war rubble and the wreckage of a Ju 87 aircraft in the vicinity of Area 395/1 have contributed to the high number of reports from this region.

Twelve of the this year's 53 reports came from the East Coast, three from the East English Channel and two from the Thames Estuary. One report was found amongst mixed cargo and could have come from either the East English Channel or the Thames Estuary.

No reports were received from cargoes dredged from the Humber, South West or North West regions.

Region	Quantity of construction aggregate dredged in 2013 (million tonnes)	Number of finds reported 2013-2014 reporting year (2012-2013 reporting year)
Humber	1.53	0 (0)
East Coast	4.25	12 (11)
Thames Estuary	0.74	2 (2)
East English Channel	3.4	3 (5)
South Coast – Owers Bank and Isle of Wight combined	3.4	35 (28)
The South West	1.02	0 (0)
The North West	0.38	0 (0)





## Distribution of artefacts by archaeological typology

### Discoveries from 2013-14

- 0542 - Ship's timber
- 0533 - Mammoth tooth
- 0499 - Cunard steamship fork
- 0506 - Art Deco key
- 0509 - Pulley block
- 0531 - Hinge
- 0526 - Lamp wick
- 0540 - Torpedo propeller shaft
- 0535 - Bullets
- 0515 - Ju 87 propeller blade
- 0527 - Bead
- 0510 - Bolt

### Palaeolithic finds

Only one find reported this year is confirmed to relate to the Palaeolithic – a mammoth tooth found by the crew of the *Victor Horta* and reported as Hanson\_0533. This tooth was identified as an upper molar of a woolly mammoth that was around 35 years old at the time of death. It dates to between 20,000 and 70,000 years ago and was dredged from Area 240 in the East Coast region, which has previously yielded significant Palaeolithic artefacts (see page 10).

Two further finds – the thoracic vertebrae of a large mammal (LTM\_0529) and another animal bone (CEMEX\_0501) have the potential to date to this time, though they may also represent the victualing of vessels in more recent periods.

### Maritime artefacts

With Britain's long maritime history, artefacts that tell of seafaring are to be expected in the offshore context and several reports made through the Protocol this year have come from boats or ships. These include a pulley block (CEMEX\_0509), a hatch cover (LTM\_0514) and a ship's timber (Hanson\_0542).

Several finds have also been reported that are likely to have been lost from a ship, as opposed to with one. These include a fork from the Cunard Line Steamship Company which was in operation from 1879 until 1934. The fork bearing the company's name and crest was dredged from Area 395/1 which lies in the South Coast region and reported by Bedhampton Wharf as LTM\_0499. Another find thought to have been lost overboard from a ship was a key, reported by Greenwich Wharf from a cargo dredged from Area 430 in the East Coast region. This key is thought to date to the inter-war period (1920/1930) due to the Art Deco styling of its decoration. Its small size and decorative bow indicate that it unlocked furniture and comparable examples have been found originating from America.

None of the finds reported this year are thought to relate to an unidentified wreck. Finds reported this year are thought to relate to known wrecks lying in or near licence areas (and identified during impact assessment prior to dredging) or to have been lost from ships, not with them.

### Ordnance and weapons

This reporting year has seen a moderately high number of weapons and ordnance reported through the Protocol, hence the case study on page 8. Two machine guns have been reported – an MG 131 from the South Coast and a Browning M2 from the Thames Estuary region - alongside a Russian Tokarev TT-33 pistol, also from the Thames Estuary region.

Four cannonballs have been found, and two concretions that are thought to be cannonballs. Two of these were from the East Coast and the other two, and the concretions, were from the South Coast. Both regions are known to have been the location of battles during the Age of Sail.



More recent are a selection of bullets found amongst material from Area 127 which lies in the South Coast region, to the east of the Isle of Wight. One of these was identified as a .50 calibre round for a Browning machine gun (similar to the Browning M2 found at Greenwich Wharf and mentioned on page 16) whilst four were the British equivalent fired by a Vickers .50. The last bullet posed a bit of a mystery. It is a rare .276 Enfield bullet fired by a gun made in limited quantity for testing which did not enter mass production or service. This gun was tested at Whale Island, off Portsmouth, some 5km as the crow flies, and on the opposite side of the Isle of Wight, to the area in which it was recovered. Its presence in Area 127 has not yet been explained.

Adding to the list of ordnance and weapon related finds dredged this year is part of the drive shaft of a torpedo found at Greenwich Wharf amongst material from 458/464 West Bassurelle which was mixed with material from Area 430, off Southwold.

Conflict, both historical and modern has left a great deal of weaponry, ordnance and military paraphernalia on the seabed and it is anticipated that further evidence of these conflicts will continue to be recovered in the future.

#### Aircraft

Finds from Area 395/1 continue to suggest that a Ju 87 Stuka aircraft lies in or near the Licence Area. Finds reported this year include part of a propeller which appears to have a bullet hole through it. Made from duraluminium, this type of blade was fitted to Ju 87s though it was also used with other aircraft that flew with Jumo engines. Interestingly, this type of propeller was only used up until 1940 when composite wooden blades were introduced. This supports previous evidence that the Stuka in or near Area 395/1 may have been downed during the Battle of Britain.

One of the machine guns mentioned above, the MG 131 which was dredged from Area 395/1, is not thought to be associated with the potential Stuka, as it was not fitted to Ju 87s. It was fitted instead to Ju 88s, Fw 190's and late models of the Bf 109 fighter. Part of a Ju 88 was dredged from Area 395/1 in August 2013 (Hanson\_0487) and it is possible that the two are connected.

In addition to the finds from Area 395/1, a potential aircraft fragment was dredged from Area 458 in the East English Channel region, and a hydraulic ram manufactured by the Blackburn Aircraft company from a currently unidentified aircraft was dredged from Area 127 in the South Coast region.





## Conclusion

As we enter the tenth year of Protocol implementation we celebrate the continued success of the scheme which has to date protected over 1,100 artefacts ranging from Palaeolithic handaxes to Second World War aircraft.

The Protocol would not be effective without the continued support of the industry and of the crews and staff who regularly find, identify and report archaeological material from amongst dredged loads.

As stated in last year's report, archaeology on the seabed is separated from us by chronological time, distance and practicality. The marine aggregates Protocol demonstrates effectively how these limitations can be overcome to ensure the protection of our fragile and finite heritage.

We would like to thank everyone who has helped to support the Protocol during the 2013-2014 reporting year.

### ***The Future***

The Protocol Implementation Service continues to be run by Wessex Archaeology and finds are reported regularly. If you have any questions about finds reporting and the Protocol, please contact us via [protocol@wessexarch.co.uk](mailto:protocol@wessexarch.co.uk)



## LTM\_0498: Aircraft Remains

This find was discovered at Lafarge Tarmac's Bedhampton Wharf. It was amongst scrap and its dredging area is not known. However, a number of similar finds have been reported from Area 395/1 recently and this find is believed to be associated with them.

This is one of several finds reported from the South Coast region towards the end of 2013 which has been interpreted as having come from an aircraft. The other finds have been identified as parts of a Jumo engine and parts of a Stuka dive bomber, both used by the Luftwaffe during WWII. This piece has no real distinguishing features and is damaged – damage either caused when the plane ditched, after deposition or which has occurred on retrieval. It has not been possible to conclusively identify this find though it is believed to be connected with the earlier finds from Area 395/1.

Aircraft crash sites at sea are notoriously difficult to identify – records tracking the location of downed planes were poorly kept and aircraft are not always visible during geophysical surveys. The finds from 395/1 were the first indication that a plane may be lying within the licence.

The recovery of aircraft material from 395/1 was something of a surprise given that the Area has been in use since the late 1990's and it is being dredged within historic footprints. The aircraft material from the Licence was likely to have been buried and this is potentially why it has not come to light previously.

Whilst this piece itself has not changed our interpretation of the Area it will be added to an archive of information which is slowly gathering a picture of the submerged remains in Area 395/1. Further finds will help to enhance this picture.

Information about this discovery has been forwarded to:

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



## LTM\_0499: Fork

This fork was discovered at Bedhampton Wharf by Gary Cooper. It was dredged with material from Area 395/1 which lies to the east of the Isle of Wight and was discovered in September 2013. Lafarge Tarmac sent it to Wessex Archaeology for analysis.

Despite the excellent photographs of the decorative elements of this fork taken by Lafarge Tarmac staff, this find could only be identified by in-hand analysis. The fork was sent to Wessex Archaeology where finds experts Lorraine Mepham and Sue Nelson examined it under a microscope. The wording (shown right) reads 'The Cunard Line Steamship'. Unfortunately, the key component of this message ('Cunard Line') is obscured by damage. The fork was eventually identified from the Cunard company branding, shown on the fork in the image on the right which was compared with examples seen on Cunard publications.



Detail on LTM\_0499

The Cunard Line Steamship Company brand was used from 1879 until 1934 giving a neat 55 year period in which this fork is likely to have been made. Cunard, which began trading around 1840, established the Steamship line in 1879 to transport mail and passengers from Liverpool to America. It was a lucrative route and they faced tough competition from companies such as the White Star line, who Cunard went on to acquire in 1934. Shipping in this period was interrupted by the outbreak of the First World War, during which civilian vessels were pressed into service as hospital ships, troop ships and merchant cruisers. Post-war, Southampton replaced Liverpool as the British port serving Cunard vessels.

This fork is silver plated and displays the Cunard logo featuring a lion holding a stylised globe underneath a crown. The company logo is normally encircled by laurel branches which on this fork appear to have been moved to provide decoration extending from the base of the handle. It is not known how the fork came to be lost in Area 395/1 though it is highly likely to have been lost from a vessel.

Information about this discovery has been forwarded to:

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



## CEMEX\_0501: Animal Bone

This find was dredged from Area 360 which lies in the East Coast region. It was found by Andrew Lingham at Northfleet Wharf in October 2013.

Wharf staff correctly identified this find as being animal bone and images of the find were shown to Wessex Archaeology's zooarchaeologist, Lorrain Higbee. She confirmed this identification and went further to suggest that, based on images alone, the find looked like part of a vertebra or possibly a proximal fragment of femur. Vertebrae are the bones that form the spine and the femur is the upper rear limb bone – in humans also known as the thigh bone. The proximal end of a bone is the one closest to the core of the body, so in this instance it would be the part of the femur that attaches with the pelvis, if it is found to be part of a femur.

Identifying which species of animal this bone has come from is not possible based on images. Given the size of the artefact it is likely to have come from a large animal and the bones of a species such as cattle may provide the closest parallel for this find, though this cannot be ascertained for certain at this stage.

Animal bone can enter the archaeological record offshore in a number of ways - the two most common being that the animal lived and died in or around the dredging area when this land was dry during the last Ice Age, or that the bone was lost from a ship, potentially after the meat had been used for victualing the vessel.

Interestingly, all of the finds dredged from Area 360 and reported during the past 8 years of the Protocol potentially relate to the earlier of these two events hinting that this bone, which appears dark in images suggesting a degree of fossilisation, dates to the last Ice Age which ended c. 12 thousand years ago. Finds from the Area include an eroding peat layer containing animal bone and struck flint, which was found by CEMEX staff and reported in the first year of Protocol operation (2005-2006). Further finds from this Licence will continue to enhance our understanding of the archaeology of Area 360.

Information about this discovery has been forwarded to:

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



## LTM\_0502: Cannonball

This artefact was discovered by Jamie Wallis at Lafarge Tarmac Marine's Greenwich Wharf. It was dredged by the City of Westminster from Area 254 which lies in the East Coast region, approximately 10km from Great Yarmouth.

This find is clearly a cannonball – a heavy circular projectile fired from cannon during conflict or training. These finds are commonly made of solid iron (some examples are hollow but these are rarer) which makes dating them accurately difficult.

Archaeological finds are typically dated based on context or typology. To date by context artefacts are considered based on the finds around them so if a cannonball were recovered from the site of a 17<sup>th</sup> century shipwreck, the ball may be reasonably assumed to also date from the 17<sup>th</sup> century. Typological dating assumes a progression or change in an artefacts construction which can be traced through time. This type of dating is commonly used for pottery and flint tools. The difficulty with dredged cannonballs is that they rarely have a context (and not just because of the way they are found, they may also lack context as firing can leave them isolated on the seabed) and cannonballs have few typological variations, the most common they do possess being diameter and weight.

This ball measures 140mm diameter and weighs between 8 and 8.5kg (weighed on the only scales available at the wharf). The diameter would suggest that it was fired from a 24-pounder gun which gives a broad range for the date of the find of the 17<sup>th</sup> – 19<sup>th</sup> centuries.

This is currently the only cannonball to be reported from Area 254 which may suggest that this is an isolated find – possibly a practice or warning shot rather than one fired in the heat of battle or recovered from the site of a shipwreck (as multiple finds may be expected from either of the latter events).

Information about this discovery has been forwarded to:

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



## Hanson\_0504: Sounding Lead

This artefact was found by G Price on the *Arco Arun* amongst material from Area 240 which lies in the East Coast region. It was dredged in October 2013.

This is a sounding lead which would have been used to determine the depth of water beneath a vessel. They are one of the oldest navigational instruments and have been used for over 2000 years. The lead was thrown in front of a vessel and the depth read from the line when the lead was on the seabed and the line vertical. By around 1600, the line attached to the lead was marked with a piece of material every fathom (1 fathom = 6ft of line).



The photograph above right shows that the underside of this sounding lead has a small dimple. This would have been filled with tallow, a waxy substance that on contact with the seafloor would pick up sediment. Crew on board would then know whether they were sailing over mud, sand or gravel which assisted their navigation and the charting of the seafloor.

It is likely that this lead is an isolated find lost overboard whilst in use. However two further leads were reported from Area 240 in the 2010-2011 reporting year and there have been other maritime finds from the area reported through the Protocol (specifically a ship's timber and an anchor stock). Whilst at present these finds do not suggest the presence of an uncharted wreck in the region, future finds may alter this picture.

Information about this discovery has been forwarded to:

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





## LTM\_0505: Cannonball

This artefact was discovered by Jamie Wallis at Lafarge Tarmac Marine's Greenwich Wharf. It was dredged by the City of Westminster from Area 430 which lies in the East Coast region, approximately 27km south-west of Southwold in Suffolk.

This cannonball measures 110mm diameter and weighs 3kg. This example has clearly sustained some damage but a casting line is visible around its circumference which was formed during its manufacture.

At nearly 4.5 inches diameter this cannonball may have been fired by either a 9 or a 12-pounder cannon. These guns were typically made of cast iron or bronze and were notably used in the vicinity of the Licence Area by both sides during the Anglo-Dutch wars of the seventeenth century.

Area 430 has yielded a variety of cannonballs since the start of the Protocol in 2005, many of which have been linked to conflict with the Dutch in the 1600's. The Anglo-Dutch wars are an important part of Britain's maritime history as the two nations fought for control over commerce and maritime trade routes. These great battles were based entirely at sea and as such had a profound impact in shaping the development of the English Royal Navy.

Two major battles of the Anglo-Dutch Wars are thought to have taken place near to what is today Area 430. These were the Battle of Lowestoft in 1665 (the first engagement of the Second Anglo-Dutch War and a victory for the English) and the Battle of Sole Bay in 1672 (the first engagement of the Third Anglo-Dutch War and an important battle for the Dutch).

This cannonball could have been deposited during either of these conflicts. Further finds from the Licence have the potential to pinpoint the location of a previously unknown shipwreck relating to one of these naval battles, and wharf and vessel staff are encouraged to keep an eye out for any finds which may relate to the vessels deployed in this significant historical episode.

Information about this discovery has been forwarded to:

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



## LTM\_0506: Brass Key

This find was dredged from Area 430 in the East Coast region. It was discovered at Greenwich Wharf by Gary Law in October 2013.

This find was correctly identified by wharf staff as a brass key. Its small size and the decoration on it suggest that it played an ornamental as well as a functional role.

Given its size and styling, this key is likely to have been designed to unlock furniture such as a wardrobe, dresser or bureau, instead of a door. The discovery of the find offshore suggests that the item of furniture in question was situated on a vessel, though this cannot be confirmed at present.



The decoration on the bow of the key is a classic and highly recognisable art deco design popularised in the inter-war years, during the 1920's. Research undertaken by Wessex Archaeology revealed images of several identical keys online. The speed with which these images were located suggests that this was a mass produced item and there are many parallels for this key in personal collections. Examples viewed by Wessex Archaeology online came from both the UK and the US.

LTM\_0506 is interpreted on current evidence as a brass key used with locking furniture, manufactured in the 1920's or 1930's.

How this key came to lie on the seabed is unknown – given the location of the dredging region it is likely to have come from a ship, though whether it was lost accidentally or deliberately disposed of overboard is not known. Its loss almost certainly caused the owner some inconvenience.

Information about this discovery has been forwarded to:

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



## CEMEX\_0508: Wooden Find

This artefact was discovered at CEMEX's Northfleet Wharf with a cargo from Licence Area 430, which is in the East Coast region. It was found by Andrew Lingham in October 2013.

This find is made from wood. It is broken at one end and tapers towards the other. Whilst some wood can occur naturally offshore (washed from the land for example), this piece is believed to be worked. The evidence of this can be seen in the broken end of the find, shown right. Growth rings that form naturally in wood radiate from a central point. On this example, the point from which the rings radiate is now on the edge of the find, which suggests that the wood has been worked to create this object.

This artefact is potentially a treenail or wooden dowel used in ship construction.

Treenails (commonly pronounced 'trunnels') were driven through wooden ship structure, for example to secure planks onto frames or to secure scarf joints between framing timbers. They swell when wet to form a tight seal but can be further anchored in place using caulking or by driving a wooden peg into the end of the treenail. No further ship material was found with CEMEX\_0508, suggesting that it was lost from a vessel, rather than with one.

Information about this discovery has been forwarded to:

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



CEMEX\_0508: Detail



*In situ* treenails



## CEMEX\_0509: Pulley Block

This artefact was discovered during monitoring of material delivered to CEMEX's Northfleet Wharf in August 2013 from Area 319, which lies in the East Coast region.

In 2007 and 2008 significant flint artefacts were recovered from the North Sea by dredging activity – these included handaxes, flakes, cores and the bones of mammoth, rhino, bison, reindeer and horse. These discoveries have led to extensive work being conducted to better understand the submerged prehistoric remains of areas of the east coast. In July 2012 staff from Wessex Archaeology monitored a cargo from Area 319 when it was delivered to Northfleet Wharf as part of this work.

The purpose of the monitoring was to assess the cargo for prehistoric material. However, amongst this material was the above pulley block. This block is made of wood and wrought iron. It has a significant break which has led to the loss of the second wooden cheek and of the pulley sheave which would have been held between the two cheeks.

This type of block is common in rigging and many examples have been found offshore. The presence of metal in the construction of the pulley block indicates that it is likely to be nineteenth century or younger in date. Prior to this, blocks were made entirely of wood.

Interestingly in this case, we can be reasonably certain that this artefact has not come from a shipwreck and is more likely to have been lost from a ship, rather than with one. Were it to have come from a vessel on the seabed it would be expected that further maritime remains would be retrieved in the same cargo – bolts, wooden frame or other ships fittings for example. The cargo this was found in was spread out on clean sand at the wharf to allow archaeologists to assess the material for Palaeolithic tools and animal remains. Were ship remains present they would have been recovered.

Information about this discovery has been forwarded to:

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



## LTM\_0510: Dump Bolt

This artefact was discovered during monitoring of material delivered to Lafarge Tarmac's Ridham Wharf in August 2013 from Area 296 which lies in the East Coast region.

In 2007 and 2008 significant flint artefacts were recovered from the North Sea by dredging activity – these included handaxes, flakes, cores and the bones of mammoth, rhino, bison, reindeer and horse. These discoveries have led to extensive work being conducted to better understand the submerged prehistoric remains of areas of the east coast. In support of this, staff from Wessex Archaeology monitored a cargo from Area 296 when it was delivered to Ridham Wharf in August 2013.

The purpose of the monitoring was to assess the cargo for prehistoric material. However, prior to it being examined it passed through the wharf's metal detector where the bolt pictured above was discovered.

This bolt is constructed of Muntz metal. Patented in 1832, Muntz metal consists of copper, zinc and iron and is favoured for its corrosion resistant properties. This example is highly likely to have come from a ship, probably a wooden vessel dating post-1800, and could be a 'dump nail' or 'dump bolt'. These are defined as large round, solid headed bolts with a circular cross-section.

Interestingly in this case, we can be reasonably certain that this artefact has not come from a shipwreck and is more likely to have been lost from a ship, rather than with one. Were it to have come from a vessel on the seabed it would be expected that further maritime remains would be retrieved in the same cargo – additional bolts, wooden frame or other ships fittings for example. The cargo this was found in was spread out on clean sand at the wharf to allow archaeologists to assess the material for Palaeolithic tools and animal remains. Were ship remains present they would have been recovered.

Information about this discovery has been forwarded to:

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



## LTM\_0511: Hydraulic Ram

This artefact was discovered by Gary Cooper at Bedhampton Wharf. It was dredged by the Arco Dee with material from Area 127 which lies to the west of the Isle of Wight.

This find was correctly identified by wharf staff as a hydraulic ram, which was commonly used for aircraft undercarriage and flap systems. Despite the corrosion, several logos and serial numbers are visible on this find – clear images of all of these were provided to Wessex Archaeology by Lafarge Tarmac Marine.

Details of this find were forwarded to Ewen Cameron, a Curator of the Royal Air Force Museum in Stafford. He agreed with the initial identification and agrees that this find is likely to have come from an aircraft. One of the logos seen on the find, he tells us, is an inspection stamp from the Blackburn Aircraft Company which existed in the early twentieth century – from 1914 to 1960. The company was named for the founder, Robert Blackburn, and was based in Yorkshire. It initially produced motor vehicles and aircraft but by the outbreak of war in 1939 focus has shifted to aircraft due to the increased demand for rearmament in the fractious political climate of the 1930s.

The most plausible origin for this find is from a downed British aircraft – many thousands of allied and enemy craft flew and fought over the south coast during the Second World War and military plane losses at sea are well evidenced, in addition to the civilian craft that may have met an unfortunate end on the seabed. Such losses, especially in the early twentieth century and in the context of war, were often very poorly recorded and the first indication of the presence of a wreck may well be found during offshore commercial work. That said, in nine years of Protocol reporting only one further find from Area 127 (which is a well dredged licence) has been linked to an aircraft and this identification was not confirmed (ref: UMA\_0097 reported in 2006). Aircraft on the seabed can be highly fragmented due to the cataclysmic damage that caused their loss, impact with the surface of the sea and journey to the seabed. Wreckage can be spread over a wide area and if a wreck site were situated in Area 127 further remains are likely to have been retrieved before now. It may be that a wreck site lies outside of the Area and this find has migrated into a dredged zone, that this find represents terrestrial debris dumped at sea in Area 127 (a number of finds likely to have originated in a domestic context have been reported previously giving support to this theory) or there may be a buried wreck in the Area which may yield further remains as dredging continues. Military wrecks are protected under UK law and are likely to contain munitions – both factors should be considered as dredging continues.

Information about this discovery has been forwarded to:

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



## LTM\_0514: Hatch Cover

This artefact was discovered by J Jerromes at Lafarge Tarmac's Burnley Wharf. It was dredged from Area 127 which lies to the west of the Isle of Wight in the South Coast region.

The wharf staff who discovered this find and compiled the report did an excellent job of describing it noting key features, damage, material types and fixing holes. They also provided clear images of the find including close up photographs of key details.

Made of brass and consisting of two inter-locking oval rings separated by a rubber seal, this artefact is interpreted as a port hole or hatch cover. Its composition from brass suggests a role in an environment in which it would be exposed to the corrosive effects of weather and sea water, and it is likely to have come from a vessel. The rubber would have ensured a watertight seal when the inner portion was bolted to the larger piece. The absence of latches or hand-turning screws which would have allowed the aperture to open more easily (the two sections are secured by four recessed screws) suggests that the identification provided by wharf staff of inspection hatch may be more accurate than the interpretation of port hole, as the latter were commonly designed to be opened by hand.

It is highly likely that the centre of this find would have contained a glass panel allowing light to pass through or allowing crew to inspect machinery or equipment secured beyond it. This has been lost, either before it reached the seabed, whilst in submersion or during recovery by the dredger. This find is likely to date to the post-medieval or modern periods and was probably manufactured during the 18<sup>th</sup> or 19<sup>th</sup> century.

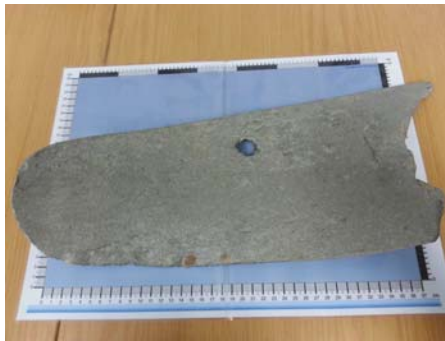
The seabed around the coast of Britain is littered with maritime material that has been lost from or with vessels. Finds from shipwrecks, entire wreck sites, chance losses and material deliberately discarded or dumped from ships operating in UK waters has all added to a rich layer of artefactual evidence lying on and under the seabed. This is not the first find thought to have a maritime origin to be dredged from Area 127 – a dump bolt, boat hook, stanchion and a copper panel from a steamship have all been reported from the Licence during the Protocol's operation. However, prior to the granting of a licence to dredge every Area is investigated for archaeological sites and surveys are periodically undertaken to protect sites of potential interest. Based on current evidence, this is likely to be a chance find.

Information about this discovery has been forwarded to:

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

## LTM\_0515, LTM\_0516, LTM\_0517, LTM\_0522, LTM\_0523 and LTM\_0524: Aircraft Remains

These finds were dredged by the *City of London* on 2<sup>nd</sup> November 2013 and delivered with a cargo to Burnley Wharf. J. Jerromes and N. C. Sait retrieved and reported them. The cargo was dredged from Area 395/1 which lies in the South Coast region to the east of the Isle of Wight.



Finds retrieved in 2013 from Area 395/1, which lies in the South Coast region, suggested the presence of a dispersed aircraft wreck site in or around the Licence Area. Finds included several which allowed the aircraft to be identified as a Ju 87 – a *Luftwaffe Stuka* - though a further find from the Area was identified as potentially coming from a different aircraft, reminding us of the strong possibility that more than one aircraft lie in the region.

The finds reported here are all believed to have come from an aircraft although identifying them conclusively has not been possible in all cases. Images of these finds were shown to Ewen Cameron, a Curator of the RAF Museum in Stafford.

Potentially the most diagnostic is LTM\_0515 (shown top left) which is interpreted as part of a propeller. Ewen tells us that this type of duraluminium blade was fitted to the front of Ju 87s though it was also used with other aircraft that flew with Jumo engines. Interestingly, this type of propeller was only used up until 1940 when composite wooden blades were introduced. This supports previous evidence that the *Stuka* in or near 395/1 was downed during the Battle of Britain.



A hole seen in the propeller is potentially a bullet hole which would be plausible given the wartime circumstances that likely led to the loss of the aircraft.

The other finds are less diagnostic. LTM\_0516 (shown top row, centre) is a cogged ferrous wheel and spindle and is likely to be from an engine. LTM\_0517 (shown top row, right) consists of a ferrous central section with a cogged base onto which four numbered brass interlocking sections are attached, one of which is missing. Ewen recognises this piece as being German which supports the interpretation that this has come from WW2 aircraft wreckage lying in or around the Licence.

The least diagnostic finds are shown on the bottom row above – LTM\_0522 and LTM\_0523. Given that they were discovered in the same cargo as confirmed aircraft remains they are interpreted as being from a Second World War aircraft though what parts they were exactly cannot be determined from the pieces as they are not diagnostic. LTM\_0522 consists of two aluminium bars which are potentially part of aircraft framing structure and LTM\_0523 is a small flat circular disc with three perforated holes and four sub-rectangular notches around its outer edge.

Finally, LTM\_0524 which is an aluminium pedal or lever on an iron spindle was reported and is shown below. Again identifying it conclusively is problematic given its partial nature but its discovery with other aircraft remains from an area that is known to contain evidence of a *Luftwaffe* aircraft suggests that it is connected.

At present the 'site' is believed to be highly dispersed. The remains certainly suggest the presence of a downed aircraft but whether the bulk of the wreckage lies within the Licence or outside of it is not yet known. Wessex Archaeology will continue to work with Lafarge Tarmac to ensure that dredging continues with respect to our submerged cultural heritage. The report 'Tarmac\_0463, Lafatarm\_0474 and Lafatarm\_0486: Aircraft Remains' carries more detail about the finds from Area 395/1.

Information about this discovery has been forwarded to:

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





## LTM\_0518: Cannonball

This artefact was discovered by N. C. Sait at Lafarge Tarmac Marine's Burnley Wharf in Southampton. It was dredged from Area 395/1 which lies in the South Coast region to the east of the Isle of Wight.

This 4" cannonball was reported by Lafarge Tarmac staff who noted the presence of a flat section on one face of the ball.

This find weighs 3.868g and is of the correct calibre to be fired by a demi-culverin. These were introduced in the late 16<sup>th</sup> century and were still in use in 1714 according to an inventory of armaments recorded in the Priddy's Hard Archive (and reproduced in *The Story of English Sea Ordnance 1523-1875* by Adrian B. Caruana). Cannon commonly continued in usage until being superseded by newer and more standardised weapons though the changeover would be gradual. It is the fourth cannonball reported from Area 395/1 during the nine years of Protocol operation (see UMA\_0068, UMA\_0199 and Tarmac\_0455).



Detail on LTM\_0518

It is possible that the 'dimple' on this find was caused by impact as despite their size cannonballs were often damaged when striking, for example, the wooden hull of an enemy ship. Alternatively it may be that this cannonball was part of a bar shot - an offensive weapon used to disable an enemy ship by causing damage to the sails, masts and rigging. When fired from the cannon the bar shot would spin on its trajectory enabling it to cause maximum damage to an enemy vessel.

Cannonballs are common finds in the South Coast region as the area played host to an abundance of battles during the Age of Sail. A concentration of them from one area may indicate the site of a naval battle, or (and especially if maritime material is recovered alongside them) the site of a shipwreck. This example may have been lost with a ship, it may have been fired from a ship or it may have been deliberately discarded overboard – either to lighten the load of a struggling vessel in severe weather, or to sink something to the seafloor. At present it is deemed to be a discrete find.

Information about this discovery has been forwarded to:

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

References: Caruana, A. B. 1994. *The Story of English Sea Ordnance 1523-1875*. Jean Boudriot Publications.



## LTM\_0520: Iron Object

This artefact was discovered by J Jerromes at Lafarge Tarmac's Southampton Wharf. It was dredged by the City of London with material from Area 395/1 to the east of the Isle of Wight.

This enigmatic find was dredged in 2013 from Area 395/1. Identifying it has not yet been possible. Images were shown to experts from Wessex Archaeology's terrestrial finds teams, coastal and marine team and historic buildings team. Despite drawing on a wide range of experience and skills, no parallel has been found.

The find is made of iron and it has suffered corrosion whilst in submersion. It has a central depression on one face (shown above, main image) which has become in-filled with a hard substance, possibly concrete or marine concretion. The opposing face, shown right, has two broken bolts embedded in it.



LTM\_0520 Reverse view

Bob Davis, from Wessex Archaeology's historic buildings team noted that the position of the two bolts in an off-centre position means that the find was not intended to rotate, as may have been expected for a circular find. This eliminates roles in, for example, a pulley. With a diameter of 8.5 inches the find is fairly solid and presumably heavy. It may, Bob suggests, have been used as a counter-weight in apparatus though this cannot be confirmed on current evidence. Alternatively, it may be a sacrificial anode designed to protect ships hulls from corrosion but these are very rarely made of iron making this interpretation unlikely.

Iron is not commonly used in the marine context because of corrosion so this find may have originated in a terrestrial context and been dumped at sea later. There is a known spread of terrestrial debris interpreted as being blitz rubble from Portsmouth or Southampton which lies in the vicinity of Area 395/1. Alternatively it could have been used as ballast or to weight fishing gear. If further information about this find comes to light, or a specialist found who can identify it, further reports will be issued.

Information about this discovery has been forwarded to:

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



## LTM\_0526: Oil Lamp Wick

This artefact was discovered by Gary Cooper at Lafarge Tarmac's Bedhampton Wharf. It was dredged with material from Area 395/1 in November 2013. 395/1 lies to the east of the Isle of Wight.

Wharf staff identified this artefact as being part of the wick mechanism for an oil lamp. Wessex Archaeology's Sue Nelson, who supervises the finds team and sees a diverse range of artefacts from all periods, agrees with this identification.

These items would once have been common in homes, businesses and on board vessels to provide light. Oil was poured into the reservoir, seen right, and a wick inserted. The handle on the side would turn a screw allowing the wick to be extended as it burned down.

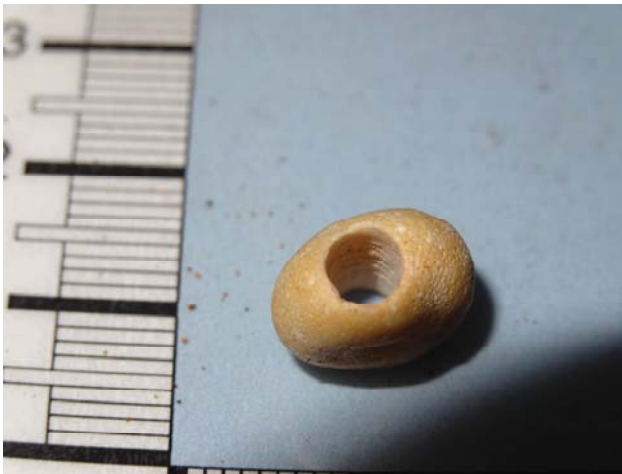


Assigning a date is difficult but Sue believes it is plausible that this find dates from the Victorian (1837-1901) or Edwardian periods (1901-1910) where they were popular prior to the widespread availability of electric lights. This example appears to be made of brass and would likely have had a glass dome over the wick which protected the flame from being blown out, protected the user from direct heat, looked appealing and helped disperse the light to greater effect.

This example may have been lost from a vessel or it may have been deposited with a spread of post-war domestic debris believed to lie in the South Coast region and well evidenced by Protocol finds.

Information about this discovery has been forwarded to:

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



## LTM\_0527: Glass Bead

This artefact was discovered by N. C. Sait at Lafarge Tarmac's Burnley Wharf. It was dredged from Area 127 which lies to the west of the Isle of Wight in the South Coast region.

This is another incredible find made by Lafarge Tarmac staff. Recognising finds this small (the bead measures only 1cm across its widest point) amongst aggregate takes tremendous dedication, quick action and keen eyesight. On discovering the bead, Nigel Sait checked the surrounding areas of the pile but no further beads were discovered.

This bead looks at first glance to be made of stone but Sue Nelson, an expert from Wessex Archaeology's finds department, believes that it is actually made of glass and that the hole is hand-drilled. The bead is slightly irregular in shape, presumably due to its hand-made nature.



Monochrome glass beads from Cliffs End Farm, Kent. Dated to the Saxon period.

Finds like this are often dated by the context in which they are found – beads in a Saxon grave could usually be assumed to be Saxon, those in the remains of a Romano-British building to be Roman and so on, though of course exceptions do apply. The lack of context for this find makes absolute dating impossible but Sue has suggested that it may be Saxon, though this cannot be confirmed.

This is an incredible find. How it came to be on the seabed is not known – it may have washed from a terrestrial context, been lost or dropped over board or it may have come from a wreck.

Information about this discovery has been forwarded to:

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

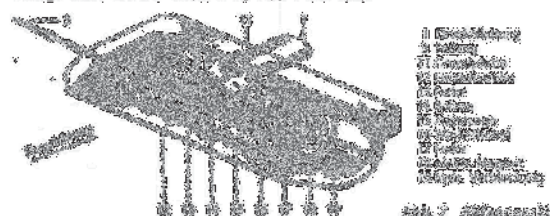


## LTM\_0528: Aircraft Remains

These finds were discovered by N. C. Sait at Lafarge Tarmac's Southampton Wharf. They were dredged in December 2013 from Area 395/1 which lies to the east of the Isle of Wight.

These finds are likely to have come from an aircraft. Area 395/1 has yielded a range of aircraft material since the summer of 2013 and these finds, with their aluminium construction, are likely to be connected with the earlier discoveries.

Ewen Cameron of the RAF Museum confirmed this, though given the partial nature of the remains he was not able to conclusively identify them. He did note that the find shown on the right may be a control rod and noted the similarities between the find shown on the left above and the part labelled '19' in the diagram shown right. The diagram shows part of the elevator control system from a Ju 87 – earlier finds from Area 395/1 have been positively identified as having come from a Ju 87 so this is a plausible identification though it is not possible to confirm it.



The finds from Area 395/1 currently suggest a dispersed site. The bulk of the aircraft may lie outside of the Area or it may be buried by sediments. Military aircraft are protected by the *Protection of Military Remains Act* 1986 and where they can be identified on land or offshore they should not be disturbed without a licence. Interestingly (and predictably given the location of this Licence on the south coast) evidence of a different aircraft has also been recovered from Area 395/1. Given the vast number of aircraft that were lost in the region during the Second World War (and indeed at other times) there is a strong possibility that more than one aircraft lie in the region, in addition to other sites of historic and prehistoric interest.

The report 'Tarmac\_0463, Lafatarm\_0474 and Lafatarm\_0486: Aircraft Remains' carries more detail about the aircraft finds from Area 395/1.

Information about this discovery has been forwarded to:

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



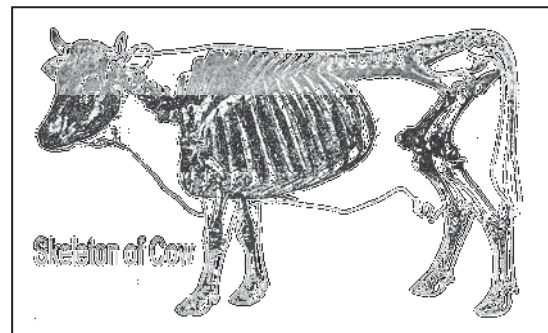
## LTM\_0529: Animal Bone

This artefact was discovered by Gary Cooper at Lafarge Tarmac's Bedhampton Wharf. It was dredged by the *Arco Dee* with material from the South Coast region. The exact cargo is not known but it was likely to have come from Area 127, to the west of the Isle of Wight, or Area 395/1, to the east.

Images of this find were shown to Lorrain Higbee, Wessex Archaeology's zooarchaeologist, who studies all animal bone reported through the Protocol.

Lorrain identified this example as being thoracic vertebrae from a large mammal, most likely cattle.

Vertebrae form the spinal column which protects the spinal cord and provides attachment for the muscles and ligaments that support the body and allow movement. They fall into five categories – cervical (those in the neck), thoracic (the chest), lumbar (lower back), sacral (attaching to the pelvis) and caudal which form the tail of animals. In humans, the caudal vertebrae form the coccyx which is also known as the tail bone.



Animal bones recovered from the sea could have been deposited in several ways. They may have been lost or thrown from a vessel, washed from the land or may have originated during the last Ice Age when some areas that are today underwater were dry land. This example is likely to be an isolated find which possibly represents the provisioning of crew on board a vessel.

Information about this discovery has been forwarded to:

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



## LTM\_0530: Machine Gun and Ammo Clip

These finds were dredged from Area 395/1 which lies in the South Coast region to the east of the Isle of Wight. They were discovered by J Jerromes at Southampton's Burnley Wharf in January 2014.

This collection of finds contains a German Second World War machine gun, a NATO ammunition clip and six currently unidentified ferrous artefacts.

Images of all the finds reported as LTM\_0530 were shown to Jonathan Ferguson, Curator of Artillery at the Royal Armouries Museum in Leeds.

Jon recognised two of the assemblage – the gun shown above and the ammunition clip, shown right. The find above is the breech block of a German MG 131 machine gun. It is still locked into what remains of the receiver's barrel extension which can be seen on the left. This type of gun was commonly fitted to aircraft and the partial remains of a Ju 87 have been dredged from the licence area over the last 6 months. However, this gun was not fitted to Ju 87s. It was instead installed in the Ju 88 Bomber, the Fw 190 Fighter and late models (1943 onwards) of the Bf 109 Fighter, amongst others.



Ammunition Clip

Comparing trackplots for these finds and for those dredged earlier (which were interpreted as being from a Ju 87) reveals that these came from the south-west of the Licence whereas the earlier finds were concentrated towards the east of Area 395/1. This confirms that the gun is not likely to be associated with the Ju 87 remains from the Licence Area.

Interestingly part of a Ju 88 Bomber was retrieved from 395/1 – Hanson\_0487, a Jumo Supercharger, which was dredged in August 2013. This serves to remind us that more than one aircraft potentially lie within the licence area, which is to be expected given the large number of aircraft lost over the south coast during the Second World War.

The other find that Jonathan recognised is shown above right. This is an ammunition clip but is entirely unconnected with the machine gun. The clip is similar to others dredged previously from the Licence which were reported as Tarmac\_0454.



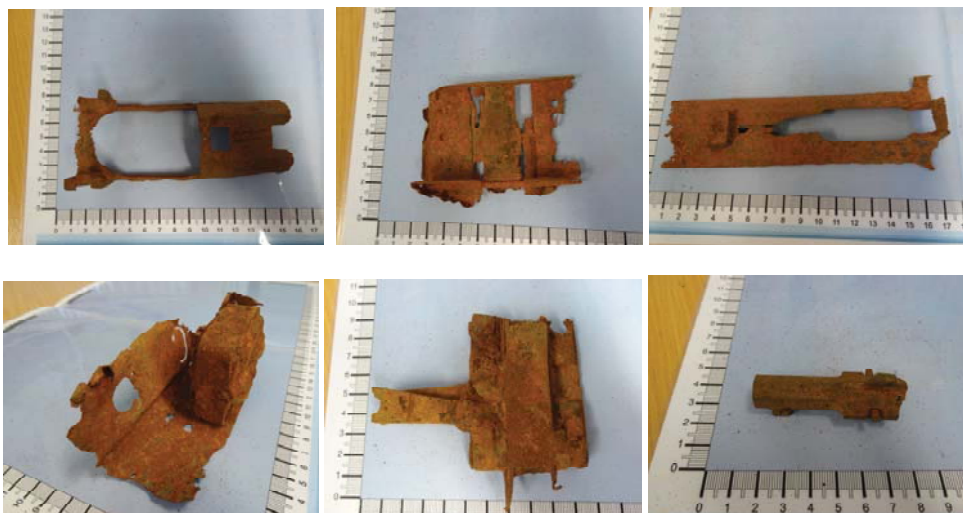
This is a disintegrating link which was used with 7.62x51mm NATO ammunition. These clips were used with General Purpose Machine Guns, which given the context of the find, may have been deployed in a naval role. This type of clip splits apart as the gun is fired and the clip is pushed out with the empty cartridge cases. 7.62x51mm ammunition entered use in the late 1950's. The corrosion evident on this find suggests that this is an early example.

The other 6 finds reported have been more difficult to identify. They are ferrous – made of iron – and have suffered a high level of corrosion during their time underwater. Whilst it is possible that they are related to the gun or to the aircraft that the gun was lost from or with, this cannot be confirmed. Jonathan Ferguson could not confidently identify them from the images and Ewen Cameron of the RAF Museum did not recognise them as having come from an aircraft. Were these connected with an aircraft it is also likely that aluminium finds would have been retrieved alongside them.

Conserving metal finds that have come from a marine context is difficult – the process of drying out (which many dredged finds go through prior to their discovery at wharves) can weaken the structure of the finds and it is likely that these finds will continue to degrade. This can be reduced by keeping them in stable conditions – preferably those that are cool and dark. Finds that have dried before discovery should not be submerged as this can weaken them further.

Information about this discovery has been forwarded to:

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



LTM\_0530: Ferrous finds



## Hanson\_0531: Copper Hinge

This artefact was discovered by Tom Hearn on the *Arco Arun*. It was dredged from Area 366/367 which lies in the East English Channel region, approximately 16km south of Hastings, Sussex.

This is a hinge pintle for hanging doors. The pintle, seen on the left in the image above, receives a 'loop' or gudgeon allowing the door to be hung, but also easily removed. This type of fitting is used commonly for agricultural gates that need to be unhinged as the pintle and gudgeon are not fixed together and rely solely on gravity to operate.

Images of this find were shown to Wessex Archaeology's buildings expert Bob Davis who confirmed the identification and offered the following insights into its construction and age.

This example is made of copper which is an interesting choice for a hinge as copper is a soft metal. However its use in hinges is not unusual and its soft nature can aid lubrication allowing the hinge to operate effectively. The hinge has a triangular plate which was designed to have been screwed onto a wooden door, not buried in a wall. At 10cm long it is moderately large and would have been capable of supporting a fairly heavy door and as it is not decorated it was presumably a functional item, not an ornate one.

The two remaining fixing holes would have been joined by a third (now broken) and the holes appear counter-sunk suggesting that this item was affixed using good quality screws, probably brass ones. The screw holes and regular shape of the find suggest that this is a machine made item which gives a potential 19<sup>th</sup> or early 20<sup>th</sup> century date for the artefact.

How this find came to lie offshore is unknown though it is likely to have been lost from or with a vessel. An interpretation of geophysical survey results from the area undertaken by Wessex Archaeology in 2012 revealed four sites of archaeological or potential archaeological interest lying within the Licence, none of which coincide with the lanes dredged when this find was discovered. One of these sites is the wreck of the *Gold Coin*, a vessel built in 1952 and wrecked in 1972 some 700 metres to the north of the lanes from which Hanson\_0531 was dredged. The wreck was dispersed in 1973 and in 2012 was recorded as consisting of scattered debris with no obvious bulk structure remaining. It is possible that this find has migrated from the debris field of the wreck site, though this cannot be confirmed.

Information about this discovery has been forwarded to:

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



## CEMEX\_0532: Support or Brace

This artefact was discovered by Andrew Lingham at CEMEX's Northfleet Wharf. It was dredged with material from Licence Area 251 which lies in the East Coast region, off of Lowestoft, Suffolk.

This artefact has a circular head with three apertures around the circumference. Material within the circular head extends through these gaps indicating that this find was not meant to rotate as, for example, a pulley would. The base of the item is damaged but would originally have been triangular with a fixing hole at each corner, only one of which is still partially present. The find has a spur (visible above) to provide strengthening and support and the positioning of this spur suggests that the item was wall mounted and subject to downward force.



CEMEX\_0532 reverse view

Two potential interpretations have been considered for this find. Bob Davis, from Wessex Archaeology's Heritage Team suggested that the item may have been used to support electrical cabling or pipes. It is of the correct size to hold a 5/8 inches copper pipe which is a common old English gauge or it may have held a lamp or other electrical device.

The find also has characteristics similar to a brace or support for railings. The circular head may have provided a socket to hold a hand rail, providing support on board a vessel.

Whilst definite identification is not possible, this find is likely to have originated on a vessel either as an electrical conduit or as a support or brace for railings.

Information about this discovery has been forwarded to:

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



## Hanson\_0533: Mammoth Tooth

Ihor Manhupli found this artefact on the *Victor Horta* whilst dredging in Area 240 which lies in the East Coast region. It was reported in March 2014 but not firmly identified until the summer.

This well preserved mammoth tooth was dredged by the crew of the *Victor Horta* during work in Area 240, which lies in the East Coast region. Area 240 has previously yielded significant prehistoric remains dating from the Palaeolithic and the whole East Coast region is known to contain archaeological evidence from the last Ice Age.

The crew of the *Horta* recognised this item as a tooth after looking at examples reported through the Protocol and publicised through the annual reports and the Dredged Up newsletter. Realising that they had found something of archaeological significance, the crew made sure that the find was reported correctly and are praised for their dedication to heritage.



Whilst this is clearly a mammoth tooth there were several species of mammoth that have inhabited the UK and the areas that we now term offshore UK, at times in the past, so specialist help was enlisted to firmly identify this find. Experts from the Natural History Museum in London studied images of the artefact. Pip Brewer, Fossil Mammals Curator, and Professor Adrian Lister studied the images and Professor Lister describes it saying:

“[It is] a lovely left upper third molar of woolly mammoth, [aged] about 35 when it died.”

The Natural History Museum encounters a huge range of fossilised mammal specimens so this description is high praise indeed! This example likely dates to the last glaciation, or Ice Age, meaning that this animal lived somewhere between 20,000 and 70,000 years ago. The find has been landed and delivered to Hanson Aggregates where it will be stored.

Information about this discovery has been forwarded to:

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



## Brett\_0534: Metal Finds

Matt Parkinson discovered these two metal finds amongst material from Licence Area 351 which lies in the South Coast region. They were dredged in March 2014 and found at Ipswich Wharf.

These two finds were discovered at Ipswich Wharf and have both suffered damage before, during, or after entering the water. Identifying them has been problematic and neither has yet been conclusively identified.

The lower find shown in the photograph is made of brass. It was cast and has not been polished or finished to a high standard. This suggests that it was not intended to be on display and instead formed part of an object hidden from view. The distal end, shown left, is badly damaged with signs of lamination, cracking and splaying. Brass is a soft metal which may partially account for this damage. The proximal end, shown right, is more characteristic. It displays a square notch, the upright sections of which have the remnants of two worn holes. These would likely have accepted a pin enabling the item to pivot around this axis. This, combined with the material used, suggests that this find once formed part of the casing for instruments or optics, potentially on board a vessel.

The other find is made of cast iron and has also suffered damage. It is likely that this find was once cylindrical in shape and that it wrapped around another component thought, in this instance, to have been a wooden pole. The remains of an internal wall is present on one face which would have provided a surface for the pole to butt against and a pin or tack hole is present (seen left) which would have been used to secure the find. There is also a groove around the base of the object that could have been used to secure strapping. This type of hafting suggests an agricultural utensil or implement not dissimilar to a spade or hoe.

During nine years of Protocol reporting several diverse and interesting discoveries have been made amongst material from Licence Area 351 including an admiralty telescope, a worn iron drill bit and a modern red ensign complete with cord for attachment to a flag pole. There is the potential that future discoveries from the Area may provide information on the origin of these and so information about them will be added to national databases.

Information about this discovery has been forwarded to:

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



## LTM\_0535: Bullets

N. C. Sait discovered this collection of 6 bullets at Lafarge Tarmac's Burnley Wharf. They were dredged from Area 127 in March 2014. Area 127 is in the South Coast region, to the west of the Isle of Wight.

Bullets and ordnance are common finds offshore. The six bullets reported here were identified by Jonathan Ferguson of the Royal Armouries Museum in Leeds. The bullet on the left is a .50 BMG fired by a Browning machine gun, probably from an American aircraft during the Second World War. The four shown centrally are the British equivalent, identified by Jonathan as having been fired by a .50 Vickers. These were prevalent on ships as an anti-aircraft gun, which may account for the bullets' discovery offshore.

The last bullet, shown right and on the far right above, is a rare example. The dimensions of the bullet, combined with its weight, suggest only one identification. It is likely, Jonathan tells us, to be a .276 Enfield bullet from the Pattern 1913 rifle.



Potentially a rare .276 Enfield bullet

The .276 was fired by a rifle which was only produced in limited quantities for testing. Tests led to the suggestion of several improvements to its design. These were not finalised before the outbreak of the First World War and so the Short Magazine Lee Enfield, which preceded the Pattern 1913, remained the standard issue rifle during the conflict. The Pattern 1913 was not put into mass production and few examples exist today.

How the bullet came to lie offshore in Area 127 is not known. This weapon's use was limited. It was tested on the south coast at Whale Island, Portsmouth, but this is unlikely to account for the bullet's presence in the Licence Area. LTM\_0535 was found alongside concreted cannonballs LTM\_0537 and two large screws LTM\_0536. The three reports are not thought to be associated.

Information about this discovery has been forwarded to:

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



## LTM\_0536: Screws

N. C. Sait discovered these two screws at Lafarge Tarmac's Burnley Wharf. They were dredged from Area 127 in March 2014. Area 127 is in the South Coast region, to the west of the Isle of Wight.

These two large screws were dredged with material from Area 127 (in the South Coast region) in the same cargo as 6 bullets (LTM\_0535) and two heavily concreted potential cannonballs (LTM\_0537). The finds are not thought to be associated with each other.

These two large screws are interesting. They have large, counter-sunk heads and the shafts do not taper. Screws that taper are often intended for use with wood and the taper allows them anchorage when tightened into position. These have parallel shafts (or certainly appear to have parallel shafts – one example is broken) which suggests they were intended to screw into a threaded hole in a metal item.



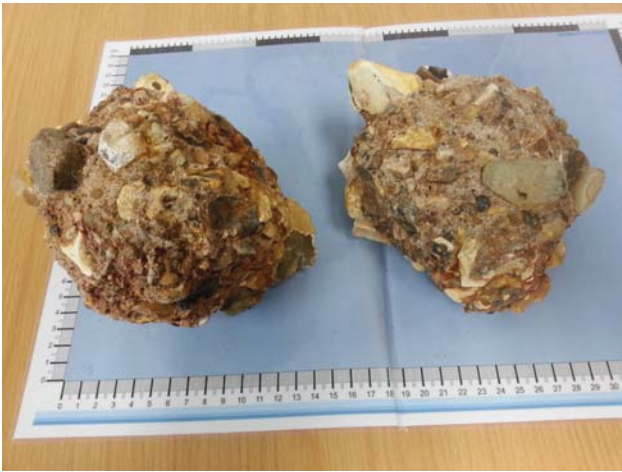
LTM\_0536: Alternate view

The counter-sunk heads suggest a degree of finishing which implies that the heads of the screws were on display and the size of the finds suggests that they were part of machinery.

Area 127 lies to the west of the Isle of Wight and has yielded some material more likely to be found in a domestic context. These examples may have come from machinery or been used to secure equipment on board a vessel, or it is plausible that these may have come from onshore and been deposited within the Licence. They are machine made and likely date to the twentieth century.

Information about this discovery has been forwarded to:

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



## LTM\_0537: Concretions

N. C. Sait found these concretions at Lafarge Tarmac's Burnley Wharf in March 2014. They were amongst cargo from Licence Area 127 which lies in the South Coast region, to the west of the Isle of Wight.

These two finds are difficult to interpret. Concretion like that seen above is formed when iron degrades underwater. Keith Muckelroy in his book *Maritime Archaeology* describes how the degradation of iron underwater 'creates compounds which bind together everything in the neighbourhood – sand, stones, epifauna and other artefacts – into a hard matrix.'<sup>1</sup>

This hard concretion can entirely cover an iron artefact, as appears to be the case with LTM\_0537 and in some instances the iron inside can completely degrade leaving only a cast of the original item. Conserving such finds is difficult and should be managed on an individual basis. As with other finds reported through the Protocol, it is recommended to keep these finds wet if they were still wet when discovered but not to re-submerge them if they have begun to dry before discovery. Placing them in a bucket of damp sand can help to stabilise finds if they have begun to dry.

These two finds were probably cannonballs which were commonly made of iron and are spherical in shape. Although the details from the finders were well reported (each concretion measures approximately 6 inches in diameter and weighs in the region of 3kg) it is not possible to identify them further as these measurements will relate to the concretion, and not to the original find.

Cannonballs were in common use from the medieval period, being made first of stone and, by the 17<sup>th</sup> century, of iron. They were replaced in the 19<sup>th</sup> century following innovations in artillery and ammunition. Fourteen further cannonballs have been reported from Area 127 during the nine years that the Protocol has been in operation.

<sup>1</sup> Muckelroy, K (1978). *Maritime Archaeology*. Cambridge: Cambridge University Press. P. 34.

Information about this discovery has been forwarded to:

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





## LTM\_0538: Driving Band

N. C. Sait found this artefact at Lafarge Tarmac's Burnley Wharf in Southampton. It was amongst cargo from Licence Area 395/1 which lies in the South Coast region to the east of the Isle of Wight. It was dredged in April 2014.

This was correctly identified by LTM staff as a driving band. This would have been positioned around a projectile and measures an estimated eight inches in calibre (estimated as the artefact is broken). Driving bands form a tight seal with the breech of a gun, trapping propellant gasses behind the shell to ensure efficient firing.

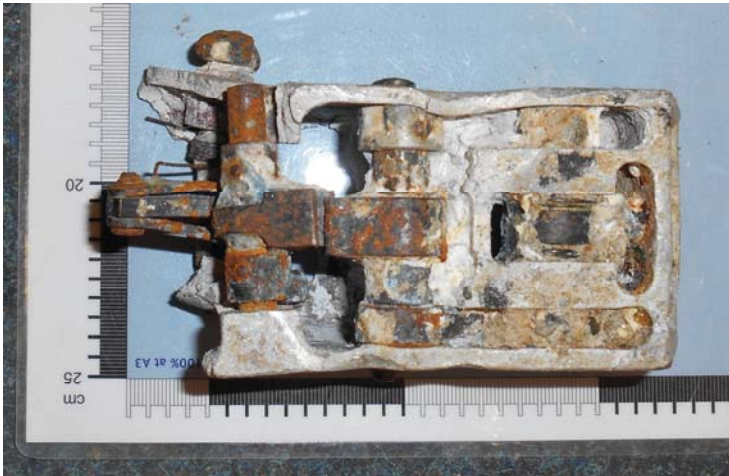
The Royal Armouries' ordnance expert Nicholas Hall, based at Fort Nelson, studied images of the find and confirmed the interpretation. Eight inches, he tells us, was a common calibre for naval guns and driving bands were used with breech loading and quick-firing guns from around 1880 onwards. The faint diagonal incisions on the outside of the find provide evidence that it has been fired whilst the horizontal incisions on the inner surface provided grip to secure the band to the projectile.

This find entered the water after firing, either during conflict or training. Driving bands are made of soft metal (and some modern versions are manufactured from plastic) allowing them to fit and distort with the breech of the gun firing them. This produces the diagonal lines etched on the outside of the band. Whilst this appears to be an isolated find it serves as an apt reminder of the inherent danger of unexploded munitions amongst marine aggregates. In all circumstances the health and safety of industry staff takes priority over archaeological reporting.



Information about this discovery has been forwarded to:

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



## LTM\_0539: Aircraft Fragment

J. Jerromes retrieved this find from aggregate delivered to Lafarge Tarmac's Burnley Wharf. It was dredged from Licence Area 395/1 which lies in the South Coast region, to the east of the Isle of Wight.

A German Luftwaffe aircraft lies in or near Licence Area 395/1. Lafarge Tarmac and Hanson have retrieved several small parts of it from the area since summer 2013. A review of the available surveys of 395/1 has not revealed a distinct site which could represent the remains of the aircraft. Based on current evidence the rest of the aircraft is believed to be either highly dispersed, to lie largely outside of the Licence Area or to be well buried by sediments.

This piece has been tentatively identified by Ewen Cameron of the Royal Air Force Museum as being part of the bomb release of a Ju 87. The other parts retrieved from the Licence Area, where identification was possible, are also likely to have come from a Ju 87.

The Junkers Ju 87 was a German bomber crewed by two men, a pilot and a rear gunner. Whilst the Ju 87 or *Stuka* (from *Sturzkampfflugzeug*, meaning dive bomber) was an effective bomber and ground-attack aircraft, it was vulnerable against enemy fighter aircraft. Accordingly, for defence, they often had to fly with a protective escort. The vulnerability of the aircraft was exposed during the Battle of Britain in 1940. In summer 1940 Axis aircraft flew from Continental Europe across the English Channel and the North Sea to attack military and industrial targets in Britain. Many aircraft from both sides of the conflict were lost at sea as the two forces engaged in aerial combat and the locations of many of these aircraft were poorly recorded. A review of records undertaken when the first finds were retrieved revealed that the closest recorded aircraft loss to Area 395/1 is indeed a Ju 87, though its given location lies some 5km to the north-west of the lanes being dredged for aggregate.

Information about this discovery has been forwarded to:

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



## LTM\_0540: Torpedo Component

Jamie Wallis retrieved this artefact from aggregate at Greenwich Wharf. When discovered, it was amongst aggregate from Area 458/464, West Bassurelle, which was mixed with material from Area 430, Southwold.

This enigmatic find was dredged by the *City of Westminster* and delivered to Greenwich Wharf over a weekend. Subsequently two cargoes, both from the *Westminster*, had been mixed by the time eagle-eyed staff at Greenwich recovered the find. It is either from Licence Area 458/464 which lies in the East English Channel region, south-east of Eastbourne in Sussex, or Area 430 which lies in the East Coast region, off Southwold, Suffolk.

The find was tentatively identified by Wessex Archaeology's Bob Davis as part of a torpedo, and this was confirmed by George Burgess, former torpedoman of A-class submarines and volunteer at the Royal Navy Submarine Museum. The propellers would have been situated on the right of the find as shown above. The gear wheels, shown left, are part of a bevelled transverse gear mechanism which allowed rotational propulsion to be transferred to the propeller. The find is made of brass and copper which not only protects it against marine corrosion and rust, but also minimises the risk of potentially fatal sparks igniting the torpedo before it reached target. This example shows signs of damage consistent with the device having been fired, which potentially accounts for its discovery offshore.

George Burgess informs us that this device would originally have had four cog wheels, two of which are missing from LTM\_0540. The four cog wheels drive two propellers in opposite directions ensuring that the torpedo moves smoothly through water without gyrating or 'cork-screwing'.

A torpedo is a self-propelled weapon with the capacity to explode on contact or in proximity to a chosen target. The modern torpedo has been used in various forms since the late 19<sup>th</sup> century and torpedoes were used in both WW1 and WW2. Despite clear photography of the marks on the find, it has not yet been possible to determine which nation fired this weapon or when it was manufactured. It is certainly a machine-made item, likely placing its manufacture in the twentieth century, and comparable examples exist from WW2.

Information about this discovery has been forwarded to:

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



## Hanson\_0542: Timber

Anthony Greenway discovered this artefact on board Hanson's *Arco Dijk*. It was dredged in April 2014 with aggregate from Licence Area 240, which lies in the East Coast region off the Norfolk coast.

This damaged timber measures approximately 50cm long and 12cm at its widest point, although it is likely to have been larger when manufactured. Despite the damage, it is still possible to interpret this find as a ship's timber. It has two clear treenail holes (both broken, shown bottom left and far right in the image above) and shows signs of having been shaped. The size and profile of the timber suggests that it is likely to have been a plank though it is not possible to confirm where on the vessel it may have been situated.

Analysis of the wood reveals that it is well-preserved oak (*Quercus* sp.) which is a common material for ships' timbers. Oak appears in the archaeological record in the later Mesolithic (Middle Stone Age – approximately 8500 – 4000 BC) and can be evidenced in prehistoric peat beds which are present in the East Coast region. However, the working on this piece indicates that it is from a vessel and is, therefore, more recent, dating instead from some time in the last millennium.

Several other maritime finds have been reported from Licence Area 240 through the Protocol including several rigging blocks. The area saw heavy traffic from wooden vessels during the Age of Sail (16th to the mid-19th century) and has played host to several naval battles which may account for the discovery of this timber.

This find is not currently thought to indicate a further site of archaeological significance such as a shipwreck. Every Licence Area is investigated prior to the granting of a licence to dredge and any suspected sites investigated and potentially protected by an exclusion zone. It is possible that a site was not detected by geophysical survey (because it is dispersed or was buried) and the reporting of finds like this one is important in case they are able to reveal a previously unknown site of archaeological interest.

Information about this discovery has been forwarded to:

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



## LTM\_0543: Collapsible Step

This was discovered on board the *City of Chichester* which had been dredging in Licence Area 351 in the South Coast region, to the east of the Isle of Wight.

This mangled metal object was correctly interpreted by the crew of the *Chichester* as being the remains of a collapsible step. This was confirmed by Wessex Archaeology's Bob Davis.

The find has red paint visible in some places and a pattern of raised holes along the leading edge to provide traction. When straightened out it would form a rectangle suitable for use as a step.

Its presence offshore is intriguing. It may have come from a vessel where it could have formed part of a boat boarding ladder. Alternatively it could have come from a vehicle (there are notable instances in which vehicles were dumped at sea) or could have come from a terrestrial context, just as a percentage of finds from neighbouring Licence 395/1 and relinquished Licence 122/2 are believed to have done. Some of the finds from 395/1 and 122/2 are thought to have been dumped at sea as part of a post-war clearance operation after the Blitz.

This find joins others from Area 351 that have been reported during the nine years of Protocol operation. Previous finds include an Admiralty telescope, a worn iron drill bit, the lid of a copper kettle and a 19<sup>th</sup> century metal sword hilt. An assessment of geophysical survey data obtained from Licence Area 351 in 2012 identified seven anomalies of anthropogenic origin and potential archaeological importance. However, none of these lie on or close to the track that was dredged when this step was recovered.

This find was machine manufactured and is likely to date from the twentieth century. It is currently thought to be an isolated find.

Information about this discovery has been forwarded to:

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



## LTM\_0544: Aircraft Fragments

J. Jerromes made these discoveries at Lafarge Tarmac's Burnley Wharf. They were amongst cargo from Licence Area 395/1 which lies in the South Coast dredging region, to the east of the Isle of Wight.

These latest finds continue the story begun by previous finds from this Licence Area. Area 395/1 is thought to hold the partial remains of a downed German *Luftwaffe* aircraft believed on current evidence to be a Ju 87 *Stuka* dive bomber. The crash site has not yet been identified, either because it lies outside of the Licence Area, and so has not been detected on geophysical survey data, or because it is highly dispersed, or has become buried.

Ewen Cameron of the RAF Museum confirmed that these finds are likely to be associated with the earlier aircraft finds from this Licence, though given the broken and undiagnostic nature of the finds, this could not be conclusively proven. He did confirm though that these finds are similar to those that may be expected from a WW2 *Luftwaffe* aircraft, such as the Ju 87.



The *Stuka* was developed in 1936 and was used extensively during the Second World War. During the early part of the war the Ju 87 was crucial to the *Luftwaffe's* power though it was no match for the faster British Hurricanes and Spitfires during the Battle of Britain in 1940. The closest aircraft loss to the Licence Area is a Ju 87 downed during the Battle of Britain though it is some 5km from the Licence Area. The positions of many aircraft lost during the Second World War are poorly recorded and this is not the first whose presence has been suggested by Protocol discoveries. Without the Protocol in place these sites may not be recorded. Information about these finds will be added to national databases.

Information about this discovery has been forwarded to:

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



## Hanson\_0545: Ammonite

Dagenham Wharf's Gwyn Bulkeley and Geoff Seago discovered three pieces of this fossil amongst material from Licence Area 372/1 which lies in the Isle of Wight region. It was dredged in June 2014.

This is part of the fossilised spiral of an ammonite, a prehistoric invertebrate animal that lived in marine environments 240 – 65 million years ago. The ammonite's closest living relative, the nautilus, can be used to picture what it may have looked like.

Given the span of time between the death of these creatures and the present day, examples are fossilised, as this one is. Ammonites are preserved when buried in sediments on the seafloor. Over millions of years and under pressure, the organic components of the creature become fossilised and turn to stone. The ridged effect shown on the examples above is the shell of the creature.



Nautilus

Lee R Berger - CC licence via Wikipedia

Fossils are not strictly speaking archaeology, as archaeology only concerns the human past which in the UK is broadly understood to be the last 1,000,000 years (give or take a millennium or two).

There is evidence though that, just as people collect fossils today, people in the past valued fossils, for example as jewellery, ornaments or curios so it is important that all further finds of a similar nature are reported through the Protocol.

This type of fossil is well evidenced along the south coast, and coastal areas of Dorset attract thousands of people on the hunt for fossils every year.

Information about this discovery has been forwarded to:

- BMAPA
- The Crown Estate



## Hanson\_0546: Unidentified Object

G. Price found this enigmatic item on board the *Arco Arun*. It was amongst material dredged from Area 401/2 which lies in the East Coast region, 25km east of Lowestoft. It was found in July 2014.

Images of this find have been shown to several experts both within, and external to, Wessex Archaeology and a firm identification has still not been reached. The find is made of iron and is believed to have performed a maritime role, involved with shipping or fishing activity around the coast of Britain. It has an aperture at one end, inside which a small length of thin chain is fixed. Four holes are present at the other end and wear around them suggests that ropes or chains passed through them.

One of the potential identifications is fishing weight, which is plausible given the size of the item and the potential for it to have been attached or secured to nets or pots lowered to the seabed. Alternatively, the four holes through the object might suggest a role in tensioning cables or chains, or securing them onto a sub-sea tool, such as a grapnel, without their becoming tangled.

This report will remain open and further information will be disseminated if a firm identification is received.



Information about this discovery has been forwarded to:

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





## LTM\_0548: Connecting Rod

This was discovered by Gary Phillips at Lafarge Tarmac's Ridham Wharf. It was dredged in June 2014 with aggregate from Area 460 which lies in the East English Channel region, south-east of Eastbourne, Sussex.



This large connecting rod measures over half a metre long (550mm). Both of the holes on the ends are threaded and were likely to have held a bush seating consisting of a pin with a rubber fitting. The rubber reduces vibration and movement, which could cause damage. Perpendicular to the bush seating holes are two narrower pin holes. The function of these would be to secure the rod in place, preventing lateral movement.

Wessex Archaeology's Senior Heritage Consultant Bob Davis studied images of the find. The light colour of the metal, and its good condition despite submergence in a marine environment, suggests that this is manufactured from aluminium or magnesium alloy, he tells us. The slight flange seen along the shaft increases the strength of the component whilst minimising bulk and weight.

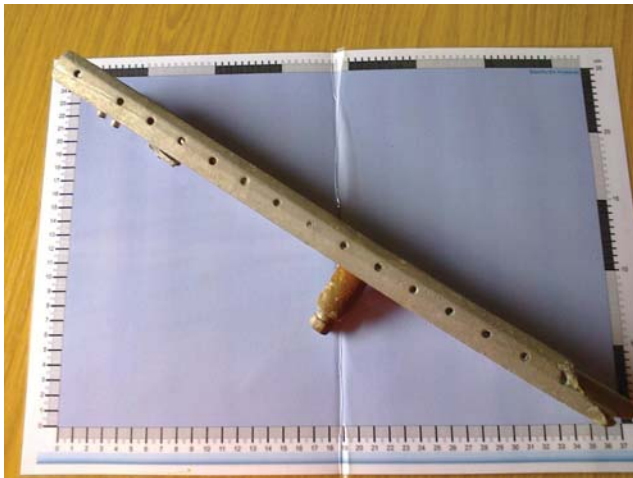
Identifying where this rod was fitted and used has been more problematic. Based on its appearance, Bob hypothesises that this was fitted to a vehicle, perhaps as part of the steering or suspension mechanisms. Images were also sent to an expert in military aircraft – Ewen Cameron of the Royal Air Force Museum – who confirmed that whilst it could possibly have come from an aircraft, it was not familiar to him, giving rise to the idea that this is from either a terrestrial or marine vehicle, or machinery.

Finally, images were shown to archaeologist and mechanic Dave Budd who confirmed that this is unlikely to have come from a car. Perhaps the most likely origin of this connecting rod is from heavy machinery, either as part of a ship or as part of the equipment employed by vessels working offshore (for example part of a trawl or similar).

A geophysical assessment of the Licence Area conducted by Wessex Archaeology in 2012 revealed two unidentified anomalies, a debris field and a dispersed wreck – any one of which could have yielded this find. Further finds from the Licence may help further identify this find in the future.

Information about this discovery has been forwarded to:

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



## CEMEX\_0551: Possible Aircraft Fragment

Lawrence Clay retrieved this find from a cargo dredged from Area 458 which lies in the East English Channel region, south-east of Eastbourne in Sussex. It was dredged in August 2014 and delivered to Northfleet Wharf.

The light construction of this artefact suggests that this may have come from an aircraft. A great number of aircraft crashed off the south coast during the Second World War and the locations of many of them are poorly recorded, where they were recorded at all.

Images of the find were shown to Ewen Cameron of the Royal Air Force Museum. It is hard to identify broken material from images alone but he did venture the theory that this find may have been part of the canopy retraction mechanism from an aircraft. This cannot currently be confirmed.



Tarmac\_0387 – *Luftwaffe* fuel filter cap

Interestingly, a fuel cap was dredged from the Area and reported in 2011 (pictured above). This was identified as a German Daimler Benz fuel filter cap from a *Luftwaffe* aircraft. Aircraft, where identified, are protected under the *Protection of Military Remains Act 1986*. They may also hold human remains or unexploded ordnance.

A geophysical review of the Licence Area conducted in 2013 revealed four anomalies of potential anthropogenic origin described as debris, buried debris and a mound feature in the vicinity of the Licence Area. However, only one of these, described as medium sized debris and referred to as 7001, lies within an area that has been dredged and it is protected by an exclusion zone. It is possible that one of the four anomalies represents an aircraft crash site or debris field and that these finds have migrated from there into the current active dredging zone.

Information about this discovery has been forwarded to:

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



## LTM\_0556: Cannonball

J. Jerromes found this cannonball at Lafarge Tarmac's Burnley Wharf in Southampton. It was dredged from Area 127 which lies in the south coast region, to the west of the Isle of Wight.

This is the fifteenth cannonball reported through the Protocol from Area 127 in the last 10 years, and it is the sixth to measure 3" in diameter. This example weighs 1.44kg, which is comparable to the weights of the other five 3" balls from this Licence. This suggests that the cannonballs are contemporary and that they may have been lost, potentially through firing, at around the same time or in the same event.

LTM\_0556, in common with the other five 3" cannonballs (Tarmac\_0383; Tarmac\_0398; Tarmac\_0413 and 0414; Tarmac\_0424) is likely to have been fired by a Saker, a gun which was in use from the 16<sup>th</sup> century to the early 18<sup>th</sup> century (from the 1500's to the early 1700's, during the post-medieval period). These guns were used by the English, by Venetian merchantmen, by the French and by the Spanish.

A concentration of contemporary cannonballs could indicate that a battle has taken place in the area (highly likely given the long history of naval and merchant activity off the south coast) or that the cannonballs were lost with a wrecked ship. The former is currently thought to be more likely.

Cannonballs from Area 127 were featured in the 2011-2012 Annual Review which is available online.



Comparable cannonballs from Area 127

Information about this discovery has been forwarded to:

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

## LTM\_0557 and LTM\_0565: Aircraft Fragments

LTM\_0557 was dredged in August and LTM\_0565 was dredged in September 2014. Both were discovered by N. C. Sait at Burnley Wharf amongst material from Area 395/1 which lies to the east of the Isle of Wight.



Finds retrieved in 2013 from Area 395/1, which lies in the south coast region, suggested the presence of a dispersed aircraft wreck site in or around the Licence Area. Further finds from 2014 have continued to reveal information about this potential site. The finds dredged so far have included several which allowed the aircraft to be identified as a Ju 87 – a *Luftwaffe Stuka* - though a further find from the Area was identified as potentially coming from a different aircraft, reminding us of the strong possibility that more than one aircraft lie in the region.

The finds reported here are all believed to have come from an aircraft although identifying them conclusively has not been possible. Images of these finds were shown to Ewen Cameron, a Curator of the RAF Museum in Stafford. All of the finds pictured here are likely to have come from an aircraft, Ewen tells us, and none of them display any characteristics that would suggest that they are not from the Ju 87 identified from earlier artefacts.

Several of the aircraft fragments reported (pictured above and below) are likely to be parts of the frame of the aircraft, whilst others suggest a role in the electrical wiring – specifically the fabric coated wire coil pictured top centre and the artefact shown top right.

One of the pieces of potential fame, reported as part of LTM\_0557 and pictured below – has a potential bullet hole visible clearly through it. This is not the first artefact dredged and believed to be part of this assemblage that suggests battle damage. Part of a propeller, reported as LTM\_0515 in 2013 and pictured below, also has a hole that is thought to be a bullet hole.

At present the 'site' is believed to be highly dispersed. The remains certainly suggest the presence of a downed aircraft but whether the bulk of the wreckage lies within the Licence or outside of it is not yet known.

The Junkers 87, known as the Ju 87 or *Stuka*, was a two man dive bomber first flown in 1935 and used extensively during the Second World War. With its distinctive inverted gull wings it was a recognisable symbol of German air power used to promote the *Luftwaffe* and popularise air victories. It was produced until 1944 giving a potential 9 year period for the date of the manufacture of these finds.



LTM\_0515: Propeller blade with bullet hole

Wessex Archaeology will continue to work with Lafarge Tarmac to ensure that dredging continues with respect to our submerged cultural heritage. The report 'Tarmac\_0463, Lafatarm\_0474 and Lafatarm\_0486: Aircraft Remains' carries more detail about the finds from Area 395/1 as does 'LTM\_0515, LTM\_0516, LTM\_0517, LTM\_0522, LTM\_0523 and LTM\_0524: Aircraft Remains'.

The finds from the Area were also featured in Dredged Up 13 – available online at: <http://www.wessexarch.co.uk/projects/marine/bmapa/dredged-up>

Information about this discovery has been forwarded to:

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





## LTM\_0559: Vehicle Water Pump

J. Jerromes found this artefact at Lafarge Tarmac's Burnley Wharf. It was dredged in September 2014 with material from Area 127 which lies to the west of the Isle of Wight.

This corroded object appears to be a fragment of machinery and it bears the initials 'GM' which in this instance stands for General Motors, a company that manufactures vehicles and other items and which has been in operation since 1908. The company is American, with head offices in Detroit, but has a European arm trading as Klintberg & Way. General Motors manufacture or manufactured several well known and iconic cars including the Chevrolet, Cadillac and the Buick. They are also the parent body for Vauxhall.

Representatives from Klintberg & Way's technical department studied images of the artefact and identified it as part of a water pump for a General Motors vehicle. Unfortunately the condition of the object, and the fact that similar pumps were fitted to many vehicles, means that they cannot be certain which make of vehicle this item came from. They did venture the suggestion that this pump might date from the 1950's, which seemingly fits with the condition of the object.

How this find came to be offshore is uncertain but this is not the first post-war find to have been dredged from the Licence Area that would be more commonly expected in a terrestrial context. Over the last nine years of Protocol reporting several metal finds have hinted that a dump terrestrial material may lie within the Area. A similar story is evidenced on the other side of the Isle of Wight where recovered terrestrial material is interpreted as being dumped blitz rubble. It is possible that rubble was also dumped in the vicinity of Area 127, which lies to the west of the Island.

Information about this discovery has been forwarded to:

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



## LTM\_0560: Possible Lever Plate

N. C. Sait discovered this artefact in September 2014 at Burnley Wharf, Southampton. It was found in material dredged by the *City of Chichester* from Licence Area 127, to the west of the Isle of Wight.

The artefact measures approximately 14cm in diameter, with a large stadium shaped aperture in the centre, which measures approximately 10 cm long and 3 cm wide. The object has blue/green corrosion indicating it is made of a copper alloy. The orange ferrous staining on parts of the object suggest that it has been in contact with corroded iron items. No fixings, such as nails or screws, are present. The object appears to be intact. The v shaped cutaway visible in the photographs appears to be original, not damage, suggesting that it fit around a square or rectangular object.

The artefact was tentatively identified by wharf staff as a face place for a lever. Photographs of the object were shown to finds and shipwreck specialists at Wessex Archaeology and externally but no conclusive identification could be made.



The object was located within aggregate dredged to the north, south and west of the shipwreck *Venezuela*, a steel hulled steam ship which was torpedoed in 1918. The wreck lies with its bow to the north-west, and the bow area is reported to have collapsed and been largely buried by mobile sands. It is likely that there is some debris from the wreck in the vicinity, given its collapsed state and the nature of the wrecking event, and it is therefore possible that the artefact is associated with the shipwreck. However, no other artefacts with an obvious ship related origin have been found close by, and it is possible that the artefact was an isolated object discarded overboard by a passing vessel. Further discoveries in the Licence Area could provide more information, and it is important that they are reported through the Protocol.

Information about this discovery has been forwarded to:

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



## LTM\_0561: Potential Smoke Mortar

This smoke mortar fragment was discovered by N. C. Sait in June 2014 at Burnley Wharf, Southampton.

It was located in material dredged by the *City of London* from Area 127, which is located to the west of the Isle of Wight.

This object has been identified as a potential smoke mortar by Toby Gane of Wessex Archaeology and Norman Bonney, a former lieutenant colonel in the Royal Army Ordnance Corps, Territorial Army. Trevor Parker, of The Ordnance Society confirmed this, adding that smoke mortars, or smoke boxes within naval shells, were used to create smoke screens, to mark where a bombardment is hitting target and to send smoke up over a target. Based on images alone, he suspects this item might be the latter, but this has not been confirmed.

The artefact has a diameter of approximately 4.5cm across the base whilst the opened out part is approximately 4cm high and 7cm long.

It has the following markings stamped on it:

<b>SMK</b>	Smoke Mortar
<b>3 ¾ oz</b>	A standard weight multiple for gunpowder indicating the size
<b>I/N</b>	Indicates Mark I Navy
<b>A. B. &amp; S</b>	Initials of the manufacturer, Ironmongers Alfred Bullows & Sons, Walsall
<b>8 - 42</b>	Indicates that it was manufactured in August 1942.



Given the object's open form, the body of the mortar appears to have exploded and is likely to have been fired during naval skirmishes in the English Channel during World War II. Its presence on the seabed is unlikely to indicate any specific intact archaeological remains, although it does highlight the potential for additional debris associated with naval battles during this period. Further discoveries in the Licence Area could provide more information, and therefore it is important that they are reported through the Protocol.

Information about this discovery has been forwarded to:

- English Heritage
- BMAPA
- The Crown Estate
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## LTM\_0562: Door Latch

This object was discovered by N. C. Sait in June 2014 at Burnley Wharf, Southampton. It was located in material dredged by the *City of London* from Area 127, which is located west of the Isle of Wight.

The artefact measures approximately 13cm x 8cm and has a blue-green corrosion product indicating that it is made of a copper alloy.

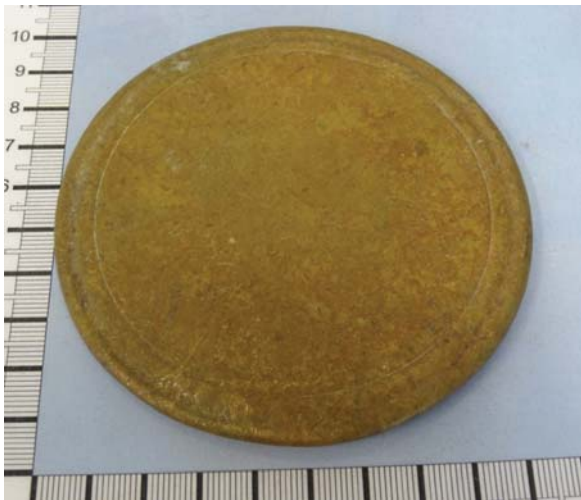
The artefact has a handle on one side and a catch on the reverse, indicating its function as a door latch or lock. Photographs of the discovery have been shown to Wessex Archaeology's find and shipwreck specialists and a tentative identification as a cold store, or cold room door latch has been given, and a tentative date of early 20<sup>th</sup> century.

The find is unlikely to have been associated with any of the known shipwrecks in the area, as the closest is nearly 1km to the north. The area from which this item came has previously produced a number of ship related items, and could be indicative of a very large debris field or widely dispersed shipwreck remains, or a vessel which sustained damage but was able to continue its journey away from the area. Alternatively this latch could have been discarded overboard by a passing vessel. Further discoveries in the Licence Area could provide more information, and therefore it is important that they are reported through the Protocol.



Information about this discovery has been forwarded to:

- English Heritage
- BMAPA
- The Crown Estate
- The Receiver of Wreck
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- The Historic Environment Record for Dorset
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## LTM\_0563: Brass Lid

This object was discovered by N. C. Sait in June 2014 at Burnley Wharf, Southampton. It was amongst material dredged by the *City of Chichester* from Area 395/1, which is located approximately 15km south-east of Chichester Harbour entrance.

This artefact is made of brass and measures approximately 9cm in diameter. It has curved edges on the underside, which indicate that it may have been a cap or lid. The underside also has the numbers 26789 stamped into the centre. The top side has an engraved circle decoration around the edge.



Photographs of the artefact have been shown to Wessex Archaeology's find and shipwreck specialists, however no definitive identification for the item could be given. A likely date of late 19<sup>th</sup> or early 20<sup>th</sup> century has been proposed based on the construction of the find and the likelihood of it having been machine made.

The item comes from an Area without any identified shipwrecks and appears to be an isolated find. The fact that it is made of brass indicates it is likely to have come from a ship, as brass is commonly used in maritime roles as it has more resistance to corrosion. It may relate to a shipwreck or may have been discarded overboard by a passing vessel. Further discoveries in the Licence Area could provide more information, and therefore it is important that they are reported through the Protocol.

Information about this discovery has been forwarded to:

- English Heritage
- BMAPA
- The Crown Estate
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- The Historic Environment Record for Hampshire
- The Local Government Archaeology Officer for Hampshire
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## LTM\_0564: Ceramic Tile

N. C. Sait found this fragment of ceramic tile amongst aggregate from Area 395/1 which lies in the South Coast region, to the east of the Isle of Wight. It was dredged in June 2014 and reported in September.

This find joins others dredged from Area 395/1 in recent years that are more likely to have had a history on land, rather than at sea.

This find is a fragment of 6 inch ceramic floor tile. Wessex Archaeology's Bob Davis, who specialises in historic buildings, took a look at the images from Lafarge Tarmac. The tile is highly vitrified, meaning that it was hard baked when produced, and it shows signs of wear. The grooves on the back of the tile, shown in the image above, not only cut down on the amount of clay used to produce the tiles, and help during the firing process, but also help to provide a key for bedding mortar.



The outward face of ceramic floor  
tile LTM\_0564

This example likely dates to the 19<sup>th</sup> century. Evidence from Area 395/1, and nearby Licence 122/3, has long suggested the presence of a spread of terrestrial material lying on the seabed in the South Coast region. This material – which has included cutlery, building rubble, badges and a bicycle bell – is thought to have been dumped after the Second World War. Cities on the south coast including Southampton and Portsmouth were heavily bombed and it is thought that rubble was cleared after the war and deposited at sea.

This find is likely to have been part of that spread.

Information about this discovery has been forwarded to:

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



## LTM\_0566: Browning M2 Machine Gun Bolt

This artefact was found by Paul Scrace at Greenwich Wharf in August 2014. It was amongst aggregate from Area 447 which lies in the Thames Estuary region, south east of Lowestoft.

Jonathan Ferguson of the Royal Armouries Museum identified this artefact as being part of a Browning M2 machine gun. John Browning began designing the M2 towards the end of the First World War but it did not enter large scale production until 1933, seven years after Browning's death in 1926, when it was manufactured by American company Colt Firearms.



The Browning M2 is a .50 calibre heavy machine gun and is still in use today by NATO forces. During the Second World War it was fitted to American combat aircraft, including the P51 Mustang fighter and the B17 bomber. It was also used in a naval role on board ships and was issued to US infantry units, though given the location of the discovery this example is more likely to be from a ship or aircraft.

A search of the records for dredged finds from this Area reveals that only one aircraft find has previously been reported from 447 - the microphone hand set from a Vickers Wellington bomber reported as Tarmac\_0419 in 2012. However this aircraft was fitted with the .303 Browning machine gun, not the .50 calibre one recorded here. Interestingly, parts of a .303 Browning were dredged from 447 in 2012 and reported as CEMEX\_0406. The absence of further aircraft material suggests that this find was lost from a vessel, though future finds from the licence might alter this interpretation.

Information about this discovery has been forwarded to:

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



## LTM\_0567: Pistol Slide and Barrel

Paul Scrace found this artefact amongst material dredged from Area 447 which lies in the Thames Estuary region, approximately 17km south-east of Felixstowe. It was dredged in August 2014 and delivered to Greenwich Wharf.

Greenwich Wharf correctly identified this artefact as being part of a pistol. Images were shown to Jonathan Ferguson of the Royal Armouries Museum who confirmed that it was indeed a pistol, specifically a Tokarev TT-33.

Tokarev TT-33 pistols are a semi-automatic weapon developed from an earlier model, the TT-30, in the early 1930's in Russia. The TT-33 was widely used by Soviet troops during the Second World War and was issued to officers.

The Tokarev TT-33 pistol was in production until 1954 and variants were produced by most countries within the soviet bloc at one time.

How this example came to be in British waters is not known – it is a long way from Russia where it was produced or from Germany where it may have been used. It may have been lost overboard from a vessel.

Information about this discovery has been forwarded to:

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

### Tokarev TT-33 Pistols



Creative Commons – SONY at ru.wikipedia



LTM\_0567

email: [protocol@wessexarch.co.uk](mailto:protocol@wessexarch.co.uk)

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



**British Marine Aggregate Producers Association**  
Gillingham House, 38-44 Gillingham Street  
London SW1V 1HU  
Tel: 0207 963 8000  
Fax: 0207 963 8001  
[bmapa@mineralproducts.org](mailto:bmapa@mineralproducts.org)  
[www.bmapa.org](http://www.bmapa.org)



The Crown Estate  
16 New Burlington Place  
London W1S 2HX  
Tel: 020 7851 5311  
Fax: 020 7851 5128  
[enquiries@thecrownestate.co.uk](mailto:enquiries@thecrownestate.co.uk)  
[www.thecrownestate.co.uk](http://www.thecrownestate.co.uk)



ENGLISH HERITAGE

1 Waterhouse Square,  
138-142 Holborn,  
London EC1N 2STT  
Tel 020 7973 3002  
Fax 020 7973 3001  
[customers@english-heritage.org.uk](mailto:customers@english-heritage.org.uk)  
[www.english-heritage.org.uk](http://www.english-heritage.org.uk)



Head Office  
Portway House, Old Sarum Park  
Salisbury, Wiltshire SP4 6EB  
Tel 01722 326867  
Fax 01722 337562  
[info@wessexarch.co.uk](mailto:info@wessexarch.co.uk)  
[www.wessexarch.co.uk](http://www.wessexarch.co.uk)