British Marine Aggregate Producers Association,
Historic England and The Crown Estate

Marine Aggregate Industry Protocol for the Reporting of Finds of Archaeological Interest

Annual Report to BMAPA 2019–2020

November 2020

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Prepared by

wessex archaeology

Celebrating the 15th Anniversary of the Protocol

for the Reporting of Finds of Archaeological Interest

Protocol background

The Marine Aggregate Industry Archaeological Protocol (the Protocol) is in place to ensure the protection of submerged cultural heritage that may be discovered during marine aggregate industry dredging works.

Prior to a licence being granted to dredge a proposed area, an intensive investigation is undertaken to identify potential archaeological material on the seabed. Using geophysical and geotechnical survey data, and analysis of available records from various sources, archaeologists can identify known and suspected sites of archaeological interest within aggregate extraction regions. The known and protected sites are protected through Archaeological Exclusion Zones (AEZs) to ensure that no harm comes to them through dredging activities. Even after this level of investigation, unidentified sites and especially individual artefacts may still be found within dredged cargoes. In response to this, the Protocol was proposed to define a framework through which archaeological material could be identified, reported, investigated and, crucially, protected. The Protocol ensures that any items of potential heritage importance recovered during aggregate dredging, whether encountered on the seabed, on a dredging vessel, or more commonly, at a wharf after a cargo is landed, can be properly reported, assessed, recorded and archived. In some instances, further mitigation or monitoring may be required.

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

BMAPA member companies have adopted the scheme voluntarily since 2006, though adherence to the Protocol has become a formal condition of consent for new marine licences and the re-licensing of existing licence areas. The Crown Estate joined BMAPA in 2009 to co-fund the Protocol Implementation Service.

When a find is encountered, it is reported through a Site Champion on the wharf or the vessel to a Nominated Contact who alerts the Implementation Service, which is operated by Wessex Archaeology.

Access

Conditions relating to archaeology are placed on marine licences issued for marine aggregate extraction, which require the results of archaeological investigations to be reported to the relevant bodies.

Once a find is reported to the Protocol Implementation Service, it is researched and compiled into a report. Details of the dredged finds are then sent to:

- the Site Champion who reported it;
- the Nominated Contact;
- Historic England;
- BMAPA;
- The Crown Estate;
- The National Record of the Historic Environment (NRHE); and
- the appropriate local Historic Environment Record (HER).

If considered wreck material, finds are also reported to the Receiver of Wreck in compliance with the *Merchant Shipping Act* 1995 and they ascertain a droit number.

All aircraft material is reported to the Ministry of Defence as it may be protected under the *Protection of Military Remains Act* 1986.

Marine finds were previously reported to the NRHE, however the NRHE is now changing, and will soon become the National Marine Heritage Record (NMHR).

All finds, old and new are also published on the Marine Aggregate Industry Archaeological Protocol Facebook page[1] that was set up in March 2017.

Each annual report also publishes all the finds reported during that reporting year, and they are all available to download[2].

In addition, the discoveries and achievements of the staff involved with the Protocol are acknowledged through various publications produced by Wessex Archaeology, including the biannual *Dredged Up* newsletter, also available to download via the previous link.

1. https://www.facebook.com/marineaggregateindustryarchaeologicalprotocol
2. https://www.wessexarch.co.uk/our-work/marine-aggregate-industry-protocol-reporting-finds-archaeological-interest

Raising awareness

The Protocol Awareness Programme is funded by BMAPA and The Crown Estate and implemented by Wessex Archaeology. Members of the Protocol Implementation Team promote awareness of the Protocol and keep awareness materials up to date as well as visiting several wharves each year to maintain a close relationship with the staff. To have consistency, it is often the same member of the team visiting the wharves where possible. Emails between the Implementation Team and the wharf managers and Site Champions are encouraged throughout the year to keep a consistent flow of communication. Through emails, phone calls and during the visits, questions can be answered, and feedback is gathered so that we can further improve the delivery and content of the Protocol. Awareness is also promoted to the wharves and vessels through the biannual *Dredged Up* newsletter.

The Protocol Awareness Programme:

- delivers in-person training by an archaeologist during awareness visits to wharves, aiding industry staff to identify several different types of archaeological finds through interactive slides as well as the process of reporting and conserving finds of archaeological interest discovered on the wharf. As of 2020, the training also sets out guidelines on what to do if a find is suspected to contain asbestos;
- demonstrates the different types of finds from a range of various ages that can be encountered by allowing wharf staff to handle a collection of finds that were previously been reported through the Protocol;
- produces the biannual *Dredged Up* newsletter which aims to publicise the Protocol and highlight recent finds and news. The newsletter is sent out to each Nominated Contact, wharf and vessel that implements the Protocol. The most recent issue, Issue 27 printed in Autumn 2020, and all previous *Dredged Up* newsletters, can be found online[1]
- raises Protocol awareness amongst third parties, such as geotechnical and environmental survey companies working on behalf of the marine aggregate industry;
- is available to support and train individual Site Champions to ensure that new and existing staff are familiar with the Protocol, either in person, over the telephone or via email;

- as of 2019, produces promotional material in the form of branded photo scale cards and mugs delivered to each wharf and vessel enrolled in the scheme; and
- as of 2019, produces biosecurity awareness material and delivers basic training as an add on to the archaeological awareness training.

Biosecurity poster (top) and booklet (right)

1. http://www.wessexarch.co.uk/projects/marine/bmapa/dredged-up

Visits to wharves

Unfortunately due to Covid-19, no Protocol Awareness Visits have been made this year. However, contact has been maintained through emails, phone calls and social media.

Once it is safe for visits to resume, if you would like to arrange a Protocol Awareness Visit in future, or would like to receive more advice on finds and finds reporting, please contact Wessex Archaeology via protocol@wessexarch.co.uk. Training could also be provided remotely and has been successfully done so in the past should any wharf urgently need any for newcomers. Just get in touch.

The training sessions that take place usually last around 30 minutes to minimise disruption to the work of the wharf and are often split in to two or three sessions so that the wharf can continue working with a rotation of staff. The sessions are designed to be informal and involve an interactive presentation to explain the different ways archaeology can reach the seabed and what to do if it is found in the cargo landed at the wharf. The reporting process is also discussed as there have been instances where a Site Champion of a wharf may prefer to report the material directly to the Protocol Implementation Team rather than going through the Nominated Contact. A member of the Implementation Team brings an array of archaeological finds previously reported through the Protocol that wharf staff can handle and discuss. The training also sets out guidelines on what to do if a find is suspected to contain asbestos and UXO. A member of the Implementation Team also brings handouts, laminated scale sheets and branded photo scale cards. Questions can be asked at any time during the training and a discussion is usually had at the end of the presentation. The handouts are designed to be left at the wharf to enable the Site Champions to induct future new employees for current employees to refresh their memories. The Protocol Implementation Team firmly believe that these visits are key to the success of the scheme as it promotes enthusiasm and resolves issues. As well as delivering the training, the visits allow the Protocol Implementation Team to maintain contact with wharves and vessels, keep the content fresh, boost interest in the Protocol and promote it to both new and existing staff.

All archaeological awareness materials can be accessed through the Protocol pages on Wessex Archaeology's website[1] and are available in English, Dutch and French.

Training certificates are sent out to the Site Champions to give to all wharf staff who receive the awareness training so that they may add them to their working portfolios. These are emailed to each Site Champion or wharf manager after a wharf is visited. Additionally, a feedback form is also handed to the attending wharf staff at the end of each visit (or emailed) in order to gather comments and suggestions so that we can continue to make improvements to Protocol Awareness and the way we deliver the training.

Contact is maintained through regular emails, the Facebook page, the annual report and the *Dredged Up* newsletter.

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

Reporting process

Archaeological finds discovered by wharf and vessel staff are reported through a Site Champion to the designated Nominated Contact of the company that owns the wharf or vessel. The Nominated Contact uploads the images and preliminary form to the secure online console[1]. In some cases, the Site Champion will report finds directly to the console rather than through the Nominated Contact. The console alerts the Protocol Implementation Service operated by Wessex Archaeology and the find is added to the database before the Receiver of Wreck is notified if the find is classed as wreck material. If classed as wreck material, the Nominated Contact is asked to sign the Receiver of Wreck form, prepared by the Implementation Service, and send it directly to their office. The find is investigated and occasionally sent to external specialists to identify before a report is produced. Most of the reports are presented on an A4 page and will have an image of the object taken with a scale for reference (see reports for 2019–2020 at the back of this report).

The Implementation Team at Wessex Archaeology then communicates directly with the Nominated Contact and/or Site Champion regarding the archaeological importance of the discovery, and conservation and storage recommendations.

It has been positive that despite Covid-19, reporting through the console has still continued.

The Nominated Contacts for each company are detailed below.

BMAPA Company	Nominated Contacts	Position
Britannia Aggregates Ltd	Richard Fifield	Marine Resources Manager
CEMEX UK Marine Ltd	Samantha Ringwood	GIS & Licence Co-ordinator
DEME Building Materials Ltd	Christophe Matton Tom Janssens	Marine Resources Manager General Manager
Hanson Aggregates Marine Ltd	Nigel Griffiths Patrick Mallon	Principal Resources Manager Marine Licensing & Compliance Co-ordinator
Isle of Wight Aggregates	Edward Skinner	Marine Resources Co-ordinator
Kendall Bros Ltd	Paul Stevens	Managing Director
Tarmac Marine	Edward Skinner	Marine Resources Co-ordinator
Volker Dredging Ltd	Will Drake	General Manager

1. http://net.wessexarch.co.uk/bmapa/login.aspx?ReturnUrl=%2fbmapa%2findex.aspx

Purfleet Aggregates staff with tusk (2006)

Hanson_0035 mammoth tusk reported in 2006

Fifteen Years of the Protocol

In 2019–2020, the Protocol celebrated 15 successful years! During this year, 202 individual finds were reported through the Protocol (from 35 reports) including Palaeolithic handaxes, mammoth teeth, munitions, pottery, and a post-medieval jug. These have been added to a database of over 2000 finds reported since the launch of the scheme in 2005.

Without the reporting process, finds from marine sand and gravel would most likely never have entered the archaeological record. Dredgers allow us to access areas of the seabed otherwise physically unexplored, and the vigilance of wharf and vessel staff allows these discoveries to be shared more widely. The reporting procedure laid out in the Protocol is designed to allow users to follow a time-effective process of documenting and reporting finds to the Nominated Contact or Implementation Team at Wessex Archaeology. The team aim to identify and conduct research on the find before producing a short report and sharing the information with marine aggregate industry staff and the named authorities. In the event that the team cannot identify the object, an in-house or external specialist will be contacted to ensure that the utmost is done to provide a background and relative age on the reported find.

Due to Covid-19, we were unable to visit the wharves to give the archaeological awareness training this year, however, communications between some Site Champions and the Implementation team were upheld via email.

The number of reports each year and the ongoing success of the Protocol confirms that it is as relevant now as it was in 2005. The support of the marine aggregate industry has once again been substantial, with the continued high standard of reporting of archaeological finds through the Protocol and the welcome that is received by the awareness staff during wharf visits.

Through the implementation of the Protocol, the marine aggregate industry has demonstrated that this is a cost-effective mitigation option for protecting cultural heritage that is both fragile and finite. The Protocol Awareness Programme trains staff to recognise and report finds of archaeological interest discovered within cargoes without the need of an archaeologist being present. Because of the success of the Protocol, the model has been adapted and implemented for use in several other industries. The Offshore Renewables Protocol for Archaeological Discoveries (ORPAD), having commenced in 2010 is now equally well-established. In addition, 2016 saw a reinterpretation of the Protocol principles for non-industry audiences, with the launch of the Marine Antiquities Scheme (MAS)[2] aimed at encouraging coastal users to report any finds they encounter. Wessex Archaeology also continues to run scheme-specific protocols for other development projects based on the marine aggregate industry model.

Further information about the Protocol and the Protocol Implementation Service is available online[1].

To contact the Protocol Implementation Service, email **protocol@wessexarch.co.uk** or phone **01722 326 867**.

DEME_0957 metal jug found in 2020. Side view showing owner's mark (left) and view revealing the bearded head decoration (right)

1. https://www.wessexarch.co.uk/our-work/marine-aggregate-industry-protocol-reporting-finds-archaeological-interest
2. https://marinefinds.org.uk

Dredged Up newsletter

In 2019–2020, two issues of the biannual *Dredged Up* newsletter were produced; issue 26 and issue 27.

Issue 26 was released online in March 2020 on the Marine Aggregate facebook page as well as all Wessex Archaeology social media platforms, and outlined some of the year's finds as well as publishing the winners of the annual Finds Awards. We also had a look at the new finds that were recently recovered from Area 240 and also highlighted the importance of asbestos awareness. The electronic copies were released on social media platforms and circulated via email. The hard copies were delayed due to Covid-19 and were distributed in August 2020.

Issue 27 was distributed in October 2020 and celebrated the success of the last 15 years by re-visiting old finds awards winners as well as taking a look at the stats on which company has reported the most since 2005 and which Licence Areas in particular they have originated from. The issue also explored some of the other work that Wessex Archaeology's Coastal & Marine team do at some aggregate wharves and why we do this.

The newsletters are distributed to every wharf, all vessels and BMAPA member companies as well as The Crown Estate, Historic England, the Receiver of Wreck and a variety of other organisations, individuals and the general public during conferences and events. A wider audience is reached through a digital copy of the newsletter that is downloadable from the Wessex Archaeology website[1] and relevant social media pages[2] as well as LinkedIn[3].

The newsletters promote the operation of the Protocol to a wide audience and also provide a positive showcase for the industry's activities. They are also an important tool for raising and maintaining awareness and interest by publicising dredged finds and the dredging process.

Newsletter issues 26 and 27

1. https://www.wessexarch.co.uk/our-work/marine-aggregate-industry-protocol-reporting-finds-archaeological-interest
2. https://www.facebook.com/wessexarch and https://www.facebook.com/marineaggregateindustryarchaeologicalprotocol
3. https://www.linkedin.com/company/wessex-archaeology

Training for the Implementation Team

During this year, members of the Implementation Team undertook additional training in asbestos and in the identification of UXO.

All members of the team attended a one day course on the Management of Asbestos with special reference to asbestos content and legislation compliance in military artefacts and vehicles presented by Simon Houghton of Brandon Environmental. As a result of the training, information on asbestos was presented in Issue 26 of *Dredged Up* and the awareness presentation was updated accordingly.

The team also attended Ramora UK's facility in Gosport for two days and all achieved a certificate in UXO Awareness in Marine Archaeology training Level 1 and 2. The knowledge gained from these courses will aid in the awareness training and in the general running of the Protocol as well as understanding some of the procedures that occur at the wharves with regards to ordnance.

Examples of finds that could contain asbestos

CEMEX_0915 aircraft components

CEMEX_0914 aircraft components

Finds Awards

The 2018–2019 Finds Awards were made to the following wharf and vessels, published in Issue 26 of *Dredged Up*.

Best Attitude by a Wharf

In 2018–2019, the winner of the best attitude by a wharf was CEMEX Angerstein Wharf. In May 2019, staff at the wharf discovered a collection of fragmented aircraft material in a cargo dredged from Licence Area 511. As there had been a large turnover of staff at the wharf since the last wharf visit, they were unsure on the procedure of reporting the finds. They got in contact with a member of the Implementation Team at Wessex Archaeology who was able to guide them through the reporting process over the phone. A member of the team gave an awareness visit to the wharf within a week of them contacting us. We would like to thank Angerstein Wharf for making contact when they were unsure what to do and for working with us to educate all the members of staff on the correct reporting methods. Since then, more aircraft and munitions have been successfully reported by the wharf (CEMEX_0914, 0915 and 0920).

CEMEX_0920 munitions

Best Attitude by a Vessel

Two vessels won this award! Congratulations to Tarmac's *City of Westminster* and to Hanson's *Arco Beck*. Thank you to all vessels that has reported finds through the Protocol over the past reporting year.

Tarmac's *City of Westminster* discovered an aircraft propeller blade (Tarmac_0907) in Licence Area 430 in the East Coast dredging region, approximately 28 km east-south-east of Southwold.

This aircraft propeller blade was found by Chaminda Tennekoon in the draghead of the vessel where it was removed to deck and photographed. Images of the find were sent to Steve Vizard, an external aircraft specialist, and to Bob Clarke, an aircraft specialist at Wessex Archaeology. Bob said that metal propeller blades made of aluminium alloy (duralumin) came into production in the late 1930s, mainly in America, with Britain following suit in the 1940s. He said that the hollow hub is characteristic and used for balancing. The curve that can be seen on the propeller blade is distinctive evidence of damage to a rotating prop hitting water. Steve said that it is a British blade from an RAF aircraft and that the configuration of the blade, the way it would be attached to the actual hub unit, at its base, strongly indicates that it is a DeHavilland type prop unit. Unfortunately, this would not tell us the aircraft type, as the DeHavilland propellers were fitted to a variety of different RAF aircraft throughout the Second World War. He said it could, however, be from an early Spitfire, or at least from that period.

Combining all the aircraft material now recovered from Area 430, it would seem that they represent three different aircraft and varied nationalities; with American, German and now a possibly British part having been discovered.

From Hanson's *Arco Beck* Malcolm discovered and reported a vertebra, discovered in Licence Area 240 in the East Coast dredging region approximately 10 km east of Great Yarmouth. Professor Adrian Lister from the Natural History Museum viewed the photos and concluded that this is the second neck vertebra (axis vertebra) of an elephant. Without detailed comparisons, he could not say what species it is, but its size is consistent with woolly mammoth and as it was found in the same deposit as a woolly mammoth tooth (Hanson_0927), that is a probable ID. *Mammuthus primigenius* or woolly mammoth were in existence in Europe during the late Middle and Late Pleistocene, dating from 350,000 to 10,000 thousand years ago.

Tarmac_0907 propeller blade

Best Find

The best find of the 2018–2019 reporting year went to CEMEX_0908; a submarine pyrotechnic discovered in Licence Area 137 in the South Coast dredging region, approximately 10 km south of the Needles. Michael Pettitt, Tim Bethune and Mark Nichols discovered it at Shoreham Wharf.

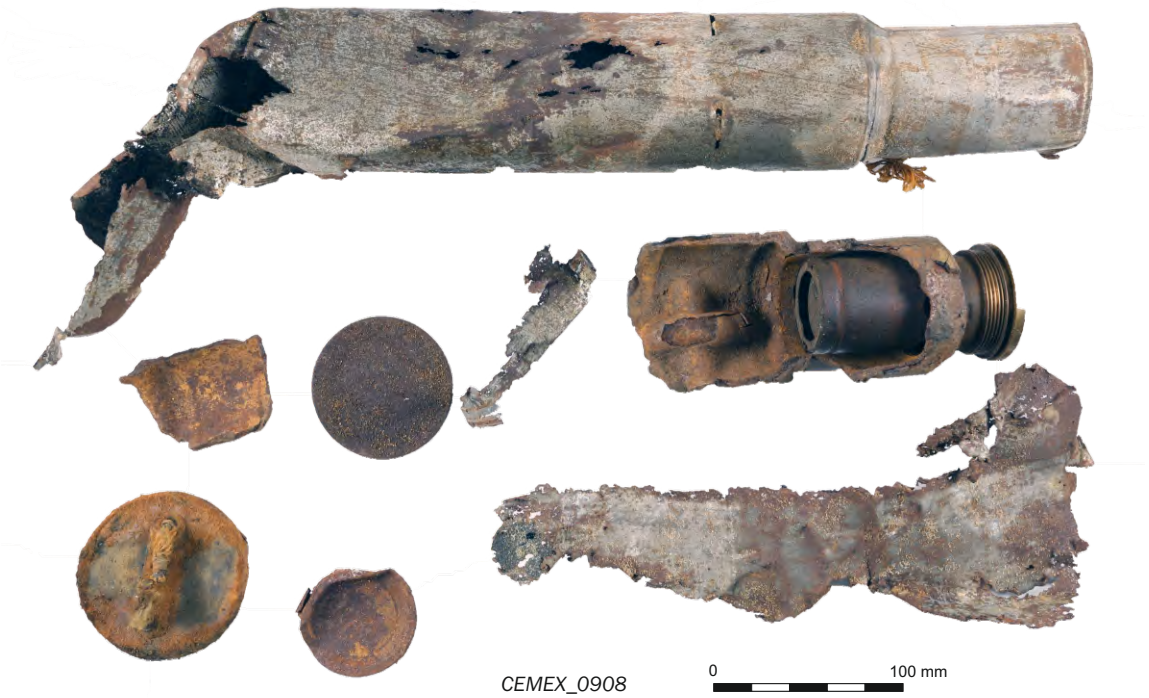
The first element of this find is a broken metal cylindrical tube that measures 820 mm long and 70 mm wide that appears to be made of aluminium with an associated brass mechanism, inscribed with 'Ejector No. 2 MK I/L II MB/44' as well as the Navy Broad arrow. Wire and a series of electrical components are also visible. The second component of this find is a canvas parachute that, despite a few holes, was complete with the remains of the string that would have held it to its origin. Images were sent to our in-house specialists Alistair Byford-Bates, Bob Davis and Bob Clarke. Alistair and Bob Davis both said that it looked 'percussive' and suggested that both finds were connected.

After research, it has been suggested that this find is an example of a Submarine Emergency Identification Signal, Star, Mk 2 Mod 2 or Mk 3 Mod 0. They were for use exclusively with the submarine signal ejector and were ejected by compressed air. On rising to the surface of the water, Submarine Emergency Identification Signals Mk 2 Mod 2 and Mk 3 Mod 0 project a Single Star Grenade Mk 5 to a height of 250 feet (76 m), where a parachute would open to support the star, which would burn for approximately 13 seconds. The complete signal was available in one of three colours, red, green or yellow and should not have been ejected at depths greater than 160 feet (79 m), as the time required to reach the surface was limited to the 27 seconds allowed by the fuse. They consisted of a buoyant tube of aluminium 18.5 inches (470 mm) long and three inches (76 mm) in diameter, which contained the Single-Star Grenade Mk 5 Mod 0. Early issues of Submarine Emergency Identification Signal Mk 2 Mod 2 contained either Smoke Grenade Mk 3, for day use, or Three-Star Grenade Mk 4, for night operation.

Bob Clarke had a different idea for the find. He said it looks more like a 2-inch UP (unrotated projectile) Anti-Aircraft Rocket which were successfully deployed in the anti-aircraft Z Batteries, operated by the Home Guard. He said the chute looks to be 5 feet (1.5 m) based on the images, which unfortunately is a standard size and therefore cannot be identified further. He said it may not be associated with the other find.

CEMEX_0908 canvas parachute

This item is believed to date to the Second World War, where it may have been deployed as a flare from a submarine. It is not possible to confirm whether both finds are associated with each other at this time although it is believed to be the case.



CEMEX_0908

CEMEX_0952 tooth

CEMEX_0952 tooth

0 50 mm

CEMEX_0951 bone

0 100 mm

CEMEX_0964 brass weight

0 50 mm

Hanson_0936_001 hand axe

Protocol reports

During the 15th year of operation, Wessex Archaeology received 35 reports through the Protocol Implementation Service. These reports encompassed details of 202 separate finds. Further details of each discovery are shown below and included in the wharf reports appended to this report.

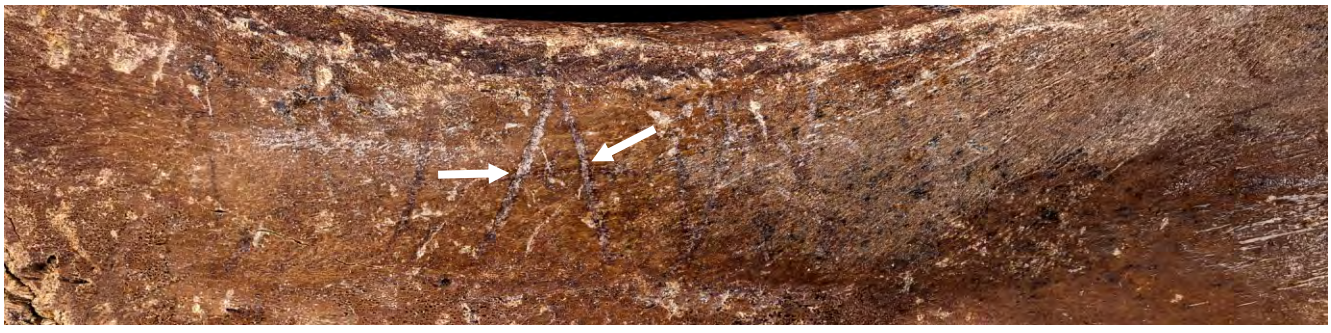
Finds reported in 2019–2020

Report ID	Licence Area	Region	Wharf/Vessel	Description	No.
DEME_0932	351	South Coast	Vessel	Large munition	1
CEMEX_0933	137	South Coast	Wharf	Hook	1
CEMEX_0934	340	South Coast	Wharf	Two plastic tubes	2
Hanson_0935	240	East Coast	Vessel	Mammoth tooth	1
Hanson_0936	240	East Coast	Wharf	Collection of flints	3
Hanson_0937	240	East Coast	Wharf	Collection of bones	26
Hanson_0938	240	East Coast	Wharf	Collection of flints	27
Hanson_0939	240	East Coast	Wharf	Collection of bones	85
Hanson_0940	240	East Coast	Wharf	Shell casing	1
Hanson_0941	240	East Coast	Wharf	Pottery sherd	1
Hanson_0943	240	East Coast	Vessel	Hook	1
CEMEX_0944	340	South Coast	Wharf	Bullets	4
CEMEX_0945	340	South Coast	Wharf	Munition	1
CEMEX_0946	340	South Coast	Wharf	Munitions	4
CEMEX_0947	340	South Coast	Wharf	Munition	1
CEMEX_0948	511 or 512	East Coast	Wharf	Collection of bones and aircraft pieces	8
CEMEX_0951 & CEMEX_0952	460 or 512	East English Channel or East Coast	Wharf	Collection of bones	4
Hanson_0953	401/2	East Coast	Wharf	Metal finds including pipe cover and gasket	6
Hanson_0954	240	East Coast	Wharf	Three bullets	3
Hanson_0955	240	East Coast	Vessel	Bone	1
CEMEX_0956	137	South Coast	Wharf	Munition	1
DEME_0957	340	South Coast	Wharf	Jug	1
Hanson_0958	240	East Coast	Wharf	Two animal bones	2
Hanson_0959	401/2	East Coast	Wharf	Two shells	2
Hanson_0960	401/2	East Coast	Wharf	Two bullets	2
DEME_0961	351	South Coast	Vessel	Large munition	1
CEMEX_0962	137	South Coast	Wharf	Possible flare casing	1
CEMEX_0964	460 or 512	East English Channel or East Coast	Wharf	Brass weight	1
Hanson_0965	401/2	East Coast	Wharf	Shell casing	1
Hanson_0966	401/2	East Coast	Wharf	Shell casing	1
Hanson_0967	401/2	East Coast	Wharf	Bullet	1
CEMEX_0968	137	South Coast	Wharf	Pottery sherd	1
Hanson_0969	240	East Coast	Vessel	Tusk fragment	1
Hanson_0970	240	East Coast	Vessel	Mammoth bone	1
CEMEX_0971	514/1	Humber	Vessel	Metal debris	4

Specialists

If a new find cannot be successfully identified by a member of the Protocol Implementation Service team at Wessex Archaeology, or if more information is needed, experts both in-house and from external companies and organisations are consulted. Since the implementation of the Protocol in 2005, the collection of willing and valuable experts we consult has grown to include a range of fields. The table below provides a list of the specialists who gave advice during the 2019–2020 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 extremely grateful to all the specialists who have assisted in the identification of Protocol finds over the last 15 years.

Expert	Advice given concerning	Institution/Organisation
Euan McNeil	Maritime artefacts	Wessex Archaeology
Alistair Byford-Bates	Maritime artefacts	Wessex Archaeology
Graham Scott	Maritime artefacts	Wessex Archaeology
Paolo Croce	Maritime artefacts	Wessex Archaeology
Phil Andrews	Terrestrial artefacts	Wessex Archaeology
Lorrain Higbee	Zooarchaeology	Wessex Archaeology
Phil Harding	Flint artefacts	Wessex Archaeology
Lorraine Mepham	Pottery	Wessex Archaeology
Rachael Seager Smith	Pottery	Wessex Archaeology
Dr Adrian Lister	Mammoth remains	Natural History Museum
Simon Parfitt	Animal bones	Natural History Museum
Dr Silvia Bello	Cut marks on bone	Natural History Museum
Anthony Mansfield	Mechanics and engineering	Senior Naval Engineer
Trevor Parker	Ordnance	Ordnance Society
Steve Vizard	Aircraft	Airframe Assemblies



Teeth marks on Hanson_0937_001 scapula bone identified by Dr Silvia Bello (above). See Case Study 2 for more details

LTM_0581
antique dive regulator

UMD_0062 rudder pedal from aircraft

Britannia_0228 ship's badge for HMS Cavendish

Hanson_0171 sherd of Roman samian ware

Tarmac_0320 ship's log

Case Study 1 – Looking back at Fifteen Years of Protocol

To celebrate 15 successful years of the Protocol, we thought it would be interesting to look back at previous finds and analyse the statistics. We looked at how many finds each company has reported since 2005 up to 30 September 2020. This provides an update on the data presented in *Dredged Up* issue 27. By looking at the table below, it may seem that CEMEX were the winners; however, over the years Tarmac has had many names including Lafartarm, Lafarge and LTM therefore, they are the clear winners with a total of 528 finds.

Over the last 15 years, we've had **2081** finds, which is very impressive! Without the dredging industry, these finds would not have been discovered so we would like to send a big thank you to every single one of you who contribute to the Protocol. We've had some very special finds over the years, some of which are featured on this page representing all eras of history.

Company	Number of finds	Number of reports
Tarmac	413	274
Cemex	515	153
LTM	102	84
Hanson	444	131
UMA	429	88
UMD	78	74
Britannia	28	24
Pre-protocol	16	13
Brett	16	13
Lafartarm	12	7
Kendalls	11	11
Deme	8	8
Clubbs	5	5
WARG	3	1
Lafarge	1	1
Total	**2081**	**887**

Which areas had the most/least

The table on the next page shows a breakdown of where finds have originated from in the last 15 years. Some areas have changed their location, shape and size over the years but the map on the next page is true as of 2020.

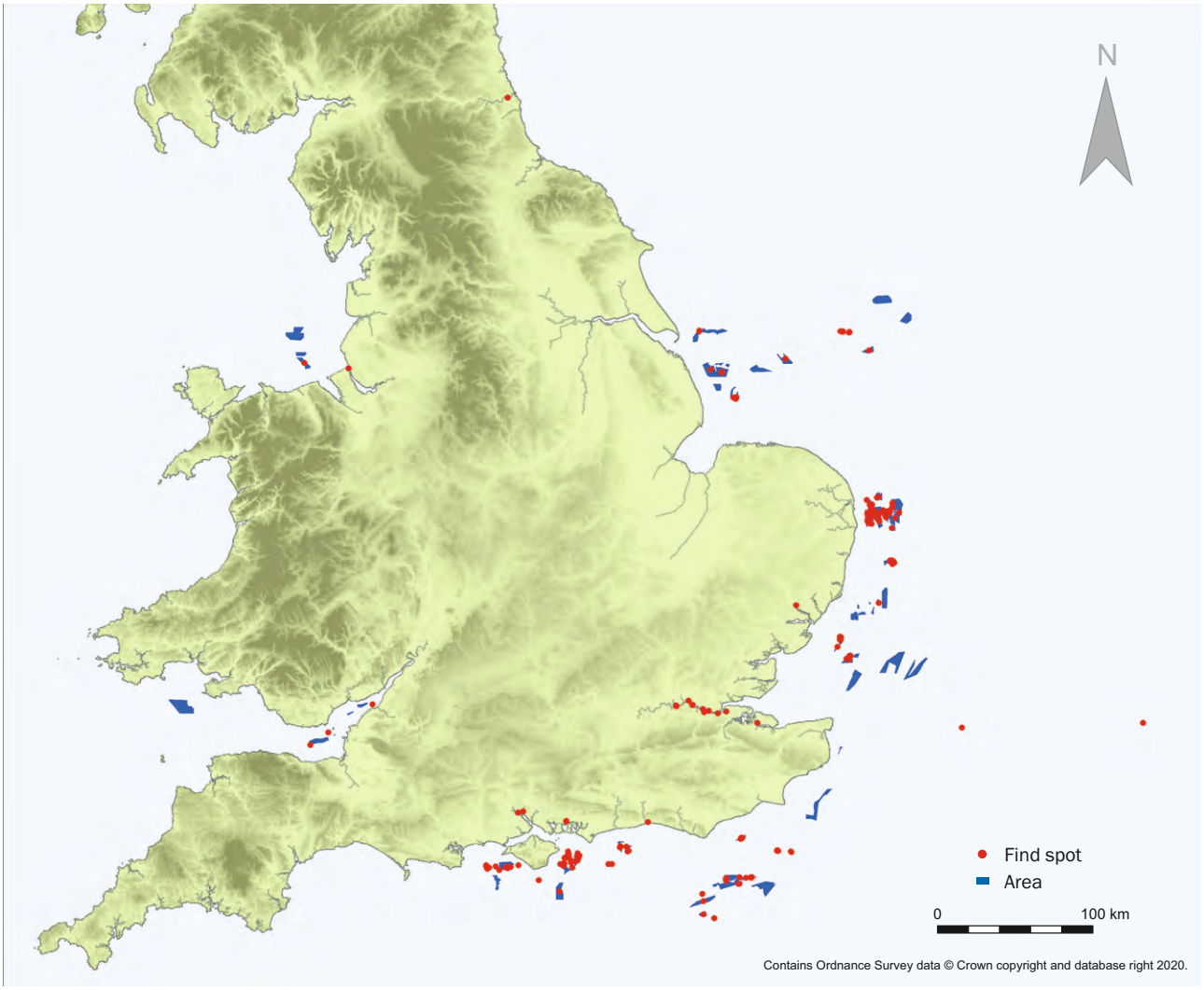
From the table it appears that areas 430, 360 and 240 have the highest number of reported finds since 2005, although no one area is more important than another.

Area 430 has produced several pieces of aircraft wreckage including engine components, structural elements and internal fittings, probably from a Junkers Ju 88. Several other undiagnostic pieces of riveted aluminium and a saddle magazine with ammunition from a German MG 15 machine gun has also been reported from the area.

Waterlogged and mineralised wood (250 pieces) from an eroding peat layer were reported from Area 360 along with mineralised bone, fragments of deer antler and bone, a fragment of worked flint, a mammoth tooth, and an elephant, or possibly mammoth, atlas vertebra.

Area 240 is famous for producing Palaeolithic material including handaxes, worked flints and a large quantity of animal bones and teeth belonging to a variety of animals including woolly mammoth and woolly rhino (see Case Study 2).

CEMEX_0207 relish pot



Distribution of find spots and areas covering 15 years of the Protocol

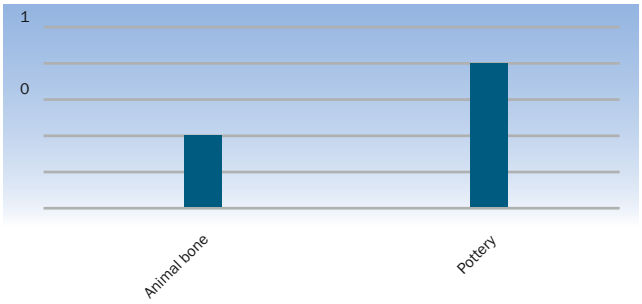
Region	Licence Area	Finds
Belgium	758	3
East Coast	202	1
East Coast	228	6
East Coast	240	327
East Coast	242	14
East Coast	251	12
East Coast	254	25
East Coast	296	19
East Coast	319	24
East Coast	328/1	1
East Coast	328A	1
East Coast	360	277
East Coast	361	15
East Coast	401/2	14
East Coast	401/2B	1
East Coast	430	338
East Coast	511	50
East Coast	512	6
East Coast	513/2	1
East English Channel	458	15
East English Channel	460	22
East English Channel	461	9
East English Channel	473	7
East English Channel	474	3
East English Channel	478	1
Humber	102	1
Humber	106/3	3
Humber	106C	4
Humber	107	10
Humber	197	1
Humber	408	5
Humber	484	1
Humber	514/1	5

continues right

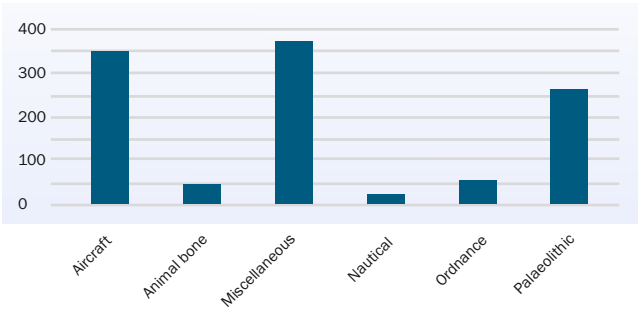
Region	Licence Area	Finds
N/A	Mixed	69
N/A	Unknown	114
N/A	N/A	1
North West	175/2	2
North West	392	2
South Coast	122/1A	4
South Coast	122/3	90
South Coast	122/3C	3
South Coast	123G	1
South Coast	124/1A	3
South Coast	127	158
South Coast	137	26
South Coast	340	40
South Coast	351	96
South Coast	372	1
South Coast	372/1	23
South Coast	395	2
South Coast	395/1	156
South Coast	395/2	2
South Coast	396	7
South Coast	396/1	3
South Coast	407	1
South Coast	451	4
South Coast	500/3	2
South West	377	1
South West	391	1
South West	472	2
Thames Estuary	509/2	5
Thames Estuary	509/3	2
Thames Estuary	510/1	2
Thames Estuary	113/1	8
Thames Estuary	447	23
Thames Estuary	498	5
	Total	**2081**

Summary of discovered objects by Region

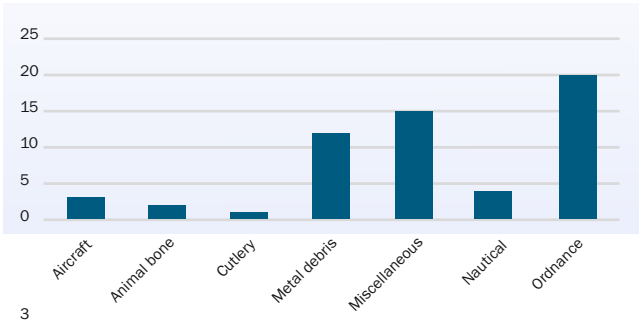
Belgium



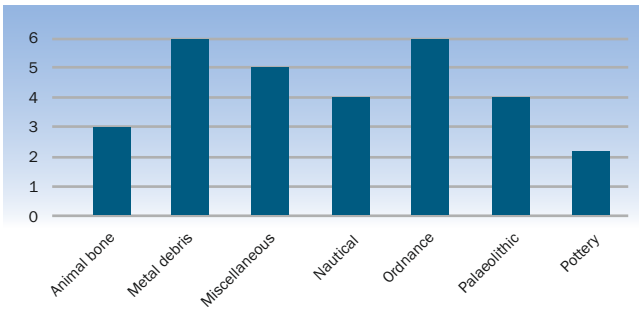
East Coast



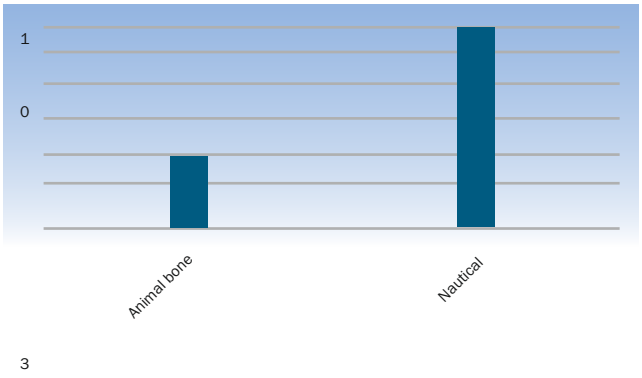
East English Channel



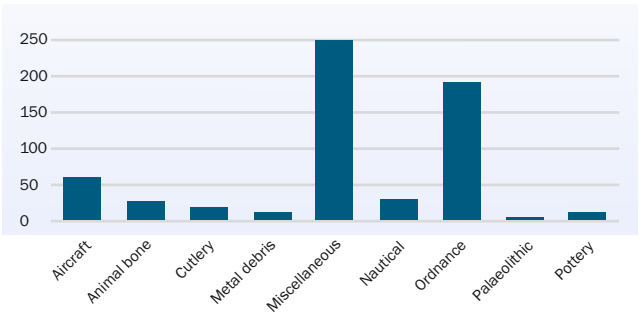
Humber



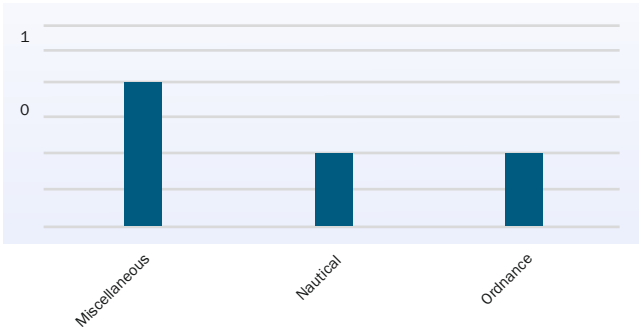
North West



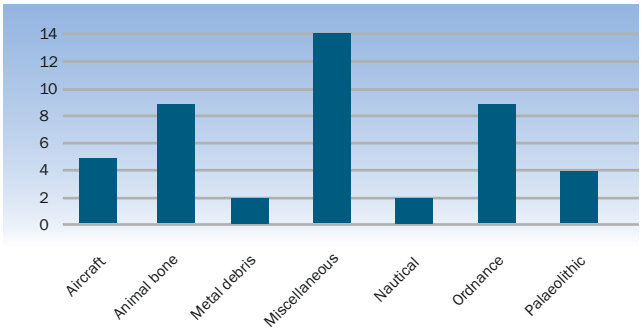
South Coast



South West



Thames Estuary



Case Study 2 – Dagenham Wharf

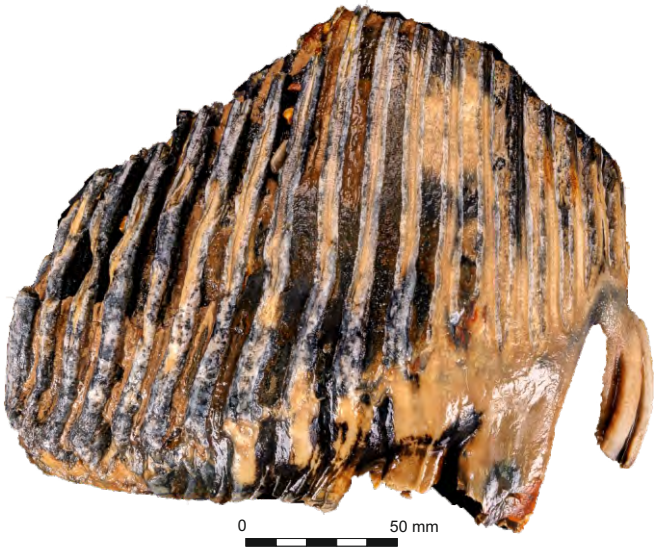
As well as the Marine Aggregate Industry Archaeological Protocol awareness visits, we also visit CEMEX Northfleet and Hanson Frindsbury Wharves a few times a year to carry out a programme of two-day archaeological operational sampling. This involves the assessment of oversize cargo at the receiving wharf by a team of two or three archaeologists.

Operational sampling was implemented as a result of the discovery, in 2007/2008, of Palaeolithic artefacts including handaxes, flakes and cores, as well as a series of prehistoric animal bones, by Mr Jan Meulmeester in stockpiles of gravel at SBV Flushing Wharf, Netherlands and reported through the Protocol. The finds were recovered from aggregate dredged from Licence Area 240, off the east coast and subsequently published by Wessex Archaeology as a monograph (Tizzard *et al.* 2015).

These discoveries from Licence Area 240 were of national significance, and they were found to meet several of the criteria set out in *Identifying and Protecting Palaeolithic Remains* (English Heritage 1998) in relation to whether Palaeolithic remains have particular importance. The high quality of the finds being discovered suggested that: they were in an undisturbed, primary context; the remains belong to a period and geographic area where evidence of human presence was particularly rare or was previously unknown; there are well-preserved indicators of the contemporary environment (ie: floral, faunal, sedimentological); and one deposit containing Palaeolithic remains has a clear stratigraphic relationship with another. In addition, Historic England's *Sites of Early Human Activity: Scheduling Selection Guide* (Historic England 2018) notes that the discoveries from Licence Area 240 are comparable to the prehistoric sites of Boxgrove and Happisburgh, where rare *in situ* deposits were discovered, dating to over 800,000 BP (Parfitt 2010; Lewis *et al.* 2019).

Hanson Dagenham Site Champion, Aaron Chidgey with his finds

In September 2019, during the dredging and processing of cargo from a new lane in Area 240, lane F10, three megafaunal finds were reported by *Arco Beck* and Dagenham Wharf; Hanson_0927 a single lamella (enamel plate) of an upper molar of a woolly mammoth, Hanson_0929 a second neck vertebra of an elephant, likely woolly mammoth, and



Hanson_0935 mammoth tooth from Area 240

Hanson_0931 a section of tusk. In early November 2019, a large mammoth tooth (Hanson_0935) was discovered on board *Arco Avon* from the same area. Professor Adrian Lister from the Natural History Museum concluded that this was a virtually complete 3rd (last) molar of a woolly mammoth aged about 35 years old. He said the top edge of the molar is extremely worn, whereas the roots are in pristine condition indicating that the roots were protected by being buried in the skull until recently.

Further reports were made to us from Dagenham Wharf of several worked flint tools and animal bones, one of which displayed unusual cut marks thought perhaps to be evidence of butchery marks (Hanson_0937_001). Thanks to the rapid reporting of finds by vessel and wharf staff, and early recognition of their probable importance, it was possible to plan an operational sampling visit for the following week to assess the remaining cargo.

The oversized material was transported via a mechanical shovel by an appointed machine driver to a concrete slab a short distance away and spread. Two archaeologists from Wessex Archaeology and one from Historic England along with three staff members from Hanson visually inspected the cargo for any archaeological material.

Once lane F10 had been identified as producing significant material, an archaeological exclusion zone was placed around the lane and dredging ceased to minimise disturbance to the area and other potential finds.

In total, 30 flint artefacts (Hanson_0936 and Hanson_0938) and 111 animal bones (Hanson_0937 and Hanson_0939) were recovered from the cargo prior to and during the monitoring works. Although artefacts from operational sampling visits are usually reported on separately, in this case, the finds were reported through the Protocol to ensure the entire assemblage of 144 artefacts could be recorded together.

One of the bones (below) was identified by Hanson's own Aaron Chidgey as having unusual markings, initially considered to be possible butchery marks.

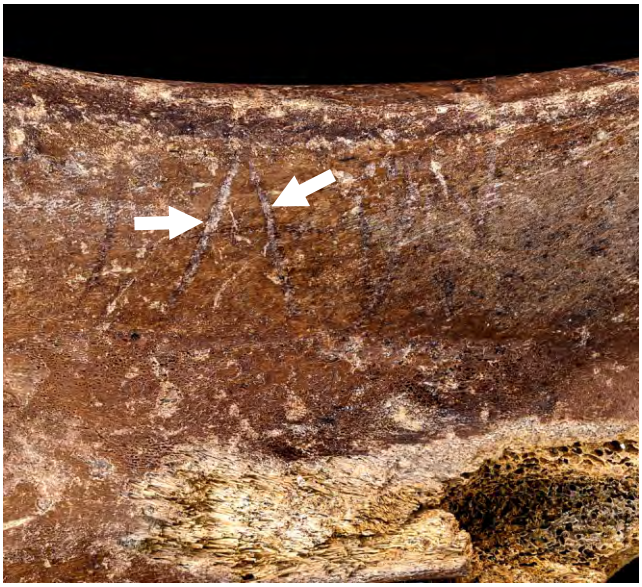
All the finds were bagged during the visit and transported back to Wessex Archaeology's Salisbury office where each individual item was given a unique ID number, washed by the finds team and photographed before being analysed by our in-house specialists.

Phil Harding, in-house flint expert, analysed all the flints and determined that there were five handaxes dated to the Middle Palaeolithic as well as 18 flakes, two possible flakes, a flint blade, a core, and three natural flints that showed signs of thermal fraction (Hanson_0938).

New bay at Dagenham Wharf for isolating Area 240 cargoes

Hanson_0937_001 Woolly Rhino scapula (shoulder blade)

Hanson_0938_001 hand axe from Area 240



Teeth marks on Hanson_0937_001 scapula bone

Detail of fine butchery marks on an animal bone from Boxgrove

Lorrain Higbee examined all the animal bones (Hanson_0937 and Hanson_0939) and reported that most of the bones belonged to mammoth but also included deer, aurochs, cattle, horse and undiagnostic large mammals. The bone with potential butchery marks (Hanson_0937_001) was taken to the Natural History Museum to be inspected by animal bone expert Simon Parfitt and marking specialist Dr Silvia Bello in order to confirm what the marks were as well as the species it belonged to. Simon instantly identified the bone as a rhino scapula. Silvia analysed the bone under the microscope and determined that the bone was not butchered/modified by humans but had been chewed by animals, possibly hyenas.

For comparison, the Protocol Implementation Team were shown other rhino scapulae from the Natural History Museum's collection; one from the site of Kent's Cavern that had been similarly chewed by hyenas and one from Boxgrove that had actually been butchered by hominins. The butchery marks on the Boxgrove bone (pictured) are so fine, they look like they have been done with a needle, showing how sharp a handaxe can be! The chewing marks appear much thicker. It is important that any future bones found on any aggregate vessel or at any wharf is examined for any visible markings that may add to its archaeological value.

The analyses of the finds were included in a report produced by Wessex Archaeology and sent to Hanson and Historic England that outlined the importance of the finds discovered and gave suggestions as to the potential of the new dredging lanes within the exclusion zone.

A big thank you to all those who helped with the monitoring work, and a special thank you to Dagenham employee Aaron Chidgey who discovered several finds including handaxes and the possible butchered bone, as well as being a valuable asset to the archaeologists during their time there.

It was an honour to be able to return some of the finds to Dagenham Wharf in September 2020 where a finds cabinet has been purchased to showcase their finds. The finds were consolidated and boxed at Wessex Archaeology which will hopefully enable them to be admired for many years.

New display cabinet at Dagenham showcasing Area 240 finds

Liaison and accessibility

Details of each discovery have been sent to:

Mark Russell	British Marine Aggregate Producers Association
Stuart Churchley	Historic England, Marine Planner
Neil Guiden	Historic England, National Record of the Historic Environment
Andrew Cameron	The Crown Estate
Nick Everington	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, Camilla Moore. In 2019–2020 the following reports that have droit numbers were deemed to represent items of wreck:

Report ID	Droit number
DEME_0932	231/19
CEMEX_0933	237/19
CEMEX_0934	243/19
Hanson_0940	262/19
Hanson_0941	263/19
Hanson_0943	265/19
CEMEX_0944	015/20
CEMEX_0945	016/20
CEMEX_0946	018/20
CEMEX_0947	019/20
CEMEX_0948	026/20
Hanson_0953	025/20
Hanson_0954	030/20
CEMEX_0956	039/20
DEME_0957	040/20
Hanson_0959	047/20
Hanson_0960	048/20
DEME_0961	049/20
CEMEX_0962	056/20
CEMEX_0964	057/20
Hanson_0965	054/20
Hanson_0966	055/20
Hanson_0967	073/20
CEMEX_0968	121/20
CEMEX_0971	148/20

In the fifteenth year of the Protocol, one discovery was made relating to aircraft (CEMEX_0948).

Although the Protocol received a number of reports of artefacts which may relate to vessels as wreck material, none of them was thought to directly relate to unknown and uncharted wreck sites. Consequently, no reports were forwarded to the United Kingdom Hydrographic Office in the 2019–2020 reporting year.

Information on each find has been forwarded to each county HER relevant to the location of the archaeological discovery. In the case of a discovery where the original location is known, this will be the HER closest to the dredging licence area. Discoveries made at wharves where the licence area is unknown are reported to the 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.

Discussion

Covid-19

Despite the Covid-19 pandemic, the number of reports has remained relatively consistent this reporting year. The distribution of *Dredged Up* Issue 26 was affected by the pandemic as the delivery of the newsletter from the printers overlapped with uncertainties as to presence of staff at wharves, whether physical copies of newsletters could be left out and shared between staff, and members of the Implementation Team working from home. Wharf visits that normally take place between April and August were also affected due to non-essential travel and social distancing rules. We aim to visit 10 wharves a year and this year we were unable to visit any to deliver awareness training. The Implementation Team did visit two wharves to conduct Operational Sampling which is separate from the Protocol.

Importance

Thirty five individual reports were raised during the 2019–2020 reporting year, although less than the number of reports last year and less than the Protocol Implementation Service's expectation of around 50 reports a year, the reports comprised 202 individual finds, and therefore over doubled the 96 finds reported in the 2018-2019 reporting year..

Shoreham Wharf staff

CEMEX_0968 pottery sherd

The finds reported through the Protocol this year represent a diverse range of periods, emphasising that the awareness training is successful in providing background information from all periods. The majority of the finds were Middle Palaeolithic in date (Hanson_0938: Assemblage of Worked Flints) and they ranged through to the modern period (Hanson_0954: Bullets). The various archaeological material and the amount that is still reported reiterates the importance of the Protocol and demonstrates the wealth of archaeological material still on the seabed. Investigations into these finds expand our knowledge of the past and contribute to our understanding.

Success

Hanson Dagenham have bought a display case to house the finds discovered at the wharf from Area 240 which illustrates their enthusiasm for the finds. Aaron Chidgey, who discovered most of the finds, voluntarily became the Site Champion at the wharf as of November 2019 and has continued to do great work there.

New contacts

Being updated with the most recent contacts for each company has ensured that we are able to keep in touch and request data from the correct people. This has helped the Implementation Team get the latest information such as trackplots and the news of a vessel retirement.

Timely reporting

The Receiver of Wreck must be notified of any wreck-related material within 28 days of it being removed from the seabed. Wreck-related finds include any artefacts that have come from a ship or aircraft. The reporting time limit is a legal requirement of the *Merchant Shipping Act* 1995 that exists regardless of the presence of a Protocol, and this is why the Protocol Implementation Team will urge all finds to be reported through the console as soon as they are found. It is vitally important that any material discovered at the wharves or on vessels be reported to the Protocol Implementation Team as soon as possible. In addition to complying with legislative requirements, timely reporting can lead to important success stories, such as the discovery of a significant assemblage of Palaeolithic finds from Licence Area 240 this year (as discussed in Case Study 2). This would not have been possible without prompt reporting, as the rest of the cargo would no longer have been available for Operational Sampling and archaeological assessment.

There have been instances in the past where recovered material accumulates over time before being reported as a batch at a later date, most likely due to how busy the Nominated Contacts are in their daily roles. The longer the items are kept without being reported, the more detail is lost. We therefore ask that all material is reported in a timely fashion. The Protocol Implementation Team will notify the Receiver of Wreck with the positional details of the find as soon as possible and will follow up with additional information as the find is assessed and a Wharf Report will be produced.

Recently, the reporting of finds has occurred soon after the items are discovered which is a big improvement.

Angerstein Wharf staff

Key issues

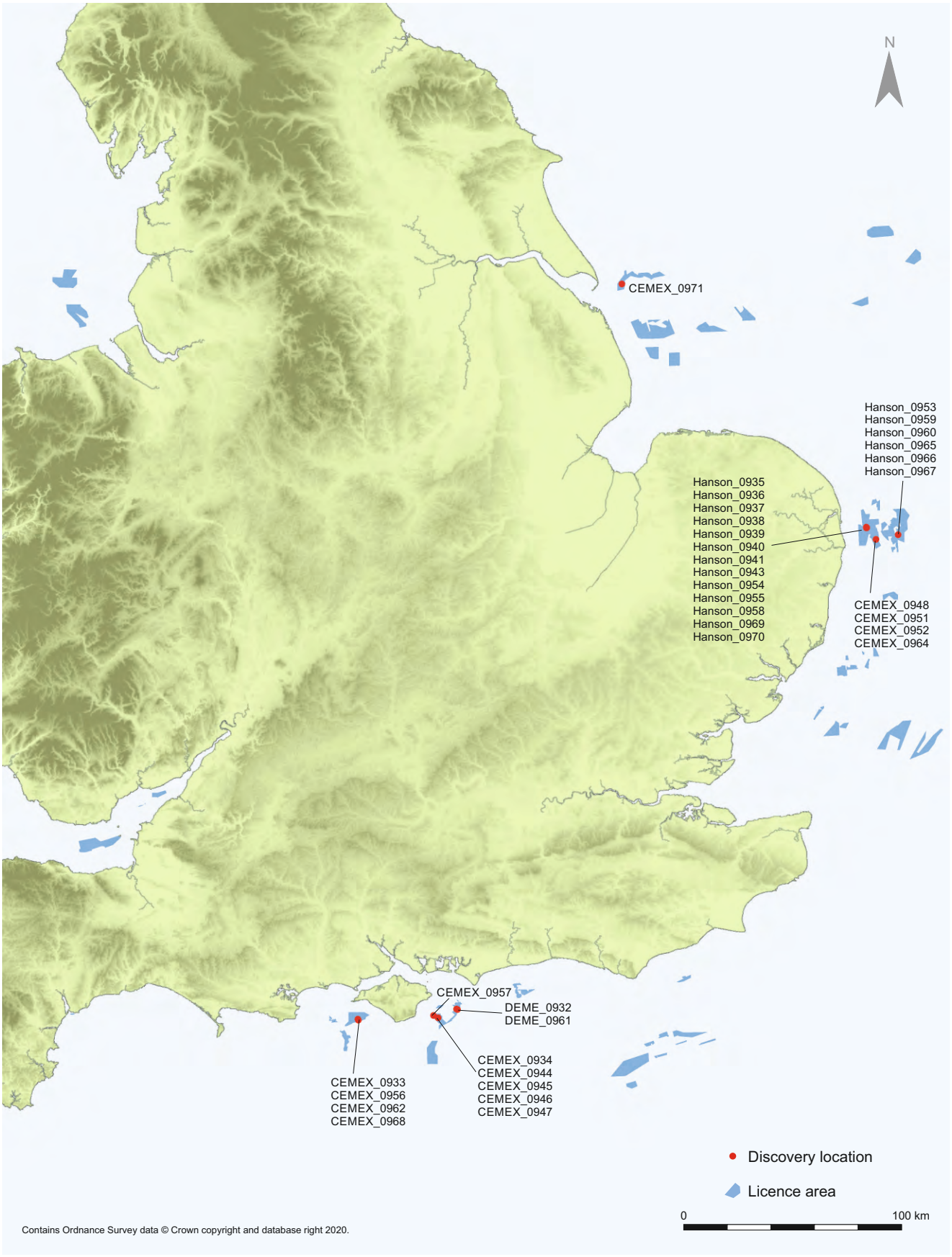
The Protocol has not been rewritten since its inception and has only had minor addendums appended to it relating to the handling of specific finds, demonstrating the robustness and effectiveness of the scheme. During each year of Protocol implementation, minor operational situations are recognised, and the Protocol Implementation Service develops and adapts to overcome these. This year the following points have been raised for discussion.

- *Companies with nil return*
  It is unfortunate that no finds have been reported from Tarmac during the 2019–2020 reporting year, despite emails between the Implementation Team and the Nominated Contact enquiring whether any finds had been discovered. In previous years, Tarmac have reported the most finds and therefore it is unusual not to have any finds reported.

- *Less use of the console*
  There has been a decrease in the number of finds reported through the console. Alternatively, Nominated Contacts or wharves are emailing protocol@wessexarch.co.uk with their finds and a member of the Implementation Team will upload the information to the console on their behalf. There are some issues with this as it is felt information can be lost if only images are sent to the email address, however, those who report this way have started including the key details needed. If not, the sender is contacted with a preliminary discoveries form that requests details such as which Licence Area the artefact was dredged from, the date it was dredged and who found the object.

- *Regions with nil return*
  This year, there were no reports of finds among material dredged from the Thames Estuary, North West or South West regions.

Discoveries 2019–2020



Artefact patterns and distribution

Through the use of a Geographic Information System or GIS (ArcMap 10.6), patterns and trends such as artefact discovery location and concentration can be studied. During the reporting process, the Site Champions or Nominated Contacts are asked to give the licence area number of the object, if known or even the dredging vessel trackplot, if available. Patterns in artefact concentration can potentially identify sites of archaeological interest or debris fields or alternatively, licence areas which are more likely to yield finds of archaeological interest in the future. When a large concentration is discovered from one area, it is useful to look back at previous years to compare what that particular licence area has yielded in the past.

Archaeological Exclusion Zones (AEZs) are positioned around areas of significant archaeological material and it is prohibited for dredging vessels to enter these areas. All AEZs located within Licence Areas are included within the GIS, which is useful when plotting finds of a contentious nature to note the distance of discovery from a previous AEZ as tides are able to move lighter objects from within these zones. The GIS is updated any time a new AEZ is put into place which occurred in November 2019 (Case Study 2).

Archaeological material is not distributed evenly on the seabed. Some areas have a higher potential than others to contain material that entered the archaeological record either accidentally or deliberately. Some areas, such as the East Coast, are known to have had Palaeolithic activity when sea levels were lower than the present day. Other areas are known to be post-Second World War dumping grounds which has become apparent from artefact type and quantity in that area. We also know which licence areas tend to yield more munitions and should be approached with caution.

The kind of vessel used to dredge the seabed material may also play a role in the quantity of archaeological material recovered. Third party contract dredgers are larger and more powerful, therefore they usually cut deeper into the seabed while dredging. This may result in more material being discovered in the cargo which is why information of the delivering vessel is requested.

The survival of artefacts will depend on the marine environment in which they lie. Many of the finds reported this year, in contrast to previous years, were Palaeolithic in date. As in previous years, there were also several modern finds reported, made of metal which tends to be a more durable material in a harsh underwater environment in comparison to organic finds. Finds such as wood or bone and teeth from submerged prehistoric landscapes or shipwrecks may be poorly preserved unless they are buried beneath fine grained sediments, which may account for the generally low percentage of finds received of this material. The high number of artefacts of this type discovered this year may be due to the discovery of an *in situ* site that has been buried for thousands of years and that has not previously been exposed by dredging (see Case Study 2). For finds to be discovered, the high potential for loss or discard must coincide with a high potential for the preservation of archaeological materials.

Based on potential and survival, some licence areas will therefore contain more archaeological finds than others and may be associated with more specific time periods than others. Other factors, such as whether finds are discovered in isolation or grouped with similar items, also add to their context. In most cases, objects are reported as single isolated finds, but we do occasionally receive reports of multiple items found in the same location; this year aircraft material and munitions being prime examples. The significance of a find can therefore depend on its location as much as the nature of object in itself.

Distribution of artefacts by dredging region

There are seven dredging regions around the UK:

- Humber
- Thames Estuary
- South Coast
- East Coast
- East English Channel
- South West
- North West

In the 2018–2019 reporting protocol year a trend established as in previous years whereby most of the finds come from the South Coast. However, this year, 20 out of the 35 reports came from the East Coast.

Twelve of this year's 35 reports came from the South Coast and one from the Humber region. Two reports came from a mixed cargo that may have come from the East Coast or the East English Channel, therefore they are documented as being from an unknown region.

No reports were received from cargoes dredged from the North West, South West or Thames Estuary.

Region	Millions of tonnes of construction aggregate dredged in 2019 (2018 quantity)	Number of finds reported in 2019–2020 (2018–2019 number)
Humber	3.48 (2.78)	4 (1)
East Coast	4 (4.24)	174 (32)
Thames Estuary	1.3 (1.75)	0 (0)
East English Channel	4.3 (4.08)	0 (7)
South Coast	3.3 (3.44)	19 (53)
South West	1.37 (1.24)	0 (0)
North West	0.23 (0.29)	0 (0)
Unknown	–	5 (3)
Totals		**202 (96)**

Table source: https://bmapa.org/documents/BMAPA_CE_22nd_Ann_Rep_2019.pdf

Distribution of artefacts by archaeological typology

Palaeolithic finds

During the 2019–2020 reporting year, the majority of the finds were determined to be Palaeolithic in date (Hanson_0936, Hanson_0937, Hanson_0938 and Hanson_0939), with most originating from Area 240 which has produced previous finds of this date. Most of these finds were discovered through a programme of Operational Sampling (Case Study 2) that was initiated through finds being reported through the Protocol.

Medieval artefacts

No medieval artefacts were discovered this year, although two are believed to be from the post-medieval period (DEME_0957: Jug) and (Hanson_0941: Pottery Sherd).

Maritime artefacts

Most of the finds reported this year are believed to be terrestrial while one is thought to relate to a boat or ship. This report was made up of metal finds including a pipe cover and gasket (Hanson_0953).

Hanson_0953 is not thought to be related to a wreck site, but is an isolated discovery. It could have been lost overboard, purposely dumped at sea, or moved along the seabed from a wreck site elsewhere.

Aircraft

One discovery was made relating to aircraft (CEMEX_0948).

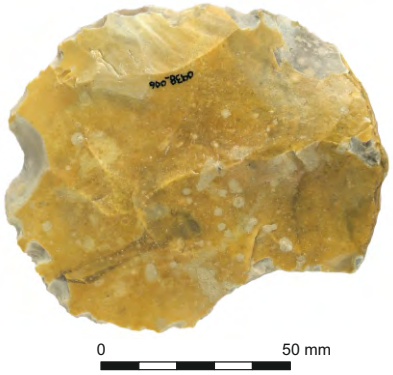
Ordnance and munitions

Several munitions were reported through the Protocol this year ranging from a Palliser round (DEME_0932) and 6-pounder Hotchkiss head (CEMEX_0945) to a Browning heavy machine gun (CEMEX_0944).

Staff should adhere to company health and safety policies before any ordnance is reported through the Protocol.

DEME_0932

CEMEX_0945



Hanson_0938_006 Middle Palaeolithic Levallois flake

Hanson_0941

Hanson_0953

Conclusion

The Marine Aggregate Industry Archaeological Protocol continues to be a relevant mitigation programme for licensed marine aggregate extraction. It also continues to be a model from which other industries draw inspiration and a framework for reporting. It remains a successful and applicable template for recording and preserving heritage on the seabed, for gaining understanding about the unexpected discoveries and for reaching audiences within the aggregate industry to improve their knowledge and understanding of archaeology. This is reiterated by the reports received this year from wharf and vessel staff and the contact that has been maintained with Nominated Contacts and Site Champions this reporting year.

The application of the Protocol ensures that archaeological information is preserved through recording and timely reporting and is disseminated as widely as possible, so that everyone can enjoy and explore our underwater cultural heritage. The fact that reports and images are uploaded to the website and on to social media platforms, and that *Dredged Up* is handed out at several outreach events has targeted a wider audience than just the marine aggregate industry. When work experience students visit the Coastal & Marine team, the work they do with us often revolves around the Protocol and the finds that have been reported. Recently, photogrammetry models were made of finds that each student found most interesting and the results have been published on Wessex Archaeology's social media platforms. This year's student placement, Daisy Turnbull, an MA student at the University of Southampton, was unfortunately cut short due to Covid-19 restrictions, however even in her short time in the Salisbury office, she had the opportunity to explore data of discoveries reported through the Protocol.

The enthusiasm and diligence of wharf and vessel staff ensures the success of the Protocol. This was particularly true this reporting year when Dagenham bought a display cabinet to showcase the finds discovered there. Everyone's support has ensured that the Protocol has become embedded in commercial processes, which in turn reduces the impact of dredging on underwater cultural heritage, by making the archaeological record available for future generations. The commitment of Hanson Wharf and vessel staff was also highlighted by the rapid reporting of discoveries in aggregate dredged from Licence Area 240, and the assistance of wharf staff during Operational Sampling was greatly appreciated.

Despite the challenges of Covid-19, contact has been maintained with the wharf and vessel staff via email and the online and hard copy circulation of the *Dredged Up* newsletters. It is also a success that reporting has not suffered despite the pandemic.

The Protocol Implementation Service Team would like to thank everyone who has helped to support the Protocol during the 2019–2020 reporting year.

The future

Protocol Implementation 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.

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DEME_0932: Large Munition

This large munition was discovered in Licence Area 351 in the South Coast dredging region, approximately 12 km south-east of the Isle of Wight. Jef Bruneel discovered it on board *Mellina.* The find was disposed of by the EOD.

This munition was observed caught in the draghead of the aggregate dredger and measured 940 mm (37 inches) long and had a diameter of 320 mm (12.5 inches). The driving band was still visible at the base of the munition and was grooved, indicating that it had been previously fired.

The Royal Navy bomb disposal unit came to assess the munition and positively identified it as a 12.5-inch Palliser round from the 1860s, estimated to weigh between 350 and 400 kg. The munition was determined to be non-explosive; however, it was blown up in a controlled explosion on the seabed (Kent Online 6 October 2019).

A Palliser round is an iron armour piercing shell of the mid to late 19th century, named after the inventor, Sir William Palliser. These shells were powder-filled but did not use a fuse. Instead, they relied upon the shock of striking the target to set off the burster. These shells were effective against wrought iron armour but shattered against steel armour. (http://www.navweaps.com/Weapons/Gun_Data_p2.php accessed October 2019). This shell may have come from a rifled muzzle-loading (RML) 12.5-inch gun that were designed for British battleships and were also employed for coast defence.

Several pieces of ordnance have previously been discovered and reported from around the Isle of Wight. This area may be indicative of naval warfare or where training took place; either at sea or from the coastal defences nearby.

Information about this discovery has been forwarded to:

- Historic England
- BMAPA
- The Crown Estate
- The Receiver of Wreck (Droit 231/19)
- The National Record of the Historic Environment
- The Historic Environment Record for the Isle of Wight

Newspaper
Kent Online, 6 October 2019. Available at: https://www.kentonline.co.uk/deal/news/victorian-weapon-caused-bomb-squad-callout-213833/?fbclid=IwAR3SVu6lrwMWHaOrK4zMAWHa-3tNMea8ogkVZwmSJbttbngg2FKwOaygEJw

CEMEX_0933: Hook

This hook was discovered in Licence Area 137 in the South Coast dredging region, approximately 6.5 km south-west of the Isle of Wight. Steve Bomber discovered it at Leamouth Wharf.

CEMEX_0933 consists of an iron hook attached to small lump of concretion that measures 80 mm by 50 mm. There are also strands of rope visible at the top of the concretion. It is believed to be a crane hook due to its shape, that has possibly broken off a larger component while it was being used or been replaced and discarded. The object has concreted during its time on the seabed.

Although “cranes” of various sorts have been around for thousands of years, this hook is of the more recent kind. The earliest cranes were made of wood, that were replaced as cast iron, iron and steel took over with the coming of the Industrial Revolution. This hook is believed to be made of wrought iron. Wrought iron consists of layers of almost pure iron that sandwich layers of slag which gives it a "grain" resembling wood, that is visible when it is etched or bent to the point of failure as seen on this example. With the onset of the Industrial Revolution (1780s to 1840s), wrought iron was replaced with cast iron versions produced on a larger scale which means this may be ahook from the last 180 years.

This type of hook was most likely used as part of a crane to unload and load cargo on to ships at a port.

This object may have entered the marine environment via a number of routes. The item appears to have broken off from another element, possibly while in use and as a result thrown overboard as discarded material. If the item originated from a dock or port, this licence area may be indicative of a debris field. Though considered an isolated find, further finds should continue to be reported, as they could provide more information about the marine usage of this area over time.

Information about this discovery has been forwarded to:

- Historic England
- BMAPA
- The Crown Estate
- The Receiver of Wreck (Droit 237/19)
- The National Record of the Historic Environment
- The Historic Environment Record for Isle of Wight

CEMEX_0934: Two Tubes

These two tubes were discovered in Licence Area 340 in the South Coast dredging region, approximately 8.5 km south-east of the Isle of Wight. Michael Pettitt discovered them at Shoreham Wharf.

These two tubes were reported by the wharf as possibly being associated with live ammunition. There are no markings on them. The largest tube measures approximately 450 mm and has a diameter of 60 mm while the smaller tube measures approximately 270 mm and has a diameter of 40 mm. The staff at the wharf said that they thought it was more likely to be a resin than plastic. They also said that it reminded them of cordite.

Cordite is a smokeless propellant developed and produced in the United Kingdom to replace gunpowder as a military propellant. However, the thickness or size of the rods of cordite varies from about 1 mm to 5 mm in diameter (https://theodora.com/encyclopedia/c2/cordite.html accessed December 2019).

Images of the object were sent to Trevor Parker, from the Ordnance Society who said that they may be sticks of propellant, but that without the sizes, it is very difficult to tell. Further communications with the wharf gave the dimensions of the tubes. He said that the other possibility if they are ordnance related is plastic explosives. Trevor said that if he had to identify them, his first task would be to cut off a small piece and see how it burnt! As health and safety policies come first, this was not recommended.

Images of the find were sent to Anthony Mansfield, a senior naval engineer who said that he could not identify the items but that they seemed to be made of resin.

As there is no positive identification for the items, it is undecided how the objects entered the marine environment. A variety of finds have been recovered from around the Isle of Wight, the area may be indicative of a debris field. Alternatively, they could be related to material lost or thrown overboard during every day shipping operations or as part of a military exercise or action.

Information about this discovery has been forwarded to:

- Historic England
- BMAPA
- The Crown Estate
- The Receiver of Wreck (Droit 243/19)
- The National Record of the Historic Environment
- The Historic Environment Record for Isle of Wight

Hanson_0935: Mammoth Tooth

This mammoth tooth was discovered in Licence Area 240 in the East Coast dredging region, approximately 10 km east of Great Yarmouth. Darryl Mason discovered it on board *Arco Avon.*

This find is a virtually compete mammoth tooth with visible root. The tooth measures 300 mm long by 160 mm wide.

Images of the find were sent to Professor Adrian Lister at the Natural History Museum for further identification who said that it is a nice specimen of a mammoth tooth. He said it's the 3rd (last molar) of an animal about 35 years old that dates very probably to the Late Pleistocene woolly mammoth (*Mammuthus primigenius*), although he would have to take measurements to rule out the earlier (Middle Pleistocene) *Mammuthus trogontherii*. He said much of the cement has been eroded, presumably through its history at the bottom of the sea, but the roots are so complete that he wouldn't be surprised to find the skull, or parts of it, still on the seabed.

Mammuthus primigenius or woolly mammoth were in existence in Europe during the late Middle and Late Pleistocene, dating from 350,000 to 10,000 thousand years ago, while the early Middle Pleistocene *Mammuthus trogontherii* (0.7 to 0.5 million years ago) (Lister and Sher 2001). Important changes can be seen in the teeth of the mammoths as each species evolves; there is an increase in the number of enamel bands (plates) in the molars and thinning of the enamel. The dental changes resulted in increased resistance to abrasion, which is believed to indicate a shift from woodland browsing to grazing in open grassy habitats of the Pleistocene.

Recent finds from the same dredging lane within Area 240 have included a lamella of mammoth tooth (Hanson_0927), a mammoth vertebra (Hanson_0929) and a mammoth tusk fragment (Hanson_0931). These finds, along with the condition of this tooth has led us to believe that a whole mammoth skeleton may be within this dredging lane and wharves have been asked to be vigilant when processing this cargo.

References

Lister, A. M and Sher, A. V., 2001. The Origin and Evolution of the Woolly Mammoth. *Science* (volume 294).

Information about this discovery has been forwarded to:

- Historic England
- BMAPA
- The Crown Estate
- The National Record of the Historic Environment
- The Historic Environment Record for Norfolk

Hanson_0936: Flints

This collection of flints was discovered in Licence Area 240 in the East Coast dredging region, approximately 10 km south-east of Great Yarmouth. Aaron Chidgey discovered them at Dagenham Wharf.

Three pieces of flint were identified by staff at Dagenham wharf as being diagnostic. The largest implement recovered measures 111 mm long, 92 mm wide, 20 mm and weighs 286 g. They were found in the same cargo as a collection of animal bones (Hanson_0937) that were all dredged from lane F10.

The artefacts were brought back to Wessex Archaeology, where they were examined by our in-house flint specialist, Phil Harding. He said that Hanson_0936_01 (top left) is a cordiform hand axe that has undergone considerable damage to the tip and edges, most likely as a result of the extraction process. This makes it possible to observe the grey mottled flint from which it was made, which is otherwise obscured by yellow-brown surface stain. Both sides show a limited number of well struck blows to thin and shape the flint. This manufacturing process also produces relatively thin edges which are more susceptible to edge damage, as this example demonstrates.

It is commonly thought that handaxes would have been used for butchering animal carcasses, but detailed examination of the individual tools and of the animal bones associated with them may be able to give more information about these people's lives and activities.

Phil Harding determined that Hanson_0936_002 (bottom centre) is a broken flake represented by the distal part only. Flakes are pieces of flint that have been removed from a larger piece of flint in order to refine and shape it during the manufacturing process. The dorsal surface shows three parallel negative flake scars which indicate that it was undoubtedly removed from a prepared Levallois core that may have been used to make a handaxe. A core is the larger piece of flint that all smaller tools including handaxes are made from by knapping (or chipping) smaller pieces off. The fractured surface contrasts markedly with all other surfaces of the flake, which are stained light yellow, which indicates that fracture resulted from gravel extraction. The edges are similarly extensively chipped.

Levallois is a toolmaking technique of prehistoric Europe and Africa, characterized by the production of large flakes from a tortoise core (prepared core shaped much like an inverted tortoise shell). Such flakes, seldom further trimmed, were flat on one side,

had sharp cutting edges and are believed to have been used as skinning knives. Sometimes the butts of Levalloisian flakes were trimmed in a way that suggests hafting onto a handle (https://www.britannica.com/technology/Levalloisian-stone-flaking-technique accessed January 2020).

After examining the third implement, Phil determined that Hanson_0936_003 (top right) is a flint produced by the natural process of thermal action, not man made, although it is always better to report it if in doubt!

This small group of material demonstrates the continuing density of Palaeolithic (970,000 BP – 10,500 BP) material which remains on the seabed in Area 240. It is thought that this material derived from the area in the North Sea when the seabed was dry land being utilised by humans that were making these tools. Area 240 has previously yielded Palaeolithic finds including handaxes and mammal bones and is thought to be a place where lots of activity occurred in the Palaeolithic period. The implements were found with an assemblage of bones (Hanson _0937) which may suggest Palaeolithic hunting activity was taking place.

Due to the importance of Hanson_0936, animal bones (Hanson_0937), a larger flint assemblage (Hanson_0938) and a separate animal bone assemblage (Hanson_0939), an exclusion zone is now in place around lane F10 where they were all dredged. As a precautionary measure, lane F9 has also had an exclusion zone to avoid any further material that may be *in situ* from being disturbed.

Information about this discovery has been forwarded to:

- Historic England
- BMAPA
- The Crown Estate
- The National Record of the Historic Environment
- The Historic Environment Record for Norfolk

Hanson_0937: Collection of Bones

This collection of bones was discovered in Licence Area 240 in the East Coast dredging region, approximately 10 km south-east of Great Yarmouth. Aaron Chidgey discovered it at Dagenham Wharf.

Hanson_0937 is a collection of 26 of animal bones of varying sizes found alongside three diagnostic pieces of flint (Hanson_0936).

The artefacts were brought back to Wessex Archaeology, where they were examined by our in-house flint specialist, Lorrain Higbee, who said that the animal bones are in poor condition and heavily mineralised. The post-cranial elements have eroded and abraded cortical surface, while many of the teeth have fragmented due to deterioration of the underlying dentine and cementum, consequently there are several enamel sections from tusks and molars amongst the remains.

Number of identified animal bones (or NISP)

Species	**Hanson_0937**
mammoth	17
rhinoceros	1
aurochs	1
cattle	1
deer	1
horse	1
large mammal	4
Total	**26**

Most of the animal bone fragments have been identified as mammoth (*Mammuthus primigenius*). The skeletal elements include fragments of rib and long bones, including three pieces of scapula from the proximal end and caudal border. No obvious signs of butchery are apparent on any of the bones and it remains uncertain if some of the fragmentation can be attributed to butchery. There are also several fragments of tooth enamel, mostly from the tusk but also a few from molars.

The other identified bones include the distal end of an aurochs (Bos primigenius) metacarpal, a horse (Equus ferus) metatarsal and a small piece of antler from either red deer (Cervus elaphus) or reindeer (Rangifer tarandus). There are also a few small

fragments of skull and other long bones with no distinguishing features that could be either from mammoth or aurochs and a poorly preserved cattle radius of more recent date.

One bone was identified by the wharf as having unusual markings, possibly attributed to butchery marks (top image of wharf report). Lorrain Higbee at Wessex Archaeology was unable to confirm whether these were butchery marks and suggested that Dr Silvia Bello at the Natural History Museum should be contacted. Images were sent to Silvia who asked whether the bone could be taken to her to examine. Two members of the implementation team took the bone along with two others from a separate collection from the same area (Hanson_0939) to the Natural History Museum in London in January.

The bone was assessed by animal bone specialist Dr Simon Parfitt and marking specialist Dr Silvia Bello in order to confirm what the marks were as well as the species belonged to. Simon instantly identified the bone as a rhino scapula. Silvia analysed the bone under the microscope and determined that the bone was not butchered/modified by man but had been chewed by animals, possibly hyenas.

For comparison, we were shown other rhinoceros' scapulae from the Natural History Museums collection; one from the site of Kent's cavern that had been similarly chewed by hyenas and one from Boxgrove that had actually been butchered by hominins (early humans).

The butchery marks on the bone from Boxgrove are so fine, they look like they've been done with a needle, although they were in fact done with a handaxe (image 1 below). Butchery marks are also consistent in their direction as they will either relate to the disarticulation of the animal limb to take away with them or will be indicative of the meat being filleted off the bone.

The chewing marks on the bone from Kent's cavern closely match the marks on our bone but appear much thicker (image 2 below). It is important that any future bone found on any aggregate vessel or at any wharf is examined for any visible markings that may add to its archaeological value.

The assemblage from Hanson_0937 includes bones from a range of animals that once roamed the area when the seabed was dry land. Lorrain said that some of the fragmentation could be due to butchery rather than damage caused by dredging. The fact that this collection was found in the same cargo as flint tools (Hanson_0936) suggests that animal bones could result from hunting activity.

Information about this discovery has been forwarded to:

- Historic England
- BMAPA
- The Crown Estate
- The National Record of the Historic Environment
- The Historic Environment Record for Norfolk

Image 1: Butchery marks on a rhinoceros scapula from Boxgrove

Image 2: Bone found at Dagenham with chewing marks, possibly from a hyena

Hanson_0938: Collection of Flints

This collection of flints was discovered in Licence Area 240 in the East Coast dredging region, approximately 10 km south-east of Great Yarmouth. Aaron Chidgey discovered them at Dagenham Wharf.

Hanson_0938 is a collection of 27 of flints that include handaxes and Levallois flakes, found in the same cargo as a collection of animal bones (Hanson_0939).

The finds were shown to Phil Harding at Wessex Archaeology who examined the finds and wrote a short paragraph on each. Of the 27 items, four were handaxes described below.

Hanson_0938_001 (top left image) is a sub-cordate handaxe made from light grey mottled flint, which is slightly stained. It measures 137 mm long, 91 mm wide, 36 mm thick and weighs 488 g. The implement is in a sharp to slightly rolled condition, with the edges showing only limited signs of damage that can most likely be attributed to gravel extraction. The clearest indications of post depositional modification are shown by concentrations of incipient points of percussion, most notably around one side of the butt. This suggests that this part of the implement was exposed to cascading blows while the remainder was protected by sediment. It is not possible to determine whether this occurred in prehistory or during the extraction process. One side of the handaxe is formed by a series of well-struck blows; this economy of effort compliments the skill of the knapper. The absence of trimming scars on this side of the tool indicate that it was formed before the other side. The opposite side is similarly well-made and is accompanied by carefully dressed edges. The butt is less well finished but is trimmed by bold flaking. This reduced level of attention to the butt is by no means unusual for this style of implement. It has a gently rounded tip.

Hanson_0938_002 (2nd image from top left) is a small, unpatinated and unstained cordiform/discoidal handaxe that has a rolled condition, with flake aretes dulled by fine-grained, abrasive fluvial sediment. Metrical data shows length 66 mm, width 60 mm, thickness 18 mm and weight 81 g. The manufacture is unremarkable, employing standard bifacial flaking with hard hammer percussion to produce the intended

implement. The flint is dark grey in colour with light grey inclusions but is otherwise good quality material. Both sides are slightly irregular, influenced by hinge fractures or failed thinning.

Hanson_0938_003 (4th image from the top left) is a small cordate hand axe, which although in a relatively sharp condition, carries extensive traces of impact in the form of incipient points of percussion. The hand axe measures 76 mm long, 66 mm wide, 23 mm thick and weighs 130 g. It is also unstained and unpatinated apart from a small patch of light blue patina on one side. It is not an exceptional piece but interesting just the same. Flaking appears to have been done using stone hammers to create a bifacial implement. The tip was apparently re-sharpened using three alternate removals to achieve the desired effect. The systematic way in which this was done reduces the likelihood that this episode of flaking resulted from gravel extraction.

Hanson_0938_004 (3rd image from top left image) is a cordiform hand axe made on a flake. The implement is in a very sharp condition and is unstained and unpatinated apart from a small area of light blue patina around the butt. The edges are slightly irregular, which may, to some degree, result from gravel extraction although some flaking was undoubtedly created during manufacture. The implement measures 104 mm long, 74 mm wide, 28 mm thick and weighs 216 g. The dorsal surface comprises regular covering flaking, with unfortunate step flaking along one edge. The ventral surface is unmodified except for flaking to remove and thin the butt.

Hanson_0938_006 (second row far left) was the best example of a Levallois flake with regular converging edges. It measures 105 mm long, 85 mm wide, 30 mm thick and weighs 229 g. The morphology of the flake was determined by the scar patterns on the dorsal surface which converge towards the distal tip. These preliminary removals were delivered boldly to create a core with a clearly domed surface which guided the shock waves of the main blow. No traces of the cortex remain. The butt was faceted using bold flaking to create a strong upright flaking angle before the final intended blow was delivered. The ventral surface is formed by a cleanly struck blow.

As well as the four handaxes and flake discussed above, there were 16 further flakes, 2 possible flakes, a flint blade, a core, and two natural flints that showed signs of thermal fraction. Flakes are pieces of flint that have been removed from a larger flint tool in order to refine and shape it. The implements were found with an assemblage of bones (Hanson _0939) that included bones from mammoths, aurochs, deer and horse. The combination of flint and animal bone assemblages from the same area suggests Palaeolithic hunting activity and demonstrates the continuing density of Palaeolithic material which remains in Area 240. The collection is especially valuable in continuing to produce both hand axes and developed Levallois material.

Information about this discovery has been forwarded to:

- Historic England
- BMAPA
- The Crown Estate
- The National Record of the Historic Environment
- The Historic Environment Record for Norfolk

Hanson_0939: Collection of Bones

This collection of bones was discovered in Licence Area 240 in the East Coast dredging region, approximately 10 km south-east of Great Yarmouth. Aaron Chidgey discovered it at Dagenham Wharf.

Hanson_0939 is a collection of 84 of animal bones of varying sizes found alongside a collection of flints that included handaxes and Levallois flakes (Hanson_0938).

The artefacts were brought back to Wessex Archaeology, where they were examined by our in-house flint specialist, Lorrain Higbee who said that most (68%) fragments are in good condition and have intact cortical surfaces with well-defined details, the rest are in a poor state and show signs of erosion. Many of the teeth are fragmented as a result of the deterioration of the underlying dentine and cementum and only the enamel survives. There is also extensive damage to the occlusal (or biting) surface of the molar teeth.

Number of identified animal bones (or NISP)

Species	**Hanson 0939**
mammoth	55
aurochs	2
cattle	-
deer	-
horse	1
large mammal	27
Total	**85**

Most (65%) of the identified remains are from mammoth (*Mammuthus primigenius*) including a near complete radius, and thoracic and axis vertebrae. The fragmented bones include pieces of atlas vertebra, scapula, tibia, pelvis and sacrum. No obvious signs of butchery are apparent on any of the bones, but it is possible that some of the fragmentation results from butchery rather than damage caused as a consequence of

dredging. There are also seven complete or semi-complete molars, including two from the same jaw, and several enamel fragments from other molars and tusks. Clear differences in the preservation condition of the post-cranial bones suggests that the remains originate from different deposits, potentially of separate date. Many of the fragmented bones are heavily eroded and have begun to fossilise, and these are potentially older than the more complete bones that are in pristine condition.

The other identified bones include an aurochs (*Bos primigenius*) metacarpal and astragalus, and a horse (*Equus ferus*) navicular.

Two bones were identified as having markings possibly attributed to being butchery marks (bottom row, far right and far left images). Lorrain Higbee at Wessex Archaeology was unable to confirm whether these were butchery marks and suggested that Silvia Bello at the Natural History Museum should be contacted. Images were sent to Silvia who asked whether the bones could be taken to her to examine. Two members of the implementation team took the bones along with another from a separate collection from the same area (Hanson_0937) to the Natural History Museum in London in January.

The bones were examined by animal bone expert Dr Simon Parfitt and marking specialist Dr Silvia Bello in order to confirm what the marks were as well as the species they belonged to. Simon instantly identified the two above bones as belonging to a mammoth, most likely woolly. The bone on the far left is a long bone while the other would have formed part of the skull. Silvia analysed the bones and determined the marks on the skull bone to be naturally occurring blood vessel indentations while the long bone had scratches thought to be damage from the dredger.

The bone from Hanson_0937 with the more unusual marking was positively identified as a rhinoceros scapula. The bone was analysed under the microscope and determined that it was not butchered/modified by man but had been chewed by animals, possibly hyenas.

The assemblage from Hanson_0939 includes bones from a range of animals that once roamed the area when the seabed was dry land. These include mammoths, aurochs, deer and horse. No obvious tool marks were observed but some of the fragmentation could be due to butchery rather than damage caused by dredging. The association with an assemblage of flint tools (Hanson_0938) that included four handaxes, 17 flakes, two possible flakes, a flint blade and a core suggests that the animal bones result from hunting activity.

Information about this discovery has been forwarded to:

- Historic England
- BMAPA
- The Crown Estate
- The National Record of the Historic Environment
- The Historic Environment Record for Norfolk

Hanson_0940: Shell Casing

This shell casing was discovered in Licence Area 240 in the East Coast dredging region, approximately 10 km south-east of Great Yarmouth. Alice Harley discovered it at Dagenham Wharf.

This shell casing measures approximately 120 mm (4.7 inches) long and has a base diameter of 20 mm (0.8 inches). The casing is damaged at one end and appears empty, indicating that it has previously been fired. It has “20 mm”, “RG” and “52” inscribed on the base, that represent the calibre, factory of manufacture and date of manufacture respectively.

Images of the object were sent to Trevor Parker, from the Ordnance Society, who said that this is the shell case from a 20 mm Hispano cannon round, made in 1952 at the Radway Green Royal Ordnance Factory in Cheshire that manufactured small arms ammunition for the British armed forces from 1940 onwards.

Trevor said that he did not think any British Naval ships were armed with this type of gun, but a lot had the 20 mm Oerlikon. Due to this, he said the casing most likely comes from a Hawker Sea Fury aircraft. The Hawker Sea Fury is a British fighter aircraft designed and manufactured by Hawker Aircraft. It was the last propeller-driven fighter to serve with the Royal Navy and was armed with Mk V Hispano cannons. These weapons were lighter and had higher rates of fire than previous variants of the same gun (http://spitfiresite.com/2010/04/spitfire-the-hispano-cannon.html accessed December 2019). The aircraft was retired from most of its military operators in the late 1950s.

According to Trevor, this shell casing likely entered the marine environment through an aircraft firing over the sea, probably at an aircraft towed target or possibly a floating target. A target tug is an aircraft which tows an unmanned drone, a fabric drogue or other kind of target, for the purposes of gun or missile target practice. The use of such target practice continued post Second World War.

Information about this discovery has been forwarded to:

- Historic England
- BMAPA
- The Crown Estate
- The Receiver of Wreck (Droit 262/19)
- The National Record of the Historic Environment
- The Historic Environment Record for Norfolk

Hanson_0941: Pottery Sherd

This pottery sherd was discovered in Licence Area 240 in the East Coast dredging region, approximately 10 km south-east of Great Yarmouth. Ben Cullen discovered it at Dagenham Wharf.

Hanson_0941 is a fragment of orange pottery that measures 140 mm by 85 mm with a visible handle.

The find was brought back to Wessex Archaeology's head office in Salisbury where Finds Manager, Rachael Seager-Smith, and Senior Archives Manager, Lorraine Mepham, examined the find. They said that the sherd is from a post-medieval glazed Redware colander with two side handles which dates from the 18th century onwards. The handle would have been attached to a shallow bowl-like shape dotted with holes to drain food items.

Both specialists said that several areas in Britain and on the continent had their own production centres, all making similar vessels, however, the source of this sherd is impossible to identify as it was found on the seabed.

The specialists also said that both surfaces are (slightly patchily in the case of the exterior) coated in a self-coloured glaze during the manufacturing process, which, given the pale orange firing, makes the vessel look orangey-yellow. A glaze is a layer or coating of a vitreous substance which has been fused to a ceramic body while the vessel was being fired. Glazing can be done to decorate or waterproof an item.

It is not clear whether this find entered the marine environment already broken or whether the damage occurred at a later stage. It may have been used on board a vessel and broken during a voyage resulting in it being dumped overboard. Alternatively, it could have been in transit as a trading object and could be indicative of an unknown wreck.

Information about this discovery has been forwarded to:

- Historic England
- BMAPA
- The Crown Estate
- The Receiver of Wreck (Droit 263/19)
- The National Record of the Historic Environment
- The Historic Environment Record for Norfolk

Hanson_0943: Hook

This hook was discovered in Licence Area 240 in the East Coast dredging region, approximately 10 km east of Great Yarmouth. Darryl Mason discovered it on board Arco Avon.

This metal hook measures approximately 620 mm by 140 mm. It is tapered at one end to a point, where it would have originally been attached to its source.

Images of the find were sent to Anthony Mansfield, a senior naval engineer who said the hook is made of wrought iron which means its construction roughly pre-dates 1930. He said that it is a spike connection, rather than a bolted one, which means it would have been attached to timber rather than metal. Beyond that, he said it could have been used for anything.

Images were also sent to Phil Andrews, Project Manager, and Lorraine Mepham, Senior Archives Manager, at Wessex Archaeology. They both said that based on the design, it could take a fairly substantial weight, given the length that would be driven into wood (presumably of a boat).

It is unknown how this find entered the maritime environment. Anthony suggested that it most likely came from a boat of some sort as it has been dredged up at sea but could also have been a wharf fitting that was washed out to sea.

Information about this discovery has been forwarded to:

- Historic England
- BMAPA
- The Crown Estate
- The Receiver of Wreck (Droit 265/19)
- The National Record of the Historic Environment
- The Historic Environment Record for Norfolk

CEMEX_0944: Bullets

These bullets were discovered in Licence Area 340 in the South Coast dredging region, approximately 8.5 km south-east of the Isle of Wight. R Newbery discovered them at Leamouth Wharf. The find was disposed of by the EOD.

Four bullets of varying sizes were reported from the cargo along with larger munition (CEMEX_0945). The two bullets on the left measure approximately 150 mm in length and have a diameter of 20 mm. The bullets had the number 37 inscribed on their base. The two bullets on the right are 60 mm in length and have a base diameter of 10 mm but a tapered diameter of 15 mm. Both of these bullets have an unblemished driving band which means they're unfired.

Images of the object were sent to Trevor Parker, from the Ordnance Society. He said that they are .50 calibre (0.5 inch/1.27 mm) Browning heavy machine gun rounds/bullets. The Browning M2 .50 calibre Machine Gun, is a Second World War era automatic, belt-fed, recoil operated, air-cooled, crew-operated machine gun (https://fas.org/man/dod-101/sys/land/m2-50cal.htm accessed February 2020).

He said that the "37" stamped on the base, probably relates to the date of manufacture, 1937, which makes them a bit unusual for the American Browning of that size. He said there was a smaller calibre version, and so the .50 calibre wasn't introduced until probably 1942 as the armament for US fighters and bombers and for some of the British aircraft. Trevor also commented that they are unfired, and therefore still dangerous; the primer in the basis is unstruck and the bullets themselves could be any of a number of types, some of which have nasty fillings!

It is believed that this ordnance relates to the Second World War, meaning it could have lain undisturbed for over 70 years. Ordnance has previously been discovered and reported from Licence Area 340 therefore this area may be indicative of an area where naval warfare or training took place.

Information about this discovery has been forwarded to:

- Historic England
- BMAPA
- The Crown Estate
- The Receiver of Wreck (Droit 015/20)
- The National Record of the Historic Environment
- The Historic Environment Record for the Isle of Wight

CEMEX_0945: Munition

This munition was discovered in Licence Area 340 in the South Coast dredging region, approximately 8.5 km south-east of the Isle of Wight. Kevin Vine discovered it at Leamouth Wharf. The find was disposed of by the EOD.

This shell measures around 300 mm in length and has a diameter of approximately 90 mm. The large “P” stamped on the metal component in the centre of the base of the munition indicates that this would have been a practice round and therefore completely inert.

Images of the object were sent to Trevor Parker, from the Ordnance Society, who said that this shell looks like a 6-pounder Hotchkiss head. Trevor also said that the brass base fuze on this shell stamped with a large "P" which means that it is a practice head and harmless; filled with either sand, or more likely salt.

The 6-pounder Hotchkiss guns were introduced in 1884 for use against torpedo boats. They were used during the First World War on early "C" class cruisers and a few submarines as well as on Monitors from the M15 class through to the M33 class. A total of 3,984 guns were on naval lists, but at least 2,344 of these had been stricken by 1939. Many of the guns were re-used as sub-calibre and saluting guns while others were converted back to shooting guns for small ships such as MTBs, MLs and "Flower" class corvettes. Some of the guns were also adapted for coastal defences (http://www.navweaps.com/Weapons/WNBR_6pounder_m1.php accessed February 2020).

Ordnance has previously been discovered and reported from Licence Area 340. The Culver Battery, located on the east coast of the Isle of Wight, had a 6-pound Hotchkiss gun that was used as an anti-aircraft weapon during the First World War. Given that the range of the guns were 7,955 m and the dredging area where the munition was found, it is possible that this practice round originated from a coastal defence.

Information about this discovery has been forwarded to:

- Historic England
- BMAPA
- The Crown Estate
- The Receiver of Wreck (Droit 016/20)
- The National Record of the Historic Environment
- The Historic Environment Record for the Isle of Wight

CEMEX_0946: Munitions

These munitions were discovered in Licence Area 340 in the South Coast dredging region, approximately 8.5 km south-east of the Isle of Wight. R Newbery discovered them at Leamouth Wharf. The find was disposed of by the EOD.

This report contains a large shell casing along with three smaller bullets. The casing measures approximately 340 mm in length while the bullets measure approximately 65 mm in length and have a diameter of 15 mm. All the bullets have an unblemished driving band which means they're unfired.

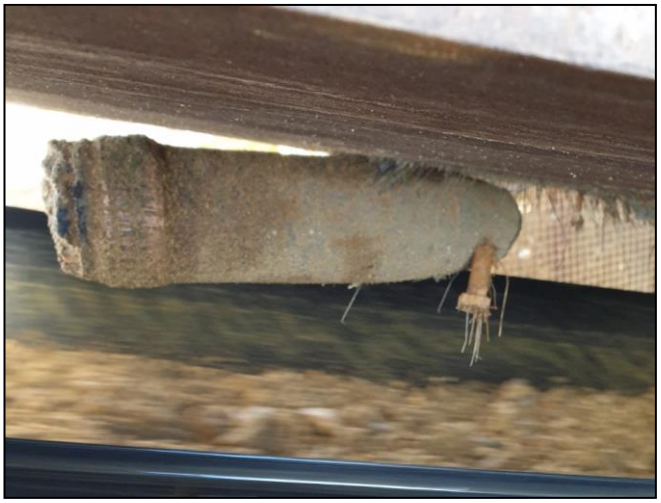
Images of the munitions were sent to Trevor Parker, from the Ordnance Society. He said the larger case is a standard 40 mm Bofors, but with the base covered and the length not clear from the perspective of the images, it is difficult to tell if it dates to the Second World War based L/60 or the more modern L/70. Trevor said that the Second World War case has a length of 311 mm while the later case has a length of 365 mm. He said that it is more likely to be the more modern L40/70. The L/70 is an automatic anti-aircraft gun designed and manufactured by the Swedish Company Bofors. The gun entered service with the Swedish Army in 1951 as the successor to the Bofors L/60 (https://www.armyrecognition.com/sweden_swedish_military_army_light_heavy_weapons/l/70_l70_l-70_bofors_40mm_automatic_anti-aircraft_gun_air_defence_system_technical_data_sheet.html accessed January 2020).

He said that the bullets are .50 calibre (0.5 inch/1.27 mm) Browning heavy machine gun rounds. The Browning M2 .50 calibre Machine Gun, is a Second World War era automatic, belt-fed, recoil operated, air-cooled, crew-operated machine gun (https://fas.org/man/dod-101/sys/land/m2-50cal.htm accessed January 2020).

Several pieces of ordnance have previously been discovered and reported from Licence Area 340, the most recent being CEMEX_0944 and CEMEX_0945, therefore this area may be indicative of an area where naval warfare or training took place.

Information about this discovery has been forwarded to:

- Historic England
- BMAPA
- The Crown Estate
- The Receiver of Wreck (Droit 018/20)
- The National Record of the Historic Environment
- The Historic Environment Record for Isle of Wight



CEMEX_0947: Munition

This large munition was discovered in Licence Area 340 in the South Coast dredging region, approximately 8.5 km south-east of the Isle of Wight. Kevin Vine discovered them at Leamouth Wharf. The find was disposed of by the EOD.

A large munition was reported from the magnet of the wharf along with a shell casing and three bullets (CEMEX_0946).

Images of the object were sent to Trevor Parker, from the Ordnance Society who said the projectile is intriguing but absolutely impossible to identify without any idea of scale. He said it's possible to say from the driving band that it isn't a 2-pdr or 40mm Bofors and is certainly a larger calibre; from a 3-pounder (47 mm) upwards!

Further contact with the wharf revealed that the munition was approximately 380 mm long and had a diameter of 130 mm. It was detonated twice on site; the first detonation only dented it, while the second one split it in half. It was reported by the bomb disposal team as being very heavy and possibly having lyddite inside. Lyddite was a form of high explosive widely used during both the Boer War and First World War (https://www.firstworldwar.com/atoz/lyddite.htm accessed March 2020).

After receiving this additional information, Trevor said that he would guess that the shell is a Second World War 5.25-inch gun armament from a battleship. The QF 5.25-inch Mark I gun was the heaviest dual-purpose gun used by the Royal Navy during the Second World War; used as the secondary guns on the King George V and Vanguard battleship classes and the main guns on the Dido and Spartan cruiser classes (http://www.navweaps.com/Weapons/WNBR_525-50_mk1.php accessed March 2020).

There is a discrepancy with the opinion of the EOD and our specialist as to whether the munition belongs to the First or Second World War. Ordnance is often discovered and reported from Licence Area 340 therefore this area may be indicative of an area where naval warfare or training took place.

Information about this discovery has been forwarded to:

- Historic England
- BMAPA
- The Crown Estate
- The Receiver of Wreck (Droit 019/20)
- The National Record of the Historic Environment
- The Historic Environment Record for Isle of Wight

CEMEX_0948: Animal bones and metal fragments

This assemblage of finds was discovered in Licence Area 512 in the East Coast dredging region, approximately 14.5 km east-north-east of Lowestoft. Jake Goodwin discovered them at Angerstein Wharf.

This assemblage of finds includes three fragments of animal bone along with two pieces of metal, thought to be related to aircraft material. The largest piece of potential aircraft measures 620 mm by of 100 mm. All the bones are dark in colour, indicating they may have been on the seabed for a long time and potentially mineralised. They were reported along with mammoth teeth and other mineralised bones (CEMEX_0951 & CEMEX_0952).

Images of the bones were sent to in-house animal bone specialist, Lorrain Higbee, who said that the left image is the distal end of a cattle metatarsal and that the largest bone (3rd image from the left) is possibly the central section of a vertebra from a large marine mammal such as a whale or Quaternary mammal like a mammoth. She said that it was not possible to determine what the second bone from the left is from but may be related to a large Quaternary mammal as it was found in the same context as the vertebra.

Although dating the bones from images is not possible, as they are thought to be related to large Quaternary mammals, such as a mammoth, they may date to a time when the seabed was once dry land. They were also found in the same cargo as another fragment of large mineralised bone as well as a positively identified as the lower molar of a woolly mammoth (CEMEX_0951 & CEMEX_0952). During the last 2.5 million years, there have been numerous cold periods, called ‘glacials’, separated by warmer periods called ‘interglacials’. During colder periods, large ice sheets covered much of Britain and most of the North-west European Peninsula (http://ets.wessexarch.co.uk/recs/humber/archaeology/ accessed March 2020). At these times sea levels were low and large expanses of land, now forming the seabed

of the North Sea and the English Channel, were available to humans and animals.

Images of the possible aircraft related pieces were sent to external aircraft specialist Steve Vizard who said that he didn't immediately think that any of the parts were aircraft related. He said the piece on the right is quite distressed, which could be taken for impact damage, however, there are no rivet or bolt holes evident that would have attached it to another piece of the aircraft. Steve said the two bottom images appear to be the same piece, and although it is the right shape and profile for a flying control surface leading edge skin, it also shows no sign of any way of attachment. A leading edge panel would definitely have a rivet line at the edge of the skin, and/or small diameter bolt holes. He said he would be more inclined to think that all of these parts are related to maritime vessels and general detritus thereof.

If the modern metal objects are related to maritime vessels, they may be a part of an unrecorded modern wreck or may have been lost or discarded overboard when they came to the end of their working life. Although the pieces are not diagnostic enough to confirm they are from a wreck, staff should be vigilant when examining further cargo from the area.

It is not unusual to have mixed material from a range of ages from one cargo as the dredging trackplot may cover an area that has been previously dredged and therefore exposed older layers as well as an area previously dredged less that contains more modern material.

Information about this discovery has been forwarded to:

- Historic England
- BMAPA
- The Crown Estate
- The Receiver of Wreck (Droit 026/20)
- The National Record of the Historic Environment
- The Historic Environment Record for Suffolk

CEMEX_0951 and CEMEX_0952: Assemblage of animal bones and teeth

This assemblage of animal bones and teeth were discovered in Licence Area 512 in the East Coast dredging region, approximately 14.5 km east-north-east of Lowestoft. Martin Keeble discovered them at Angerstein Wharf.

This assemblage of finds includes two fragments of animal teeth and a mineralised fragment of bone. They were discovered in the same cargo as two heavily mineralised bone fragments (CEMEX_0948).

Images of the finds were sent to Professor Adrian Lister at the Natural History Museum for further identification. He said that the left photograph and the second from the left photograph look like two views of the same specimen and are a fragment of a lower molar of a woolly mammoth. The third fragment from the left is possibly another tooth fragment and the other is possibly a fragment of mineralised bone.

Mammuthus primigenius or woolly mammoth were in existence in Europe during the late Middle and Late Pleistocene, dating from 350,000 to 10,000 years ago (Lister and Sher 2001). European mammoths are divided into three species: the Early Pleistocene *Mammuthus meridionalis* (2.6 to 0.7 million years ago), the early Middle Pleistocene *Mammuthus trogontherii* (0.7 to 0.5 million years ago), and the woolly mammoth, *Mammuthus primigenius* (Lister and Sher 2001). Important changes can be seen in the teeth of the mammoths as each species evolves; there is an increase in the number of enamel bands (plates) in the molars and thinning of the enamel. The dental changes resulted in increased resistance to abrasion, which is believed to indicate a shift from woodland browsing to grazing in open grassy habitats of the Pleistocene.

The remains of animal bones and teeth may end up in marine contexts having been washed from terrestrial deposits by rivers or eroded from cliffs or beaches. Alternatively, they may date to a time when the seabed was dry land.

Information about this discovery has been forwarded to:

- Historic England
- BMAPA
- The Crown Estate
- The National Record of the Historic Environment
- The Historic Environment Record for Suffolk

Hanson_0953: Metal Finds

This assemblage of finds was discovered in Licence Area 401/2 in the East Coast dredging region, approximately 23 km east of Lowestoft. Stuart King and Clint Cambridge discovered them at Greenhithe Wharf.

This assemblage of material recovered from the same cargo comprised of a possible aircraft piece, a large metal disk with a diameter of 160 mm, a gasket with a diameter of 120 mm, a smaller metal disk with a diameter of 90 mm and two pieces of coal.

Images of the possible aircraft related pieces were sent to an external aircraft specialist, Steve Vizard, who said that although the first item is quite distressed, which could be taken for impact damage, the condition is too far gone to say much more. As there are no rivet or bolt holes evident along the edge of the piece, he does not think that this is aircraft related, but rather, said he would be inclined to think it belonged to a maritime vessel rather than an aircraft.

Euan McNeil, a Coastal & Marine project manager at Wessex Archaeology, recognised the larger round disk as a pipe cover which is screwed on to the open end of a pipe and commonly used on vessels. It is unclear at this time what the smaller metal disk would have been used for. A gasket is a mechanical seal which fills the space between two or more mating surfaces, generally to prevent leakage from or into the joined objects while under compression and are commonly used in aircraft and ship construction.

steamships in the 19th and early 20th century used coal for fuel, but coal was a common cargo throughout the industrial revolution and is still transported today, therefore these could also be related.

As most of this material is thought to have originated from a ship, they may be from an unrecorded wreck in the area, or they could be items that were lost or discarded overboard when they had reached the end of their working life. Staff should be vigilant for any more wreck related material coming from the area as it may lead to a wreck or dumping ground.

Information about this discovery has been forwarded to:

- Historic England
- BMAPA
- The Crown Estate
- The Receiver of Wreck (Droit 025/20)
- The National Record of the Historic Environment
- The Historic Environment Record for Suffolk

Hanson_0954: Bullets

These bullets were discovered in Licence Area 240 in the East Coast dredging region, approximately 10 km south-east of Great Yarmouth, Norfolk. Aaron Chidgey discovered them at Dagenham Wharf.

Three bullets of varying sizes were reported by wharf staff who believe they originate from aircraft. The bullet on the left measures approximately 60 mm in length and has a diameter of 10 mm, the central bullet measures approximately 50 mm in length and has a diameter of 13 mm while the bullet on the right measures approximately 45 mm in length and has a diameter of 12 mm.

Images of the objects were sent to Trevor Parker, from the Ordnance Society. He said that he could identify the bullet on the left as being a 0.5-inch M2 Browning machine gun bullet. He said that many of the American Second World War fighter aircraft and bombers were armed with this particular gun. For examples the North American P-51 Mustang that came to Britain during the Second World War and was used as a long range bomber escort. The Lockheed P-38 Lightning also used them, and there is an intertidal wreck known as the Maid of Harlech that lies on the coast of North Wales after ditching during target practice training. Further research discovered that the British adopted the smaller Browning .303 round on some aircraft.

Trevor believes that the central and right bullet are examples of the same ordnance, while one is heavily corroded. He positively identified these as bullets from the Boys 0.55-inch Anti-Tank Rifle in use during the Second World War. It was often nicknamed the "elephant gun" by its users due to its size and large bore (Henderson 1958). The gun had a length of 63.5 inches and weighed around 36 lbs. For security reasons, this rifle was code named, the “Stanchion” and was capable of penetrating 25 mm of armour plate. The first few were with the infantry by 1937, but tank design had advanced very quickly, and it became clear that the Boys rifle lacked tank stopping ability by the time war broke out. The Projector, Infantry, Anti-Tank (PIAT) replaced the Boys after 1942, however photographs taken of British Commandos at the end of the war show one of them holding a Boys rifle.

Further research has revealed that several type 22 pillboxes are located across the Norfolk/Suffolk border; some of which have small square holes at the base of the walls, almost certainly a modification made to accommodate the Boys anti-tank rifle, although this would have meant that any infantryman using the rifle embrasure would

have had their feet exposed to enemy fire (https://www.worldwar2heritage.com/en/page/9069/170/BECCLES-TYPE-22-PILLBOX accessed April 2020).

It is believed that these bullets relate to the Second World War. As the Browning bullet is thought to originate from an American aircraft, it could be an area where aircraft warfare took place or where target practice was routinely undertaken. With regards to the Anti-Tank Rifle bullet, Trevor suggested that perhaps there was a training range near the coast as the gun had a high muzzle velocity and if fired out to sea would probably have travelled a few miles. The possibility that this bullet came from a Pillbox along the coast could be an option.

References

Henderson, Jim 1958. *22 Battalion War History Branch. Washington, D.C.: Department of Internal Affairs*.

Information about this discovery has been forwarded to:

- Historic England
- BMAPA
- The Crown Estate
- The Receiver of Wreck (Droit 030/20)
- The National Record of the Historic Environment
- The Historic Environment Record for Norfolk

Hanson_0955: Bone

This bone was discovered in a mixed cargo of dredged material from lanes F8 and F9 in Licence Area 240 in the East Coast dredging region, approximately 10 km south-east of Great Yarmouth. I. Johns discovered it on board *Arco Avon*.

This find is a fragment of animal bone measuring 110 mm long by 75 mm wide. The mineralised marrow is visible at the wider end of the bone. There is some marine growth visible on the surface which may mean it's been on the seabed for some time.

Images of the find were initially sent to Wessex Archaeology's in-house specialist, Lorrain Higbee, who was unable to identify it from the images alone but said that seeing it in person would be better.

Lane F10, located next to lanes F8 and F9, where this bone originated has recently produced an assemblage of worked flint (Hanson_0938) and animal bones (Hanson_0939) including vertebrae, long bones, tusks and teeth. Those bones belonged to a range of animals including mammoth, rhinoceros, aurochs, cattle, deer, horse and unidentifiable large mammal. It is therefore possible that this bone fragment may belong to one of the listed animals, however it would need to be seen to be positively identified.

The remains of animal bones may end up in marine contexts having been washed from terrestrial deposits by rivers or eroded from cliffs or beaches. Alternatively, they may date to a time when the seabed was dry land. During the last 2.5 million years, there have been numerous cold periods, called 'glacials', where large ice sheets covered much of Britain and most of the North-west European Peninsula. At these times sea levels were low and large expanses of land, now forming the seabed of the North Sea and the English Channel, were available to humans and animals. The previous assemblage of bones was tentatively dated to the Middle Palaeolithic due to the dates of the worked flints they were found with.

Information about this discovery has been forwarded to:

- Historic England
- BMAPA
- The Crown Estate
- The Receiver of Wreck
- The National Record of the Historic Environment
- The Historic Environment Record for Norfolk

CEMEX_0956: Munition

This munition was discovered in Licence Area 137 in the South Coast dredging region, approximately 6.5 km south-west of the Isle of Wight. M. Pettitt discovered it at Shoreham Wharf. This munition was disposed of by the EOD.

This shell was discovered on the feed belt magnet during the loading of the plant and was reported as measuring 6 inches (152 mm) by 3 inches (76 mm). Threading is visible on the inside of the munition meaning it would have attached to a larger section. The finder at the wharf assessed the shell and confirmed it was live and may contain explosives.

Images of the object were sent to Trevor Parker, from the Ordnance Society, who said that it's almost certainly the nose section of an RAF or Fleet Air-Arm practice bomb. There were a few different weights and sizes, but a “typical” bomb of this type weighed around 11.5 pounds (5.2 kg). As it was a practice bomb, Trevor said that the nose probably only contained lead.

These Mk I practice bombs had an overall length of 18 inches (457 mm) and a diameter of 3 inches (76 mm) and were white overall with two green bands around the tail cone. They consisted of a nose casting, fitted with a striker assembly, and a tail cone which constituted a container for the filling (usually smoke). It was also fitted with a central tube for a detonator burster that contained explosives (http://michaelhiske.de/Allierte/USA/USNBD/GBR/BombsAndFuzesUK/Section01/Page113.HTM accessed May 2020). These types of bombs were widely used during the Second World War.

Ordnance has previously been reported from Licence Area 137, however, no evidence was found of bomb practise taking place in this area. The munition is likely to have been used as the head has become detached from the main body during the exercise. It may have ended up on the seabed as a result of unknown practise in the area or being dumped at sea having been used somewhere else.

Information about this discovery has been forwarded to:

- Historic England
- BMAPA
- The Crown Estate
- The Receiver of Wreck (Droit 039/20)
- The National Record of the Historic Environment
- The Historic Environment Record for Isle of Wight

DEME_0957: Jug

This jug was discovered in Licence Area 340 in the South Coast dredging region, approximately 8.5 km south-east of the Isle of Wight. Christophe Matton discovered it at DBM Wharf in Belgium.

This metal jug measures approximately 130 mm wide by 130 mm tall. It has an ornate decoration on the pouring spout in the design of a bearded man, a stamp in its centre and an oval cross section. The handle and spout appear to be made from a different metal to the body due to the corrosion visible on them. It is complete apart from damage to the reverse.

Images were sent to Wessex Archaeology's Senior Archives Manager, Lorraine Mepham, who said that she had never seen anything like it. She said it is definitely post-medieval, and deliberately oval in cross-section rather than just squashed. The spout and handle appear to have some sort of plating which has differentially corroded. She said that the details of the stamp aren't clear, but it is in script lettering and is probably a set of initials or a monogram, though whether this relates to the manufacturer or the owner is not clear, although it's probably the latter. Although there are no direct parallels to the jug, a similar spout was found on a mid-19th century English silver coffee pot (https://www.invaluable.com/auction-lot/antique-english-silver-plate-coffee-pot-427-c-db74c7a9b5 accessed May 2020). Similarly, a Dutch silver hot chocolate pot, dated to c. 1853-1859 was noted as having a bearded seaman as the spout (https://www.carters.com.au/index.cfm/index/2019-chocolate-pots-silver/ accessed May 2020). Lorraine suggested that the shape of the handle, and the style of the script lettering on the stamp, suggest that it is 18th or 19th century in date. The age of the pots displaying similar spouts also support this.

Images were also shown to Steve Beach, Principal Heritage Consultant at Wessex Archaeology, who said that the jug may be made of Pewter. He said that different batches of pewter will corrode differently depending on its composition, which may explain why the handle and the spout are corroding differently to the body. Steve also said that the mark is reminiscent of an "owners mark".

Owners often applied their own marks to pewter. On plates, dishes and chargers these were usually just a simple triad of initials stamped on the rim, the centre initial being the surname and the other two the forenames of the husband and wife. Marks with two or four initials are also found while some owners had crests or shields engraved on their pewter, whilst institutional owners might stamp their name or symbol.

On drinking vessels such as this one, owners tended to engrave either a monogram or the full name and address. These are particularly common on pub pots of the 19th and 20th century as a deterrence against theft (https://www.pewtersociety.org/identifying-and-collecting-pewter/ownership-marks accessed May 2020).

It is unknown how this jug came to be on the seabed. It may have been lost overboard from a ship as a part of the tableware or as an item to be traded. The damage sustained to the jug may have been the reason for it being discarded or alternatively it could have been damaged in the maritime environment.

Information about this discovery has been forwarded to:

- Historic England
- BMAPA
- The Crown Estate
- The Receiver of Wreck (Droit 040/20)
- The National Record of the Historic Environment
- The Historic Environment Record for Isle of Wight

Hanson_0958: Animal Bones

These animal bones were discovered in lane F8 within Licence Area 240 in the East Coast dredging region, approximately 10 km south-east of Great Yarmouth. Aaron Chidgey discovered them at Dagenham Wharf.

Two animal bones were reported from dredging lane F8. The smaller bone measures approximately 140 mm by 90 mm while the larger bone measures approximately 260 mm by 80 mm.

Images were sent to Wessex Archaeology's Senior Zooarchaeologist, Lorrain Higbee who said that the smaller bone is a piece of skull from something that either has horns (i.e. cattle or aurochs) or antlers (i.e. deer) but that not enough detail is available to be certain which. Lorrain identified the larger bone as a horse's left distal tibia, broken obliquely as a result of percussive impact to medial side of the mid-shaft, this area being marked by several percussion platforms along the broken edge. The evidence is consistent with the bone having been struck several times in the same direction and suggests a deliberate act using a stone tool. Two parallel cut marks are also present on the plantar side of the distal shaft just above the articular surface, and these probably result from either skinning or filleting. The bones measurements (abbreviations after Von den Driesch 1976) were Bd = 75.6 mm, Dd = 49.9 mm, SD = 45.6 mm.

Images of the tibia were also sent to cut mark specialist Silvia Bello from the Natural History Museum who analysed the scavenged rhino scapula (Hanson_0937) dredged from lane F10 back in November 2019.

She said the photographs are very promising in determining whether the bone is butchered but that it would only be possible to confirm if the tibia was examined. Due to Covid 19, the museum is currently closed, however it is hoped that once it has

re-opened, a member of the implementation team will be able to take the tibia there in order to have it examined under a high-powered microscope.

Lane F8 is located close to lane F10, where two recently produced assemblages comprising worked flint (Hanson_0938) and animal bones (Hanson_0939), including vertebrae, long bones, tusks and teeth have been found, belonging to a range of animals including mammoth, rhinoceros, aurochs, cattle, deer, and horse. It is therefore not unexpected to encounter other animal bones within the surrounding area. Animal bones end up in marine contexts having been washed from terrestrial deposits by rivers or eroded from cliffs or beaches. Alternatively, they may date to the glacial periods when the seabed was dry land due to water being 'locked up' in the ice sheets that covered much of North Western Europe. During these periods of low sea levels the current North Sea and the English Channel were exploited by humans and animals. The potential butchery marks may be indicative of hunting activity in the area. The discoveries being made are therefore helping us to understand how this environment was exploited by both early humans and the fauna, as the climate both warmed and cooled, and the ice sheets and rivers retreated, advanced and altered the landscape.

References

von den Driesch, A. 1976: *A Guide to the Measurement of Animal Bones from Archaeological Sites: As Developed by the Institut Für Palaeoanatomie, Domestikationsforschung und Geschichte Der Tiermedizin of the University of Munich*. Cambridge, Harvard University press

Information about this discovery has been forwarded to:

- Historic England
- BMAPA
- The Crown Estate
- The Receiver of Wreck
- The National Record of the Historic Environment
- The Historic Environment Record for Norfolk

Hanson_0959: Munitions

These munitions were discovered in Licence Area 401/2 in the East Coast dredging region, approximately 23 km east of Lowestoft. Aaron Chidgey discovered them at Dagenham Wharf.

Two shells were reported by wharf staff who believed them to be 20 mm Hispano cannon shells. One of the shells appears to be complete and measures approximately 80 mm in length and has a diameter of 20 mm. Concretion is visible on the shell meaning it may have laid on the seabed for several years. The other appears to be an empty shell casing and measures approximately 60 mm in length and has a diameter of 20 mm.

Images of the objects were sent to Trevor Parker, from the Ordnance Society. He said that the munition on the left appears to have a non-British alloy nose plug and look like a modern American 20 mm cannon head. The most well-known American cannon is the Oerlikon gun that was installed aboard United States Navy ships from 1942 onwards as a major anti-air weapon.

Trevor said that the 20 mm munition on the right, is much older and due to the corrosion and with no head and no markings on the base to go by, it is difficult to tell if it is a Hispano or Oerlikon shell as they both have the same diameters and look similar. Hispano shells are fired from aircraft and were used widely by the British during the Second World War. Oerlikon shells are fired from ships and used on close range anti-aircraft ship mounted guns and were also used during the Second World War.

Ordnance has not previously been reported from Licence Area 401/2 through the Protocol. It is unknown whether the shells were fired from a vessel or aircraft, but it is believed that both these pieces relate to the Second World War, meaning that they could have lain undisturbed for over 70 years.

Information about this discovery has been forwarded to:

- Historic England
- BMAPA
- The Crown Estate
- The Receiver of Wreck (Droit 047/20)
- The National Record of the Historic Environment
- The Historic Environment Record for Suffolk

Hanson_0960: Bullets

These two bullets were discovered in Licence Area 401/2 in the East Coast dredging region, approximately 23 km east of Lowestoft. Aaron Chidgey discovered them at Dagenham Wharf.

These two bullets were identified by staff at the wharf as being a much smaller calibre than usually encountered. They both measure approximately 40 mm in length, have a diameter of 7 mm and appear to have scorched tips. One bullet had a small notch on its base while the other does not.

Images of the objects were sent to Trevor Parker, from the Ordnance Society, who said they look like they are from a 0.303 machine-gun, although they are in very good condition as if they were aircraft fired. He estimated that they date to the early 1950s. These calibre rounds were common and without the cases, it is difficult to tell what type of gun they were fired from. The most common 0.303 guns during this time were the Browning machine gun, Vickers machine gun and Lee Enfield. The Browning 0.303-inch Mark II was the standard gun used in the gun turrets on most British bombers during the Second World War including the Wellington and Whitley. The Vickers Machine Gun was one of the longest serving weapons in British military history, with the Mk 1 being employed in virtually unaltered form from its adoption in 1912 until 1968. The Vickers K machine gun was a rapid-firing machine gun developed and manufactured for use in aircraft by Vickers-Armstrongs. The Lee-Enfield rifle was adopted for British service in 1902 and were the standard weapons of British infantry troops during both World Wars.

No ordnance has been previously reported from Licence Area 401/2. The most likely way these bullets reached the seabed was through aircraft fire and based on the dating, are thought to relate to a Browning or Vickers machine gun. An alternative way for bullets to travel is from a coastal rifle range where the spent bullets went into the sea and not the butts, however the distance from land is thought to eliminate this possibility.

Information about this discovery has been forwarded to:

- Historic England
- BMAPA
- The Crown Estate
- The Receiver of Wreck (Droit 048/20)
- The National Record of the Historic Environment
- The Historic Environment Record for Suffolk

DEME_0961: Large Munition

This large munition was discovered in Licence Area 351 in the South Coast dredging region, approximately 12 km south-east of the Isle of Wight. Manhupli Ihor discovered it on board *Victor Horta*. The find was disposed of by the EOD.

This large munition of an unknown measurement was observed caught in the draghead of the aggregate dredger *Victor Horta*. The munition was reported as being very similar to a Palliser round observed and reported in October 2019 (DEME_0932). The driving band was still visible at the base of the munition and was grooved, indicating that it had been previously fired.

Images of the objects were sent to Trevor Parker, from the Ordnance Society who said that due to a lack of scale, identifying the munition is challenging. He said that the item is likely a large calibre shell, separate loading and either an (old) common-pointed, or a (modern) armour-piercing. A picture of the base would show if there was a fuse, or plug present, which would confirm whether it was 'live' or not, or a practice projectile. He said he estimated the number of rifling grooves in the gun to be 22 or 24, which would also help if the diameter (or circumference) of the projectile could be measured. Trevor said there seems to be marks on the ogive of the shell indicating an armour-piercing cap fitted, which may also help with identification, but the dimensions would be needed.

Images were also sent to Steve Vizard who said it appears to be a solid round with no fuse cap visible. Without anything to scale it to, he said he would guess that it's around 8-10-inch diameter which is typical of a heavy Naval ship's gun.

It is unclear whether this ordnance relates to the First World War or the Second World War, as armour-piercing shells were used during both. It is likely that this shell was fired from a vessel, however it is unclear whether it was as a part of training or whether it was fired in combat.

Information about this discovery has been forwarded to:

- Historic England
- BMAPA
- The Crown Estate
- The Receiver of Wreck (Droit 049/20)
- The National Record of the Historic Environment
- The Historic Environment Record for the Isle of Wight

CEMEX_0962: Possible Flare Casing

This possible flare casing was discovered in Licence Area 137 in the South Coast dredging region, approximately 6.5 km south-west of the Isle of Wight. M. Pettitt discovered it at Shoreham Wharf.

This object is a metal cylinder that was wrapped in a metal casing. The central cylinder appears to be made of brass and measures 254 mm in length 38 mm diameter. The tube is hollow and has “Mk VII” and “PLAIN” inscribed into the metal meaning it could be related to some sort of ordnance. Due to the corrosion present, it is thought that the outer casing is made from a cheaper material that may have been designed to break away from the inner object upon it launching.

Images were sent to Wessex Archaeology research manager Bob Clarke who preliminary identified the find as a flare casing. He passed it on to his contact, Andrew Law, a retired bomb disposal and nuclear missiles expert, who said he believes it is probable Naval ordnance, a flare that was dropped, not fired.

Images were also sent to Trevor Parker, from the Ordnance Society, who could not identify the object himself but passed it on to his colleagues. Three suggestions were put forward. One suggestion was based on the two of the rings in the photograph. The one on top and one at the bottom are called snap rings. They are designed to hold something in place so it does not come out easily, however it was not thought that it would have held ammunition or anything with high pressure inside.

Another suggestion was that it could be some sort of fire extinguisher as the internal workings can be similar in appearance to ordnance.

The third, and possibly the most accepted, suggestion was that it could be a booster can from a Mk Vll depth charge. A diagram of a Mk Vll depth charge can be seen in the by clicking on the link https://maritime.org/doc/depthcharge9/index.htm#pg23 (accessed September 2020). A depth charge is an anti-submarine warfare (ASW) weapon intended to destroy a submarine. The depth charge would be dropped or thrown overboard. At the same time the safety fork on the pistol is wiped or pulled off and the pistol is free to operate by hydrostatic action. As the charge sinks, water enters the pistol through ports inside the depth setting dial and flows into the space inside the bellows, flange, and depth-setting spring retainer which in turn detonated

the charge, subjecting the target to a powerful and destructive hydraulic shock.

It is believed that this may be a casing related to ordnance dating to the Second World War, meaning it could have lain undisturbed for over 70 years, however it is still uncertain. Ordnance related material has previously been reported from Licence Area 137. Expert opinion is divided on what the item is from and whether it has been used or not.

Information about this discovery has been forwarded to:

- Historic England
- BMAPA
- The Crown Estate
- The Receiver of Wreck (Droit 056/20)
- The National Record of the Historic Environment
- The Historic Environment Record for the Isle of Wight

CEMEX_0964: Sinker

This sinker was discovered in Licence Area 460 in the East English Channel dredging region, approximately 14 km south of Hastings or Licence Area 512 in the East Coast dredging region, approximately 14.5 km east-north-east of Lowestoft. Jake Goodwin discovered it at Angerstein Wharf.

This object was reported as a brass weight measuring approximately 205 mm by 55 mm. The find has a large hole in the centre with a diameter of 50 mm. A smaller hole is present towards the top of the find.

Images of the find were sent to marine archaeologist, Alistair Byford-Bates, who identified the find as belonging to a ship's log rotator. The rotator would be attached to its trailing rope attachment and a sinker via the hole at the top.

A patent log relies on a rotator that is towed from the stern of a ship using the help of the sinker to keep it below the surface. The movement of the water past the rotator causes it to rotate at a speed proportional to the speed of the vessel through the water. The speed or rotation is transmitted along a log line to a mechanical register that counts the log's rotations while it is being towed. The number of revolutions of the rotator in a certain time period could be used to calculate the speed of a ship. The patent log was also introduced in order to provide ships' crews with a more accurate and easier method of calculating distance travelled than the common log. Thomas Walker was widely associated with the development of the modern patent log. His "Harpoon" log with dials incorporated in the outer casing of the rotator was patented in 1861, and his famous "Cherub" log was introduced in 1884. By this time engineering development had allowed revolutions of the rotator astern to be transmitted accurately to an inboard register. These were also called taffrail logs and were manufactures until the early twentieth century.

It is thought that this object may have entered the marine environment by accident as logs were streamed behind vessels and whilst underway, it could have been lost in use. Therefore, it is unlikely to indicate the presence of a wreck. The sinker would have been attached to the log via rope that may have eroded away on the seabed and therefore they have become separated.

Information about this discovery has been forwarded to:

- Historic England
- BMAPA
- The Crown Estate
- The Receiver of Wreck (Droit 057/20)
- The National Record of the Historic Environment
- The Historic Environment Record for Suffolk and East Sussex

Hanson_0965: Shell case

This shell case was discovered in Licence Area 401/2 in the East Coast dredging region, approximately 23 km east of Lowestoft. Ben Martin discovered it at Dagenham Wharf.

This shell was reported as a 20 mm cannon shell. It measures approximately 90 mm in length and has a diameter of 20 mm. The base of the shell appears to be missing and the tube seems to be hollow.

Images of the object was sent to Trevor Parker, from the Ordnance Society, who said that this head is a British 20 mm Hispano shell and completely inert. The 20 mm MkII Hispano aircraft cannon was a development of the French Hispano-Suiza HS.404. Great Britain acquired a license to build the HS.404, which was first used in a British fighter as the Hispano MkI with the Westland Whirlwind of 1940. British engineers developed a belt-feeding mechanism. The new design was adopted by the Royal Air Force (RAF) and Fleet Air Arm (FAA) in 1941 in a slightly modified form as the Hispano MkII.

The Hispano-Suiza HS.404 20 mm calibre automatic cannon was one of the most widespread aircraft weapons of the 20th century, used by British, American, French, and many other military services. Firing a 20 mm diameter projectile, it delivered a useful load of explosive from a relatively light weapon. This made it an ideal cannon for use onboard fighters. A small number of Spitfire fighters were fitted with the 20 mm cannon in the latter stages of the Battle of Britain but a tendency for the gun to jam during combat, frequently after only one shot, meant that the RAF Squadron soon demanded that they be replaced.

Ordnance has previously been reported from Licence Area 240. The most likely way that this shell reached the seabed was through aircraft fire as the Hispano cannon was used on several British aircraft.

Information about this discovery has been forwarded to:

- Historic England
- BMAPA
- The Crown Estate
- The Receiver of Wreck (Droit 054/20)
- The National Record of the Historic Environment
- The Historic Environment Record for Suffolk

Hanson_0966: Shell

This shell case was discovered in Licence Area 401/2 in the East Coast dredging region, approximately 23 km east of Lowestoft. Ben Martin discovered it at Dagenham Wharf.

This shell was discovered on the plant magnet and reported as a 30 mm cannon shell measures approximately 125 mm in length and has a diameter of 30 mm. The staff said that they normally have a fuse at the tip or are solid and therefore the fact that this one has a corroded tip and a potential base fuse is interesting. Due to the corrosion present on the shell, the identifying marks are not visible.

Images of the objects were sent to Trevor Parker, from the Ordnance Society, who said that the munition is a British 30 mm Aden (the American version were 20 mm in diameter). The Aden aircraft cannon was fitted to various post Second World Word British jet aircraft including the Hawker Hunter. The ADEN was named for the Armament Development Establishment, where it was designed, and Enfield, where it was produced in the late 1940s. The round was developed from the German Mauser MG 213 30 mm experimental revolver cannon designed for the Luftwaffe during the Second World War.

The 30 mm Aden cannon was a replacement for the older Hispano-Suiza HS.404 20 mm cannon used in various British aircraft during the Second World War. Two case lengths were used in the experimental trials, the 86 mm (Low Velocity) and the 111 mm (High Velocity). Both rounds had the same overall length, the difference being the length of the projectile and weight of explosive charge. The Low Velocity round was dropped from the trials and the High Velocity was adopted meaning that unless this example is from the trials, it is more than likely a High Velocity bullet. If the shell casing was present, more could be revealed.

Ordnance has previously been reported from Licence Area 240. The most likely way that this shell reached the seabed was through aircraft fire; as the Aden cannon was used on several British aircraft.

Information about this discovery has been forwarded to:

- Historic England
- BMAPA
- The Crown Estate
- The Receiver of Wreck (055/20)
- The National Record of the Historic Environment
- The Historic Environment Record for Suffolk

Hanson_0967: Shell

This shell was discovered in Licence Area 401/2 in the East Coast dredging region, approximately 23 km east of Lowestoft. Aaron Chidgey discovered it at Dagenham Wharf. The find was disposed of by the EOD.

This shell measures approximately 85 mm in length and has a diameter of 20 mm. The brass nose is engraved with “R G” and other letters or numbers that are not legible. Due to the corrosion on the base of the shell, further identifying marks are not visible.

Images of the object were sent to Trevor Parker, from the Ordnance Society, who said that this shell was live when discovered. The “R G” stamped on the tip refers to the British manufacturer, Radway Green, and he said that the possible numbers next to the letters are unusual as they look like batch numbers which he didn't think were stamped on a fuse this small. The usual stamping would be along the lines of "No. 254". The former Royal Ordnance Factory, Radway Green was located in Chester and established in 1940, and it manufactured small arms ammunition for the British armed forces.

He said that the shell is either an Oerlikon or Hispano round and could have a tracer in the base as well. Hispano shells are fired from aircraft and were used widely by the British during the Second World War. Oerlikon shells are fired from ships and used on close range anti-aircraft ship mounted guns and were also used during the Second World War.

Several different types of ordnance belonging to multiple types of guns have recently been reported from Licence Area 401/2 through the Protocol. It is unknown whether this particular shell was fired from a vessel or an aircraft, but it is believed that it relates to the Second World War, meaning that it could have lain undisturbed for over 70 years.

Information about this discovery has been forwarded to:

- Historic England
- BMAPA
- The Crown Estate
- The Receiver of Wreck (Droit 073/20)
- The National Record of the Historic Environment
- The Historic Environment Record for Suffolk

CEMEX_0968: Pottery Sherd

This pottery sherd was discovered in Licence Area 137 in the South Coast dredging region, approximately 6.5 km south-west of the Isle of Wight. M. Pettitt discovered it at Shoreham Wharf.

CEMEX_0968 is a fragment of stoneware pottery that measures approximately 70 mm by 60 mm. Some of a printed stamp is visible on its surface. The text inside the circular area reads “PER’S HOM” while the text under the circle reads “PALL MALL” “LONDON”.

Images of the find were sent to our in-house pottery expert, Lorraine Mepham, who said that this is part of a cylindrical stoneware bottle, probably for ginger beer or some other form of carbonated beverage. It’s feldspathic-glazed with an iron-dipped upper part (the brown section). Not much remains of the ink-stamped manufacturer’s mark, but it may well be from Hooper & Co of Pall Mall East, London. These bottles date from the 1830s onwards, when feldspathic glaze was introduced. Before this date, all stoneware bottles were salt-glazed. Bottles with a feldspathic glaze were produced until the early 20th century, when they were finally superseded by glass bottles around the time of the First World War. Lorraine said that the word “Home” on the stamp was slightly puzzling as it is not expected on a beverage bottle and could relate to “Home wares” such as footwarmers or bed warmers as they were also made from stoneware. However, further research has found similar parallels in stoneware ginger beer bottles stamped “Hooper’s Home Brewed Ginger Beer”.

It is not clear whether this find entered the marine environment already broken or whether the damage occurred at a later stage. It could have belonged to a cargo of a vessel and broke before being discarded overboard. It is also a possibility that someone aboard the vessel was drinking the beverage and threw the empty bottle away overboard as waste. As ginger is an ingredient which has been shown to have beneficial effects on seasickness, it may be the case!

Information about this discovery has been forwarded to:

- Historic England
- BMAPA
- The Crown Estate
- The Receiver of Wreck (Droit 121/20)
- The National Record of the Historic Environment
- The Historic Environment Record for the Isle of Wight

Hanson_0969: Tusk Fragment

This tusk fragment was discovered in lane F8 within Licence Area 240 in the East Coast dredging region, approximately 10 km south-east of Great Yarmouth. Darryl Mason discovered it on board *Arco Avon*.

This tusk fragment was discovered from dredging lane F8 and measures approximately 200 mm by 60 mm. The underside of the tusk is stained black meaning it could have been buried in peat or another deposit on the seabed for a long time which has resulted in organic staining. The curve of the tusk is visible in the photograph of the profile.

Images of the tusk fragment were sent to Professor Adrian Lister from the Natural History Museum who said that unfortunately it is impossible to say anything about the identity of such a fragment except that it is of the elephant family. It could belong to the Asian elephant, African elephant, mammoth or straight-tusked elephant. He said that the only conceivable way to go further would be expensive and/or require significant work. Radiocarbon dating would be required to decide whether the species was more modern or an older fossil and DNA testing, if any DNA was preserved (although unlikely), would be needed in order to identify the species. The other conceivable method in identifying species would be to examine the so-called Schreger lines that differ between mammoth and all the others.

“Schreger lines, described for the first time by time by Bernhard Gottlob Schreger in the 1800 are a peculiar character of the Proboscidean dentine. They are evident in transversal cross-section of tusk and are due to sinusoid trend of dentinal tubules: when the waves, formed from these tubules, have intercepted by the cut-surface on the transversal section, the interception point sequences form two different sets of lines that curve clockwise and counterclockwise” - (Palombo and Villa 2001).

Professor Lister said that in a fragment like this, it would be necessary first to embed it in resin and cut a section to examine it microscopically. This may or may not yield a clear result!

Lane F8 has previously yielded an animal bone identified by Wessex Archaeology’s

Hanson_0970: Animal Bone

This animal bone fragment was discovered in lane F8 or F9 within Licence Area 240 in the East Coast dredging region, approximately 10 km south-east of Great Yarmouth. Tom Ephraim discovered it on board *Arco Avon.*

This animal bone is approximately 280 mm long, 130 mm wide and has a thickness of 100 mm. The worn cavity on the bone is consistent with a ball and socket joint.

Images of the bone were sent to Wessex Archaeology's senior Zooarchaeologist, Lorrain Higbee, who said that based on the overall morphology and length, that this is a piece of mammoth pelvis (acetabulum and ischium). European mammoths are divided into three species: the Early Pleistocene *Mammuthus meridionalis* (2.6 to 0.7 million years ago), the early Middle Pleistocene *Mammuthus trogontherii* (0.7 to 0.5 million years ago), and the woolly mammoth, *Mammuthus primigenius* (Lister and Sher 2001). Woolly mammoth were in existence in Europe during the late Middle and Late Pleistocene, dating from 350,000 to 10,000 years ago (Lister and Sher 2001). Due to previous the previous bones and teeth from the area being attributed to woolly mammoth, it is likely that this bone also belongs to one.

Lane F8 and F9 have previously yielded worked flints including handaxes and animal bones belonging to several species, including mammoth. One of the bones previously recovered has cut marks consistent with either skinning or filleting (Hanson_0958) while another displays evidence of being chewed by hyenas (Hanson_0937_001). Due to the amount of bones and worked flints originating from these two lanes, it is believed that this material dates to the glacial periods when the seabed in Area 240 was dry land. The water was 'locked' in the ice sheets that covered much of North Western Europe. The discoveries being made from this area are therefore helping us to understand how this landscape and environment was exploited by both early humans and animals.

References
Lister, A. M and Sher, A. V., 2001. The Origin and Evolution of the Woolly Mammoth. *Science* (volume 294).

Information about this discovery has been forwarded to:

- Historic England
- BMAPA
- The Crown Estate
- The National Record of the Historic Environment
- The Historic Environment Record for Norfolk

CEMEX_0971: Metal Debris

This metal debris was discovered in Licence Area 514/1 in the Humber dredging region, approximately 9.6 km east south east of Kilnsea. Gary Dudleston discovered it on board *Sand Falcon*.

This object was reported as metal debris with the main component having a diameter of approximately 310 mm. The components include a hinged cover, wire coil and some form of frame which all appear to be of the same metal.

Coastal & Marine project manager Euan McNeill said that it was possibly some form of pre-electric bulkhead lamp. Alternatively, marine archaeologist Alistair Byford-Bates noted that it is somewhat reminiscent of part of an old paraffin heater. Images were also sent to Anthony Mansfield, a senior naval engineer who said he thinks may be an air vent of some kind due to its lightweight construction. It has a one-way valve arrangement due to the machined top surface of the disk. The spring and collar arrangement means it is supposed to seal onto some sort of pipe once the cap is closed and dogged down. It's still only a very low-pressure sealing arrangement however, therefore possibly a tank vent or some other compartment vent arrangement where they want fumes to be able to be released without air getting back in. The outer housing piece is possibly the framework for a mesh strainer or even a flame arrest strainer. The copper rivets showing in the legs indicate that some sort of sheet material wrapped around it and was rivetted on. This may have been mesh or sheet metal. Again, this points to a tank vent for flammable liquids of some kind.

This object may have entered the marine environment via a number of routes. The item appears to have broken off from another element or surface and as a result, may have fallen or been thrown overboard as discarded material. Alternatively, it may be from a modern metal wreck, however the material was found in isolation and no material belonging to a vessel structure was discovered.

Information about this discovery has been forwarded to:

- Historic England
- BMAPA
- The Crown Estate
- The Receiver of Wreck (Droit 148/20)
- The National Record of the Historic Environment
- The Historic Environment Record for East Riding of Yorkshire

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www.wessexarch.co.uk/projects/marine/bmapa/index.html

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