



Penzance Harbour Capital Dredging Works Penzance, Cornwall Archaeological recording



Cornwall Archaeological Unit

**Penzance Harbour
Capital Dredging Works
Penzance, Cornwall**

Archaeological recording

Client	Cornwall Council
Report Number	2015R040
Date	6 August 2015
Status	Final
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Acknowledgements

This study was commissioned by Steve Kelleher, Major Projects Officer, Capital Projects, Economy, Enterprise and Environment, Cornwall Council and carried out by Cornwall Archaeological Unit, Cornwall Council.

Thanks to Andy Brigden, Cornwall Council Maritime Manager; Phil Osmond of Mace; Neil Clark, the Penzance Harbourmaster; and Mike Newton, the UK Representative of PETER MADSEN REDERI A/S.

Within Cornwall Archaeological Unit, the Project Manager was Charlie Johns, fieldwork was carried out by freelance maritime archaeologist Kevin Camidge, Figure 2 of this report was produced by Francis Shepherd and the radiocarbon determination from the Mount's Bay submerged forest was recalibrated using OxCal 4.2.

The views and recommendations expressed in this report are those of Cornwall Archaeological Unit and are presented in good faith on the basis of professional judgement and on information currently available.

Freedom of Information Act

As Cornwall Council is a public authority it is subject to the terms of the Freedom of Information Act 2000, which came into effect from 1st January 2005.



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Cover illustration

Dredging in progress (photo: Kevin Camidge)

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Abbreviations

CAU	Cornwall Archaeological Unit
CD	Chart Datum
CIfA	Chartered Institute for Archaeologists
CRO	Cornwall Record Office
HER	Cornwall and the Isles of Scilly Historic Environment Record
MCO	Monument number in Cornwall HER
MMO	Marine Management Organisation
NGR	National Grid Reference
OD	Ordnance Datum – height above mean sea level at Newlyn
WSI	Written Scheme of Investigation

1 Summary

This report describes the results of an archaeological watching brief undertaken by Cornwall Archaeological Unit for Cornwall Council during capital dredging works in Penzance Harbour between October 2014 and April 2015 as a condition of the dredging licence issued by the Marine Management Organisation.

The dredging works was divided into three zones:

Zone 1: this zone was inside the harbour and was dredged to improve access to Albert Pier. The results of an initial desk-based assessment indicated that dredging in this zone was unlikely to have impacts on submerged peat deposits but could affect other archaeological remains, including those relating to the medieval harbour.

Zone 2: this zone was inside the harbour and was dredged to improve access to Lighthouse Pier and the wet dock. The results of the desk-based assessment indicated that dredging in this zone was unlikely to have impacts on submerged peat deposits but could affect other archaeological remains, including those relating to the medieval harbour.

Zone 3: this zone lies at the approach to Penzance Harbour and was dredged to improve access to the harbour. The results of the desk-based assessment indicated that dredging in this zone was unlikely to have impacts on submerged peat deposits but could affect other archaeological remains, including those relating to the medieval harbour.

A protocol for reporting finds of archaeological interest was adopted during the dredging closely following the British Marine Aggregate Producers Association and English Heritage Protocol (Wessex Archaeology 2005) with monitoring visits by CAU.

No palaeoenvironmental deposits or other archaeological remains were identified during the dredging. The only finds were two anchors were recovered during the dredging, one of these was late 20th century in date and the second probably dates to the period 1860–1940.



Fig 1 Location map.

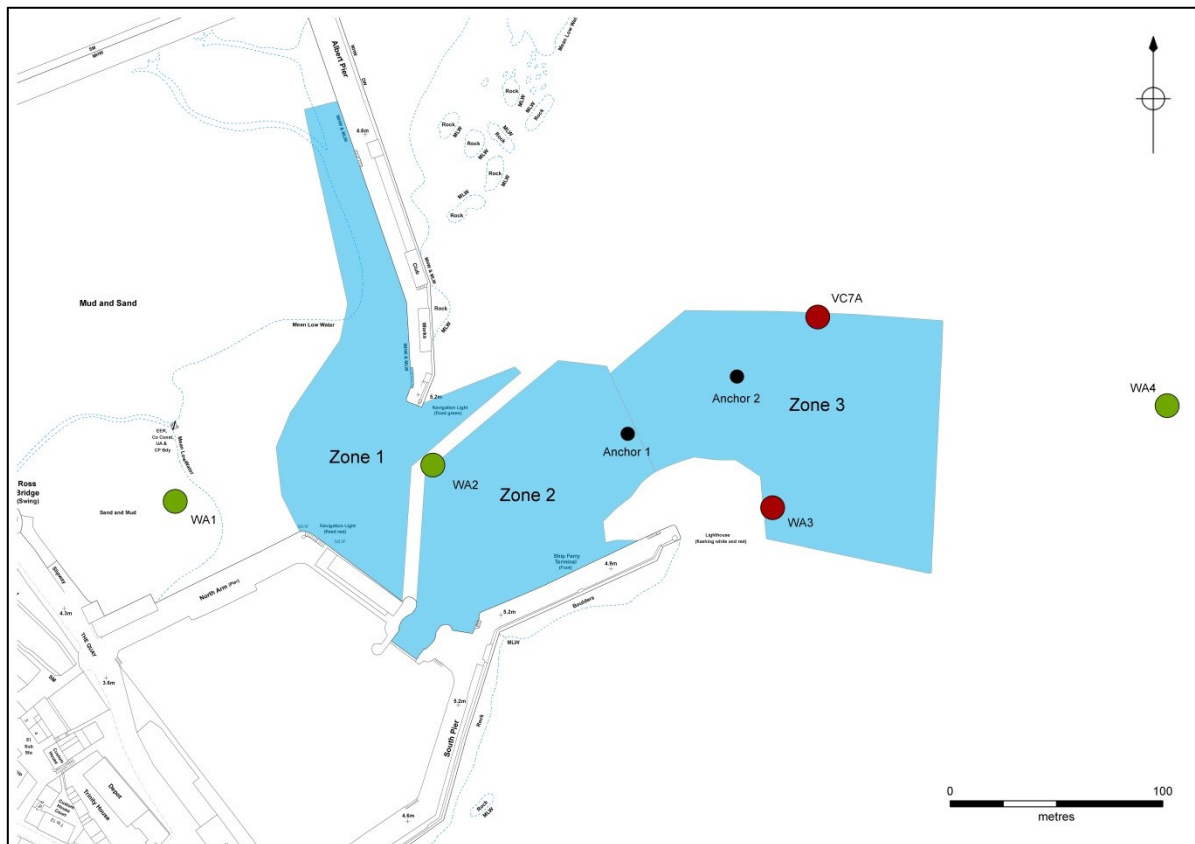


Fig 2 Plan of Penzance Harbour dredging area.

2 Introduction

2.1 Project background

A licence for capital dredging works in Penzance Harbour (Fig 1) was issued by the Marine Management Organisation (MMO) to Cornwall Council on 11 September 2013 (Licence Number L/2013/00287).

In a letter from Nick Russell, Assistant Inspector of Ancient Monuments to the MMO Case Officer Siobhan Sherry dated 19 July 2013, English Heritage (now Historic England) had advised that the proposal should be accepted subject to the conditions that the following measures be put in place prior to project initiation:

- A Written Scheme of Investigation that addresses the revised dredge and disposal area is to be agreed with English Heritage;
- An Archaeological Reporting Protocol for discoveries that specifies responsibilities for all parties.

Consequently, the Cornwall Archaeological Unit (CAU) was commissioned by Cornwall Council to prepare a Written Scheme of Investigation — WSI (Appendix 1) and Archaeological Reporting Protocol for archaeological recording (Appendix 2) and to carry out a programme of archaeological recording during the dredging works. Preparation of the WSI was guided by discussions with Nick Russell and Vanessa Straker, Science Adviser, English Heritage.

2.2 Aims

The site specific aims were to:

- Establish the presence/absence of archaeological deposits and remains.
- Determine the extent, condition, nature, character, date and significance of any archaeological deposits and remains encountered.
- To establish the nature of the activity on the site.
- To identify any artefacts relating to the occupation or use of the site.
- To provide further information on the archaeology and prehistoric occupation of the Penzance Harbour area from any archaeological deposits and remains encountered.
- To obtain palaeoenvironmental material which could be analysed and dated, which would help characterize past environments.
- To further our knowledge of the Mounts Bay prior to its submergence in the Neolithic period.

2.3 Methods

2.3.1 Desk-based assessment

During the desk-based assessment historical databases and archives were consulted in order to obtain information about the history of the site and the structures and features that were likely to survive. The main sources consulted were as follows:

- Cornwall HER
- Images of England online listed buildings database
- Early maps and photographs (see Section 8.1)
- Published histories (see Section 8.2)

2.3.2 Fieldwork

The dredging was divided into three areas Zone 1, Zone 2 and Zone 3 (Fig 2)

Zone 1: This zone was inside the harbour and was dredged to improve access to Albert Pier with a capital dredge of -0.9m CD maintained to -0.6m CD, the volume of material removed was 10264 cubic metres.

Zone 2: This zone is inside the harbour and was dredged to improve access to Lighthouse Pier and the wet dock with a capital dredge depth -2.5m CD, the volume of material removed was 19206 cubic metres.

Zone 3: This zone lies at the approach to Penzance Harbour and was dredged to improve access to the harbour with a capital dredge depth -2.5m CD, the volume of material removed was 5286 cubic metres.

It was considered that the dredging was unlikely to have impacts on submerged peat deposits (see below Sections 4 and 5) but could affect other archaeological remains, including those relating to the medieval harbour or wrecks sites, therefore an archaeological watching brief and adoption of an Archaeological Reporting Protocol for archaeological recording during the dredging works was recommended.

The CAU project manager visited the dredging vessel on 31 October 2014, at the commencement of dredging, to inspect the method of working and the potential for archaeological screening and to liaise with the skipper of the dredging vessel, machine drivers and site workers with regard to the identification of artefactual and palaeoenvironmental material. Subsequently CAU monitored the dredging on a regular basis (Figs 3 and 4).

A protocol for reporting finds of archaeological interest was adopted (see Appendix 2), closely following the British Marine Aggregate Producers Association and English Heritage Protocol (Wessex Archaeology 2005). The Contractor nominated one of their staff as a Site Champion for archaeology. They were issued with a flow chart setting out the actions to be taken when they are told about a discovery. The Site Champion was to fill in a *pro forma* Preliminary Record sheet for each find, based on the form in the Protocol document and inform the project archaeologist. The Poster accompanying the Protocol was posted in a prominent position in the Contractor's site accommodation.

In the event that finds of archaeological importance are encountered in the course of dredging the operator was to comply with the Protocol and ensure that the discovery was reported to the Marine Management Organisation, Cornwall Council's Maritime Team, English Heritage and the Cornwall Council Historic Environment Planning Advice Officer.

In the event that organic sediment, peat or submerged forest remains were recovered during the dredging work would cease and the CAU project manager would report the findings immediately to the Marine Management Organisation, Cornwall Council's Maritime Team, English Heritage and the Cornwall Council Historic Environment Planning Advice Officer in order that an appropriate mitigation strategy could be agreed.

2.3.3 Post-fieldwork

During this phase the results of the fieldwork were collated for archiving. This involved the indexing of site drawings and photographs and completion of the Historic England/ADS OASIS online archive index.

The main output from the project is this report.

3 Location and setting

The area of the capital lies within Penzance Harbour and the approaches to it on the south coast of Cornwall centred at NGR 14775 30190 (Figs 1 and 2).



Fig 3 The dredger in Penzance Harbour (photo: Kevin Camidge).



Fig 4 Tidying up alongside Albert Pier (photo: Kevin Camidge).

4 Site history and previous work

The earliest notice of a pier at Penzance is in 1512 when it was 'considerably improved'. A new pier was constructed in 1766 and extended in 1785, and in 1842 the northern pier was begun. Construction of the dock was started in 1878 (Cornwall and Scilly HER – MCO4176).

Numerous geotechnical reports and assessments relating to the proposed regeneration of Penzance harbour have been produced during the last decade including an Environmental Statement (Hyder Consulting (UK) Ltd 2005) and a subsequent palaeoenvironmental and geoarchaeological assessment. This was undertaken to further define archaeologically important peat deposits found in and adjacent to the dredge area, as well as to identify their value, and any possible mitigation that might be required prior to any construction activity (Wessex Archaeology 2006).

The 2006 Assessment reviewed the historic geotechnical data available within the Penzance Harbour area and identified 41 sample locations of archaeological interest. The sediments were provisionally identified as silts, clays, peats and organic material relating to Holocene palaeolandscapes (post-18,000 years BP) (Wessex Archaeology 2006, 6).

In relation to Penzance Harbour itself, a layer of peat was identified in a vibrocore taken approximately 35m from the end of Lighthouse Pier (**WA3**) a depth of c 1.5m to 2m below the seabed. A peat layer was also identified in core **WA11** which correlated to the depth of the peat contained in **WA3** (i.e., at 1.05m to 1.08m below the seabed), but was located some 450m to the north east and separated from **WA3** by a palaeochannel which contained a silt/clay layer but no peat (Camm 1999; Wessex Archaeology 2006, 7). In general the sequences showed that the peat occurs above clay/silt layers which overlie bedrock. The peat is overlain by sand and shingle.

It was not clear how far the peat recorded in **WA3** extended to the north and south. However, it was thought to be a possibly relatively isolated occurrence and that it may indicate a former intertidal zone or coastal saltmarsh along the bank of a former river evidenced by the palaeochannel. A similar coastal landscape on its opposite side is evidenced by the peat in **WA11** (Wessex Archaeology 2006, 7).

Peat was subsequently found in vibrocore **VC7A** located about 100m NNE of **WA3** which apparently contained some of the same Holocene sequence found in the **WA3** bulk samples. A Late Mesolithic radiocarbon date, 4960–4770 cal BC (NZA-25945; 6000±35 BP) was obtained from the base of the peat in **VC7A** at a depth of -7.22m OD. Three Late Mesolithic radiocarbon dates were also obtained from a bulk sample from **WA3** (Wessex Archaeology 2006, 13).

No further occurrences of peat were recorded in three other cores which were drilled on the foreshore or within Penzance Harbour (**WA1**, **WA2** and **WA16**) (Wessex Archaeology 2006, 7).

For the 2005 Environmental Statement a marine geophysical survey — sidescan sonar, sub-bottom profiler and single beam bathymetry – was carried out by Wessex Archaeology which covered the new proposed dredging Zone 3. The geophysical survey found no features of potential archaeological interest in Zone 3 (Hyder Consulting (UK) Ltd 2005, 13-24).

Only one wreck site was identified in the vicinity of the dredge area - an ex-Navy pinnacle which ran aground in 1971. The vessel was refloated and towed towards Penzance but sank near the entrance to the harbour – however, this site has been lifted or removed from the recent Admiralty Charts for Penzance and the sidescan sonar did not reveal any anomalies at this location (Hyder Consulting (UK) Ltd 2005, 13-29).

During the severe storms of February 2014 tree trunks and peat deposits associated with a submerged forest were exposed on the foreshore of Mount's Bay (Fig 5). This submerged forest has been exposed a number of times in the past, particularly after winter storms. There was a notable exposure in 18757 recorded by William Borlase and an even more extensive one in 1886 which was photographed by Gibson. Wood

samples were taken at that time by the Royal Geological Society of Cornwall and in 1958 radiocarbon determination was obtained from a piece of oak (Thomas 1985, 281–2, figs 125 and 126). The radiocarbon determination has been calibrated using OxCal 4.2. The result is 2469–1665 cal BC (BM-29; 3656±150 BP) at the 95.4% per cent confidence level which broadly speaking spans the Early Bronze age.



Fig 5 Part of the submerged forest exposed by winter storms at Chyandour, Mount's Bay in February 2014 (photo: Cornwall Council)

5 Potential impacts

Figure 2 shows a plan of the Penzance Harbour capital dredging zones overlaid on a map showing the location of vibrocores from the 2006 assessment by Wessex Archaeology. Table 1 shows dredge depths in relation to the vibrocore locations.

The dredging in Zone 1 was considered unlikely to have impacts on peat deposits but could have impacted upon other archaeological remains, including those relating to the medieval harbour.

The dredging in Zone 2 was unlikely to have impacts on peat deposits but could have affected other archaeological remains, including those relating to the medieval harbour.

The surface of the peat recorded by Wessex in **WA3** is at -6.40m OD and in **VC7A** is -5.95m OD, which meant that even assuming a dredging tolerance of 0.5m these deposits would not be disturbed by the dredging to depth of -5.55m OD (-2.5m CD) in Zone 3 (Table 1). The dredging could, however, affect other archaeological remains, including those relating to the medieval harbour and wreck remains.

Vibrocore location	Sea bed (below CD) m.	Dredge level (below CD) m.	Depth of dredge (below existing) m.	Depth of feature (below existing) m.
WA3	2.4	2.5	0.2 ~ 0.0 (see sec 1.1 ch 220)	1.5
WA11	2.4 (or deeper)	Nil, but 2.5 near zone 3	0.1 – 0.0 (off plan)	1.05
VC7A	1.7	2.5	0.7 (see sec 2.2 ch 220)	2.27

Table 1 Dredge depths in relation to vibrocore locations (Steve Kelleher).

6 Archaeological results

No palaeoenvironmental deposits or other archaeological remains were identified during the dredging. Two finds were reported and these were both large anchors.

6.1 Anchor 1

While dredging was in progress to the east of the harbour entrance an iron anchor was observed on 14 November 2014 lying on a pallet at the eastern end of the north arm of the floating harbour (Fig 6). No precise original location for the anchor was given, but the Harbourmaster indicated that the anchor was found within a 75m radius of the location indicated above on Figure 2.



Fig 6 Anchor 1 after recovery lying on the north arm of the floating harbour. Scale = 1m (photo: Kevin Camidge).

The anchor is of the modern stockless type, and the moderate corrosion and light concretion of sand on its surface would suggest that it has been in the water for a relatively short time (probably less than 30 years). The Harbourmaster was not aware of any vessel which had recently lost an anchor. The *Sea King*, which was stationed at Penzance, lost an anchor to the east of Low Lee Ledges some five years ago (about a

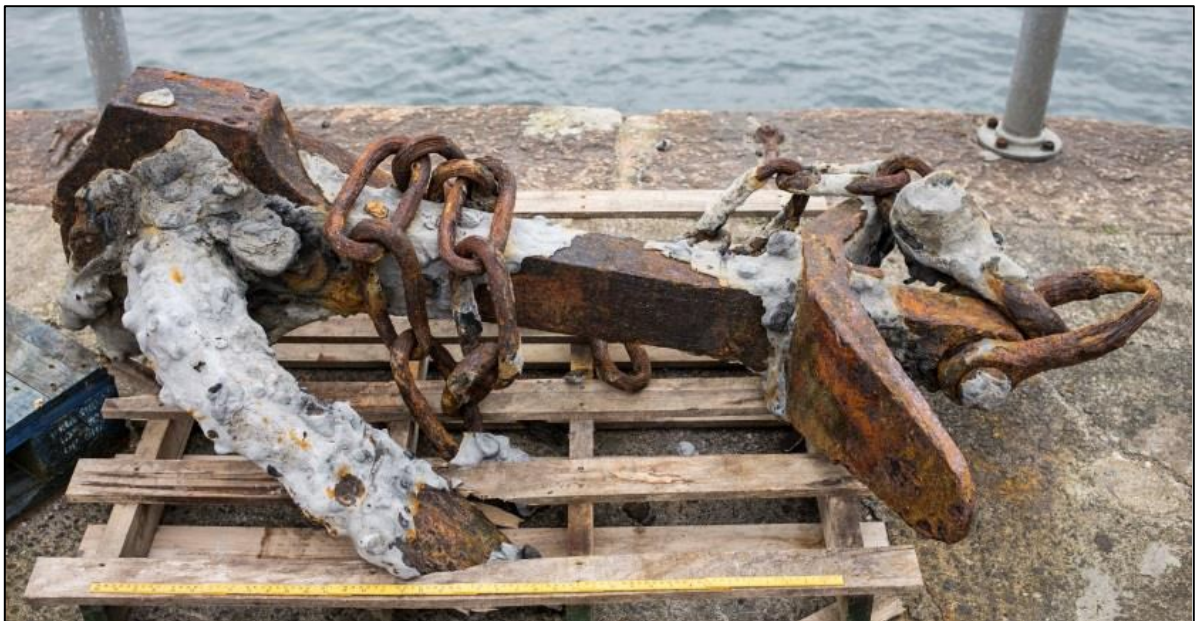
mile to the west of the harbour). Although the design of the stockless anchor originates from the nineteenth century, the style of this anchor suggests that it was manufactured in the second half of the twentieth century.

6.2 Anchor 2

While dredging was in progress to the east of the harbour entrance, a second iron anchor was recovered. The anchor was observed on 4 December 2014 lying on a pallet at the eastern end of the north arm of the floating harbour (Fig 7). No precise original location for the anchor was given, but the Harbourmaster indicated that the anchor was found within a 75m radius of the location indicated above on Figure 2.

The anchor is of a type introduced in the 1860s, the Martin's Patent Self-canting Anchor. A considerable number of improved anchor designs were introduced in the mid nineteenth century, but the Martin was one of the first to achieve widespread use. The Martin Anchor was approved by the Admiralty and patented in 1864. It remained in service until the 1940s. The Martin Anchor underwent a number of 'improvements' – for example the Wright's Improved Martin Self-canting Anchor of 1892. The anchor recovered from Penzance is of the original 'unimproved' type so was probably manufactured in the late nineteenth or early twentieth centuries.

The anchor has a moderate coating of corrosion products (concretion), which indicates that the anchor has been in the water for some time – probably at least 50 years. It also has a short length of un-studded chain still attached (see Fig 7). The tip of one of the flukes (palm) has been broken off – this could have occurred during the working life of the anchor rather than during its recovery.



*Fig 7 Anchor 1 after recovery lying on the north arm of the floating harbour.
Scale = 1m.*

7 Conclusions/discussion

Although the results of the watching brief during the Penzance Harbour capital dredging works were limited, the project entailed the development and implementation of a methodology for undertaking archaeological recording during marine dredging which will be of benefit in future projects of this type. The anchors were disposed of by the Harbourmaster and will probably be reused.

8 References

8.1 Primary sources

Ordnance Survey, c1880. 25 Inch Map First Edition (licensed digital copy at CAU)

Ordnance Survey, c1907. 25 Inch Map Second Edition (licensed digital copy at CAU)

Ordnance Survey, 2007. Mastermap Digital Mapping

Tithe Map and Apportionment, c1840. Parish of *** (licensed digital copy at CRO)

8.2 Publications

Camm, G S, 1999. Palaeovalley systems in Mount's Bay, west Cornwall in J D Scourse and M FA Furze (eds), *The quaternary of West Cornwall: field guide*, Quaternary Research Association

Hyder Consulting (UK) Ltd, 2005. *Penzance Harbour Environmental Statement*, Hyder Consulting (UK) Ltd

Wessex Archaeology, 2004. *Penzance Harbour, Cornwall: Archaeological Assessment Draft Technical Report*, unpublished client report, Salisbury

Wessex Archaeology 2005. *Protocol for reporting finds of archaeological interest*, Salisbury, British Marine Aggregate Producers Association and English Heritage

Wessex Archaeology, 2006. *Penzance Harbour, Cornwall: Final Technical report, Palaeoenvironmental and Geotechnical Assessment*, Salisbury

8.3 Websites

<http://www.heritagegateway.org.uk/gateway/> English Heritage's online database of Sites and Monuments Records, and Listed Buildings

9 Project archive

The CAU project number is **146439**

The project's documentary, digital, photographic and drawn archive is maintained by Cornwall Archaeological Unit, Cornwall Council, Fal Building, County Hall, Treyew Road, Truro, TR1 3AY.

English Heritage/ADS OASIS online reference: cornwall2-219437

Appendix 1: Written Scheme of Investigation

Penzance Harbour Dredging, WSI, Rev02, C3, 04/11/13

Historic Environment Projects, Cornwall Council



Penzance Harbour, Cornwall: Written Scheme of Investigation for archaeological recording during dredging

Client: Maritime, Cornwall Council
Client contact: Capt Andy Brigden
Client tel: 01872
Client email: abrigden@cornwall.gov.uk

Introduction

A licence for capital dredging works in Penzance Harbour was issued by the Marine Management Organisation (MMO) to Cornwall Council on 11 September 2013 (Licence Number L/2013/00287).

In a letter from Nick Russell, Assistant Inspector of Ancient Monuments to the MMO Case Officer Siobhan Sherry dated 19 July 2013, English Heritage advised that the proposal should be accepted subject to the conditions that the following measures be put in place prior to project initiation:

- A Written Scheme of Investigation that addresses the revised dredge and disposal area is to be agreed with English Heritage;
- An Archaeological Reporting Protocol for discoveries that specifies responsibilities for all parties.

This Written Scheme of Investigation (WSI) and Archaeological Reporting Protocol for archaeological recording during the dredging works has been prepared by Historic Environment Projects, Cornwall Council (HE Projects) at the request of Andy Brigden, Cornwall Council Maritime Manager, and has been guided by discussions Nick Russell and Vanessa Straker, Science adviser, English Heritage.

Site location

The site is coastal and lies within Penzance Harbour and the approaches to it on the south coast of Cornwall centred at NGR 14775 30190 (Fig 1).

Archaeological background

The earliest notice of a pier at Penzance is in 1512 when it was 'considerably improved'. A new pier was constructed in 1766 and extended in 1785, and in 1842 the northern pier was begun. Construction of the dock was started in 1878 (Cornwall and Scilly HER – MCO4176).

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Environment\Projects\Sites\Maritime\Penzance Harbour Dredge 146439\WSI\Penzance Harbour
Dredging WSI Rev 02.doc

Penzance Harbour Dredging, WSI, Rev02, CJ, 04/11/13

Numerous geotechnical reports and assessments relating to the proposed regeneration of Penzance harbour have been produced during the last decade including an Environmental Statement (Hyder Consulting (UK) Ltd 2005) and a subsequent palaeoenvironmental and geoarchaeological assessment to further define archaeologically important peat deposits found in the area and adjacent to the dredge area as well as to identify their value, and any possible mitigation that might be required prior to any construction activity (Wessex Archaeology 2006).

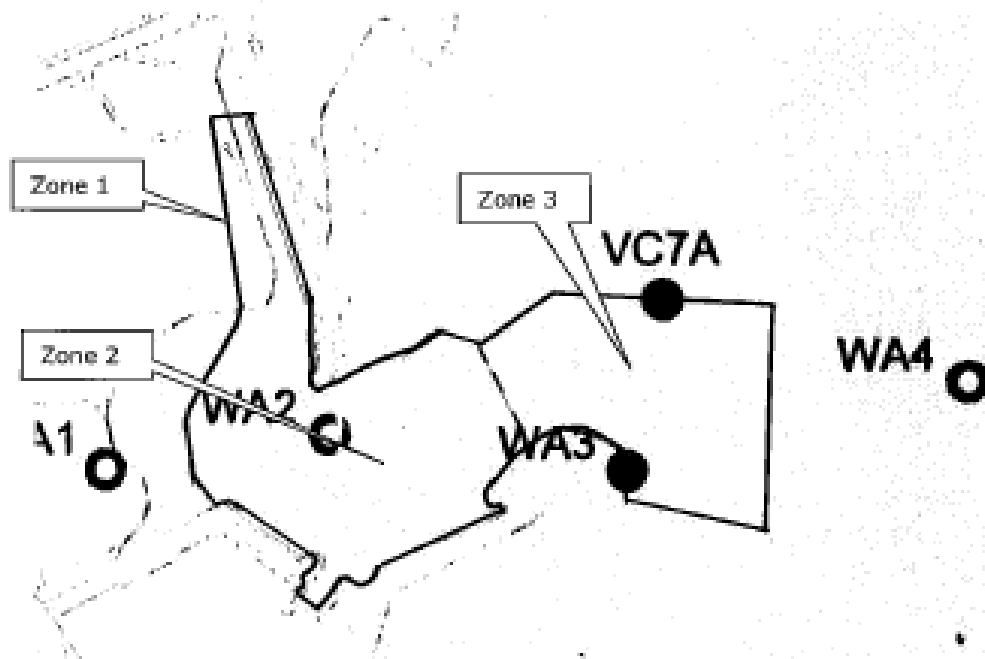


Fig 1 Plan of the Penzance Harbour capital dredging zones overlaid on a map showing the location of vibrocores from the 2006 palaeoenvironmental and geotechnical assessment by Wessex Archaeology. The palaeochannel is the darker blue shaded area at right edge of the plan containing **WA4**

The 2006 Assessment reviewed the historic geotechnical data available within the Penzance Harbour area and identified 41 sample locations of archaeological interest (Fig 2). The sediments were provisionally identified as silts, clays, peats and organic material relating to Holocene palaeolandscapes (post-18,000 years BP) (Wessex Archaeology 2006, 6).

In relation to Penzance Harbour itself, a layer of peat was identified in a vibrocore (Fig 2) taken approximately 35m from the end of Lighthouse Pier (**WA3**) a depth of c 1.5 to 2m below the seabed. A peat layer was also identified in core **WA11** which correlated to the depth of the peat contained in **WA3**, i.e. at 1.05 to 1.08m below the seabed, but was located some 450m to the north east and separated from **WA3** by a palaeochannel which contained a silt/clay layer but no peat (Camm 1999; Wessex Archaeology 2006, 7). In general the sequences showed that the peat occurs above clay/silt layers which overlie bedrock. The peat is overlain by sand and shingle.

It was not clear how far the peat recorded in **WA3** extended to the north and south but it was thought to be a possibly relatively isolated occurrence and that it may

Penzance Harbour Dredging, WSI, Rev02, C3, 04/11/13

indicate a former intertidal zone or coastal saltmarsh along the bank of a former river evidenced by the palaeochannel, a similar coastal landscape on its opposite side is evidenced by the peat in **WA11** (Wessex Archaeology 2006, 7).

Peat was subsequently found in vibrocore **VC7A** located about 100m NNE of WA3 which apparently contained some of the same Holocene sequence found in the WA3 bulk samples. A Late Mesolithic radiocarbon date, 4960–4770 cal BC (6000±35 BP; NZA-25945) was obtained from the base of the peat in **VC7A** at a depth of -7.22m OD. Three Late Mesolithic radiocarbon dates were also obtained from a bulk sample from WA3 (Wessex Archaeology 2006, 13).

No further occurrences of peat were recorded in three other cores which were drilled on the foreshore or within Penzance Harbour (**WA1**, **WA2** and **WA16**) (Wessex Archaeology 2006, 7).

For the 2005 Environmental Statement a marine geophysical survey – sidescan sonar, sub-bottom profiler and single beam bathymetry – was carried out by Wessex Archaeology which covered the new proposed dredging Zone 3. The geophysical survey found no features of potential archaeological interest in Zone 3 (Hyder Consulting (UK) Ltd 2005, 13-24).

Only one lifted wreck site was identified in the vicinity of the dredge area - an ex-Navy pinnacle which ran aground in 1971. The vessel was refloated and towed towards Penzance but sank near the entrance to the harbour - however this site has been lifted or removed from the recent Admiralty Charts for Penzance and the sidescan sonar did not reveal any anomalies at this location (Hyder Consulting (UK) Ltd 2005, 13-29).

Significance

The Holocene is significant as the period during which human recolonisation of the British Isles took place after the end of the Devensian glaciation and it is the peat and palaeochannel deposits identified in these samples which are of key archaeological importance. Peat dating to the Mesolithic period in Cornwall is uncommon and environmental deposits from this period, such as identified in WA3 and VC7A are of regional if not National significance

Potential impacts and suggested mitigation

The dredging is divided into three areas Zone 1, Zone 2 and Zone 3 (Fig 1)

Zone 1: This zone is inside the harbour and is to be dredged to improve access to Albert Pier with a proposed capital dredge of -0.9m CD maintained to 0.6m CD, the volume of material to be removed is 10264 cubic metres.

The dredging in Zone 1 is unlikely to have impacts on peat deposits but may affect other archaeological remains, including those relating to the medieval harbour, and an archaeological watching brief should be carried out during the dredging of this part of the harbour.

Zone 2: This zone is inside the harbour and is to be dredged to improve access to Lighthouse Pier and the wet dock with proposed capital dredge depth -2.5m CD, the volume of material to be removed is 19206 cubic metres.

The dredging in Zone 2 is unlikely to have impacts on peat deposits but may affect other archaeological remains, including those relating to the medieval harbour and an archaeological watching brief should be carried out during the dredging of this part of the harbour.

Penzance Harbour Dredging, WSI, Rev02, CI, 04/11/13

Zone 3: This zone lies at the approach to Penzance Harbour and is to be dredged to improve access to the harbour with a proposed capital dredge depth -2.5m CD, the volume of material to be removed is 5286 cubic metres.

The surface of the peat recorded by Wessex in WA 3 is at -6.40m OD and in VC7A is -5.95mOD , so even assuming a dredging tolerance of 0.5m these deposits should not be disturbed by the dredging to depth of -5.55m OD (-2.5m CD in Zone 3. The dredging may however affect other archaeological remains, including those relating to the medieval harbour and wreck remains.

Vibrocore location	Sea bed (below CD) m.	Dredge level (below CD) m.	Depth of dredge (below existing) m.	Depth of feature (below existing) m.
WA3	2.4	2.5	0.2 ~ 0.0 (see sec 1.1 ch 220)	1.5
WA11	2.4 (or deeper)	Nil, but 2.5 near zone 3	0.1 - 0.0 (off plan)	1.05
VC7A	1.7	2.5	0.7 (see sec 2.2 ch 220)	2.27

Table 1 Dredge depths in relation to vibrocore locations (Steve Kelleher)

Aims

The site specific aims are to:

- Establish the presence/absence of archaeological deposits and remains.
- Determine the extent, condition, nature, character, date and significance of any archaeological deposits and remains encountered.
- To establish the nature of the activity on the site.
- To identify any artefacts relating to the occupation or use of the site.
- To provide further information on the archaeology and prehistoric occupation of the Penzance Harbour area from any archaeological deposits and remains encountered.
- The obtain palaeoenvironmental material which can be analysed and dated, which will help characterize past environments.
- To further our knowledge of the Mounts Bay prior to its submergence in the Neolithic period.

Working methods

All recording work will be undertaken according to the Institute for Archaeologists *Standards and Guidance for Archaeological Investigation and Recording*. Staff will follow the IFA *Code of Conduct and Code of Approved Practice for the Regulation of Contractual Arrangements in Archaeology*. The Institute for Archaeologists is the professional body for archaeologists working in the UK.

The archaeological recording will involve the following phases of work:

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Penzance Harbour Dredging, WSI, Rev02, CI, 04/11/13

- Desk-based study.
- Pre-works site meeting
- Watching brief.
- Archiving.
- Report production and dissemination.
- Archive deposition.

Desk-based study

Prior to the commencement of on site works the project archaeologist will familiarise themselves with the site by examining the information held by the Cornwall and Scilly Historic Environment record (HER), in published sources and previous environmental and geotechnical assessments.

During this stage the watching Brief Protocol document and work cabin poster will be produced.

Pre-works site meeting

Prior to the commencement of works there will be an on site meeting between the archaeological project manager, the project archaeologist and the Contractor to agree:

- Working methods and programme.
- Health and Safety arrangements.
- Reporting and treatment of artefacts.

Watching brief

The project manager and the project archaeologist will visit the site on the first day of dredging to inspect the method of working and the potential for archaeological screening and to liaise with the machine drivers and site workers with regard to the identification of artefactual and palaeoenvironmental material. Subsequently the project archaeologist will visit monitor the dredging on a regular basis.

A protocol for reporting finds of archaeological interest will be adopted, closely following the British Marine Aggregate Producers Association and English Heritage Protocol (Wessex Archaeology 2005). The Contractor will nominate one of their staff as a Site Champion for archaeology. They will be issued with a flow chart setting out the actions to be taken when they are told about a discovery. The Site Champion will fill in a *pro forma* Preliminary Record sheet for each find, based on the form in the Protocol document and will inform the project archaeologist. The Poster accompanying the Protocol will be posted in a prominent position in the Contractor's site accommodation.

In the event that finds of archaeological importance are encountered in the course of dredging the operator will comply with the Protocol and ensure that the discovery is reported to the Marine Management Organisation, Cornwall Council's Maritime Team, English Heritage and the Cornwall Council Historic Environment Planning Advice Officer.

In the event that organic sediment, peat or submerged forest remains are recovered during the dredging work will cease and the archaeological project manager will report the findings immediately to the Marine Management Organisation, Cornwall Council's Maritime Team, English Heritage and the Cornwall Council Historic Environment Planning Advice Officer in order that an appropriate mitigation strategy can be agreed.

Penzance Harbour Dredging, WSI, Rev02, CI, 04/11/13

Recording

- A location plan will be made, plotting the areas of ground works onto the Ordnance Survey Mastermap at 1:200.
- The heights of all features identified will be tied into the Ordnance Datum if appropriate.
- The location of features recorded during the watching brief will be plotted onto a drafting film overlay to the prepared location plan.
- All finds from significant stratified contexts will be accurately located on the location plan at an appropriate scale.
- All archaeological contexts will be described to a standard format linked to a continuous numbering sequence. All contexts recorded will be recorded via the medium of HE pro forma context recording sheets.
- Registers of drawings, photographs, finds and contexts, samples will be maintained during the fieldwork.
- The dredged material will be carefully inspected for finds.

Site planning policy

- Site drawings (plans, sections, locations of finds) will be made by pencil (4H) on drafting film; all plans will be linked to the prepared location map and to the national grid; all drawings will include standard information: site details, personnel, date, scale and north-point.
- Site plans will be drawn at 1:20 and sections at 1:10, unless circumstances indicate that other scales would be more appropriate.
- Site drawings (plans and sections) will be digitised and converted into AutoCAD drawings.

Photographic record

- The photographic record will consist of prints in both black and white and colour together with the negatives. Digital photography will be used for report illustration.
- For both general and specific photographs, a photographic scale will be included.
- In the case of detailed photographs a north arrow will be included if appropriate.
- The photographic record will be accompanied by a photographic register detailing as a minimum, feature number, location and direction of shot.

Finds

- All finds will be retained from each area and by context where feasible.
- All retained finds, where appropriate, will be washed.
- All pottery and other finds where appropriate, will be marked with the site code and context number.
- This WSI includes an agreed list of specialist consultants, who might be required to conserve and/or report on finds, and advise or report on other aspects of the project including environmental sampling.
- The requirements for conservation and storage will be agreed with the appropriate museum prior to the start of work, and confirmed in writing to the HEPAO.

Penzance Harbour Dredging, WSI, Rev02, CI, 04/11/13

- Finds work will be to accepted professional standards and adhere to the Institute for Archaeologists' *Guidelines* (IfA 2001b).

Sampling

- The English Heritage Advisor for Archaeological Science will be consulted for advice if required (Vanessa Straker 0117 975 0689; 07789 745054).
- Environmental sampling will be guided by *Environmental Archaeology* (English Heritage 2011 (2nd edition).
- Other English Heritage guidance will be consulted as appropriate including *Geoarchaeology* (2004) and *Archaeometallurgy* (2001).
- The archaeologist undertaking the watching brief will assess the potential for environmental sampling.
- If the dredging is removing peat and has to be stopped for sampling, new vibrocores will be obtained.
- If suitable deposits are identified the following types of analysis will be undertaken:
 - Macro & Micro Flora Analysis (including pollen analysis).
 - Macro & Micro Fauna Analysis.
 - Radiocarbon dating of peat or microfossils, if encountered, and to aid artefact analysis if appropriate.

Human remains

Any human remains which are encountered will initially be left *in situ* and reported to the HEPAO and the appropriate authorities. If removal is necessary this will comply with the relevant Government regulations. If burials are encountered their legal status will be ascertained and recording and/or removal will comply with the legal guidelines.

If human remains are not to be removed their physical security will be ensured, if possible by back filling as soon as possible after recording.

If human remains are to be removed this will be done with due reverence and in accordance to current best practice and legal requirements. The site will be adequately screened from public view. Once excavated, human remains will be bagged and not be exposed to public view.

Archiving

During this phase the results of the fieldwork will be collated for archiving. This will involve the following tasks.

- Indexing of site drawings and photographs.
- Processing and analysis of artefacts and environmental samples, if appropriate.

Note: The requirements for Archiving and Reporting will be reviewed in the light of the fieldwork results.

Archive Report production

A report will be produced which will describe the results of the desk-based study and the nature of the fieldwork undertaken, the circumstance and conditions under which it occurred and the results that were obtained. Production of the report will involve:

- Producing a descriptive text.
- Producing maps and scaled plans.

Penzance Harbour Dredging, WSI, Rev02, CI, 04/11/13

- Selecting photographs.
- Report design.
- Report editing.
- Dissemination of the finished report.

The report will have the following contents:

- Summary
- Introduction - Background, aims, methods
- Results of archaeological - A concise non-technical summary of the results
- Discussion - A discussion of archaeological findings in terms of both the site specific aims and the desk based research
- Specialists' reports Specialists' reports or assessments as appropriate
- Archive - A summary of archive contents and date of deposition
- Appendices Copy of the WSI
- Illustrations - Location map
 - Site location plan
 - A drawing showing those areas examined as part of the archaeological watching
 - Copies of relevant historical cartography & plans
 - Plans resulting from the archaeological recording.
 - Finds drawings (if appropriate)
 - Illustrative photographs
 - Note: All plans will be tied to the national grid.

Contingency for analysis and publication

A contingency is made within the accompanying estimate for assessment for specialist analysis and full publication in an appropriate journal. The English Heritage Assistant Inspector of Ancient Monuments will notify the contractor of such a need within four weeks of receipt of the report.

Report dissemination

The full report including all specialist assessments of artefact assemblages will be submitted within a length of time (but not exceeding six months) to be agreed between the applicant and HE, with copies supplied to the client (two), Cornwall and Scilly Historic Environment Record and the Courtenay Library of the Royal Institution of Cornwall, River Street, Truro and national archive centres. A further digital copy shall be supplied on CD-ROM in 'Adobe Acrobat' PDF format. A draft will initially be submitted to the HEPATL for comment.

The report will be held by the Cornwall and Scilly Historic Environment Record and made available for public consultation. Additional copies will be submitted to the English Heritage via OASIS and to the Planning Department of the Council of the Isles of Scilly.

Penzance Harbour Dredging, WSI, Rev02, CI, 04/11/13

Report dissemination

The full report including all specialist assessments of artefact assemblages will be submitted within a length of time (but not exceeding six months) to be agreed between the applicant and HE, with copies supplied to the client (two), Cornwall and Scilly Historic Environment Record, and the Courtenay Library of the Royal Institution of Cornwall, River Street, Truro and national archive centres. A further digital copy shall be supplied on CD-ROM in 'Adobe Acrobat' PDF format. A draft will initially be submitted to the HEPAO for comment.

The report will be held by the Cornwall and Scilly Historic Environment Record and made available for public consultation. Additional copies will be submitted to the National Monuments Record via OASIS and to the Planning Department of the Council of the Isles of Scilly.

Archive deposition

- An ordered and integrated site archive will be prepared in accordance with the *Management of Research Projects in the Historic Environment (MoRPHE)* (English Heritage 2006b) upon completion of the project. The requirements for final deposition of the project archive will be agreed by the Assistant Inspector of Ancient Monuments and HE Projects.
- The site archive will initially be stored at HE premises and in the event that artefacts are recovered it will be transferred to the Royal Cornwall Museum and the RCM conditions for archives will be followed. The RCM will be notified of the commencement of the project and included in discussions for sampling and disposal as appropriate. Where no finds are recovered the archive will eventually be stored in the County Record office.
- Completion of the English Heritage/ADS OASIS online archive index.
- A summary of the contents of the archive shall be supplied to the Assistant Inspector of Ancient Monuments.

Monitoring and Signing Off Condition

Monitoring of the project will be carried out by the Assistant Inspector of Ancient Monuments.

Notification of the start of work will be given in writing to the Assistant Inspector of Ancient Monuments as far in advance of its commencement as possible. HEPAO will monitor the work and will be kept regularly informed of the progress.

Any variations to the WSI in shall be agreed with the Assistant Inspector of Ancient Monuments in writing prior to them being carried out.

Monitoring points during the study will include:

- Approval of the WSI
- Completion of fieldwork. When this has been approved by the Assistant Inspector of Ancient Monuments, then it should be possible for the client to commence building works
- Completion of report
- Deposition of the archive

Timetable

The timetable is to be confirmed.

The archiving and archive report will be completed within three months of the ending of the fieldwork. The timetable for further stages of assessment, analyses and publication will be agreed with Assistant Inspector of Ancient Monuments in the light of the results of the fieldwork results.

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Historic Environment Projects

Historic Environment Projects is the contracting arm of Historic Environment, Cornwall Council (HE). HE employs some 20 project staff with a broad range of expertise, undertaking around 100 projects each year.

HE is committed to conserving and enhancing the distinctiveness of the historic environment and heritage of Cornwall and the Isles of Scilly by providing clients with a number of services including:

- Conservation works to sites and monuments
- Conservation surveys and management plans
- Historic landscape characterisation
- Town surveys for conservation and regeneration
- Historic building surveys and analysis
- Maritime and coastal zone assessments
- Air photo mapping
- Excavations and watching briefs
- Assessments and evaluations
- Post-excavation analysis and publication
- Outreach: exhibitions, publication, presentations

Standards



HE is a Registered Organisation with the Institute for Archaeologists and follows their Standards and Code of Conduct.

As part of Cornwall Council, the HES has certification in BS9001 (Quality Management), BS14001 (Environmental Management), OHSAS18001 (Health, Safety and Welfare), Investors in People and Charter Mark.

Project staff

The watching brief will be carried out by and the report will be compiled by experienced archaeologist(s) employed by HE.

Relevant experienced and qualified specialists will be employed to undertake appropriate tasks during the assessment and analysis stages of the project.

The project will be managed by a member of staff who is a member of the Institute of Field Archaeologists, or the equivalent standard, who will:

- Take responsibility for the overall direction of the project.
- Discuss and agree the objectives and programme of each stage of the project with project staff, including arrangements for Health and Safety.
- Monitor progress and results for each stage.
- Edit the project report.

Penzance Harbour Dredging, WSI, Rev02, CI, 04/11/13

Terms and conditions

Contract

HE Projects is part of Historic Environment, Cornwall Council. If accepted, the contract for this work will be between the client and Cornwall Council.

The views and recommendations expressed will be those of the HE projects team and will be presented in good faith on the basis of professional judgement and on information currently available.

Copyright

Copyright of all material gathered as a result of the project will be reserved to the Historic Environment, Cornwall Council. Existing copyrights of external sources will be acknowledged where required.

Use of the material will be granted to the client.

Freedom of Information Act

As Cornwall Council is a public authority it is subject to the terms of the Freedom of Information Act 2000, which came into effect from 1st January 2005.

HE will ensure that all information arising from the project shall be held in strict confidence to the extent permitted under the Act. However, the Act permits information to be released under a public right of access (a "Request"). If such a Request is received HE may need to disclose any information it holds, unless it is excluded from disclosure under the Act.

Health and safety statement

Historic Environment is within the Environment Directorate of Cornwall Council. The HE projects team follows Cornwall Council's *Statement of Safety Policy*.

Prior to carrying out on-site work HE Projects will carry out a Risk Assessment.

Insurance

As part of Cornwall Council, HE is covered by Public and Employers Liability Insurance and Professional Negligence Insurance

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- English Heritage, 2011. *Centre for Archaeology Guidelines: Environmental Archaeology*, 2nd edition, English Heritage
- Hyder Consulting (UK) Ltd, 2005. *Penzance Harbour Environmental Statement*, Hyder Consulting (UK) Ltd
- IFA, 2001a. *Standards and Guidance for Archaeological Watching Briefs*, IFA

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Wessex Archaeology 2005. *Protocol for reporting finds of archaeological interest*, British Marine aggregate Producers Association and English Heritage

Wessex Archaeology, 2006. *Penzance Harbour, Cornwall: Final Technical report, Palaeoenvironmental and Geotechnical Assessment*, Salisbury

Charles Johns

Senior Archaeologist

04 November

Historic Environment Projects

Cornwall Council

Fal Building, County Hall,

Treyew Road,

Truro,

Cornwall.

TR1 3AY

Tel: 01872 322056 Fax: 01872 323811

Email: chjohns@cornwall.gov.uk

Appendix 2: Protocol for reporting archaeological finds

Penzance Harbour Dredging Archaeology Protocol, Rev00, C1, 2010/2014

**Cornwall Archaeological Unit,
Cornwall Council**



Penzance Harbour Dredging: Protocol for reporting finds of archaeological interest

Client: Cornwall Council
Client contact: Philip Osmond
Client tel: 01392 421408
Client email: philip.osmond@macegroup.com

Purpose of this Protocol

This Protocol has been designed for reporting finds of archaeological interest during dredging works at Penzance Harbour.

The Protocol is based on the protocol for reporting finds of archaeological interest during aggregate dredging prepared by Wessex Archaeology for the British Marine Aggregate Producers Association (BMAPA) and English Heritage (Wessex Archaeology 2005).

The aim of the Protocol is to reduce any adverse effects of dredging on the historic environment by the team involved in the dredging operation to report their finds in a manner that is convenient and effective.

Any archaeological finds made by the dredging team are important because they shed light on our predecessor's use of the sea and seabed. The information that these finds bring to light helps archaeologists to better understand what happened in times long (and not so long) ago. It also allows archaeologists to better protect aspects of our history that should be conserved on behalf of future generations. Archaeological finds from the seabed also help the public to catch a glimpse of the past in an otherwise unfathomable environment.

Circumstances of discovery

This Protocol addresses finds of archaeological interest made in the following circumstances:

Discoveries on the seabed: an anomaly (such as resistance on the drag head or interruption in the flow of dredged material) indicates that an object or structure has been encountered on the seabed.

Discoveries on board: a find of archaeological interest is made on the vessel, for instance trapped in the dredge gear.

Penzance Harbour Dredging Archaeology Protocol, Rev00, CI,3010/2014

Scope

This Protocol sets out best practice in the reporting of finds of archaeological interest. At all times the responsibility for implementing this Protocol rests with dredging contractor

The Protocol

Introduction

The Protocol has been designed to deal with discoveries made on the seabed during dredging.

The Protocol anticipates discoveries being made by Staff, who report to a Site Champion on their vessel or wharf, who then reports to a Nominated Contact acting for the Company as a whole. The Nominated Contact for the Company will liaise with English Heritage.

Terms and Roles

Nominated Contact

Mace shall nominate one of their staff to act as the single point of contact for all communications regarding archaeology, referred to as the Nominated Contact.

The Nominated Contact will be issued with a copy of this document.

Site Champions

The Nominated Contact will identify a Site Champion on the dredging vessel to act as a first point of contact for staff, and to liaise with the Nominated Contact in respect of the operation of the Protocol at that site. On vessels, the Site Champion will normally be the Master, though this need not preclude Mace from identifying an alternative member of staff.

The name and contact details of the Site Champion shall be written on the Poster accompanying this Protocol.

Site Champions will be issued with a Flow Chart (see below) setting out the actions to be taken when they are told about a discovery.

All Staff

Mace shall draw the attention of all relevant staff to the potential for archaeological material to be found in the course of dredging and inform them of the possible importance of such finds.

Copies of the Poster accompanying this Protocol will be displayed on the dredging vessel.

Cornwall Archaeological Unit, Cornwall Council

The Cornwall Archaeological Unit (CAU) shall be the principal archaeological contact for Mace's Nominated Contact. CAU shall:

- advise on the identification of finds and the character of their seabed locations;
- advise on material conservation of any recovered finds;

Penzance Harbour Dredging Archaeology Protocol, Rev00, CJ_3010/2014

- liaise with English Heritage, the Marine Management Organisation and the Receiver of Wreck;
- liaise with The Crown Estate, in their capacity as landowner;
- advise on proposals to further evaluate any finds;
- advise on proposals to mitigate the effects of dredging on any finds.

Timing

The Protocol requires actions to be taken by the various parties. The timescales within which these actions are taken may be critical to safeguarding finds of archaeological interest, and to avoiding unreasonable disruption to commercial operations.

Where Staff or an Officer on Watch notice something on a vessel, it is important that action is taken immediately. The precise position on the seabed of a find or anomaly will be a key piece of information. The occurrence should be noted and brought to the attention of the Master / Site Champion straight away, so that positions can be calculated. Time may also be of the essence in checking the ROV for any artefacts that may have become lodged in it.

The Site Champion will be able to take the actions necessary to safeguard finds, and information relating to them, in the short term. It is important, however, that information is passed on promptly so that decisions – which may have operational implications – can be taken for the medium term. It is expected that the Site Champion will inform the Nominated Contact on the same working day that a find is made.

On receiving a report, the Nominated Contact has a number of obligations that require discussion with third parties, and regarding which the Nominated Contact may wish to take advice. Nonetheless, it is expected that the Nominated Contact will inform CAU within two working days of receiving information from the Site Champion. Subsequently, CAU will inform English Heritage and the Marine Management Organisation (MMO) within two working days of receiving information from the Nominated Contact.

Actions taken by Mace to safeguard finds may constrain their dredging operations. In order that such constraints be removed as swiftly as possible if they are not merited on archaeological grounds, it is important that Mace contact CAU promptly. For their part, English Heritage may want to obtain specialist advice, on specific finds and their treatment for example. It is expected that English Heritage will provide initial formal advice to CAU and the Nominated Contact within two working days of receiving information from CAU.

In view of these arrangements, the overall timescale between a find occurring, and formal archaeological advice being provided, should be no more than six working days.

If anyone finds or takes possession of wreck, they are committing an offence if they do not report it to the Receiver (Merchant Shipping Act 1995 s. 236). Although the Act does not state a time limit within which notification must occur, it is a matter of policy that the Receiver expects to be notified within 28 days of the find occurring.

Types of Find

'Finds' are considered here to mean all forms of artefact that can be found on the seabed. To be an artefact, the thing must have been made, modified, used or transported by people, i.e. their presence on the seabed is 'artificial' or 'cultural' rather than 'natural'.

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Penzance Harbour Dredging Archaeology Protocol, Rev00, C3,3010//2014

For legal purposes, finds from the seabed fall into two categories. 'Wreck' has a specific legal definition broadly encompassing all sorts of materials that came to be on the seabed as a direct result of once being aboard or part of a vessel.

All other finds are referred to here as 'non-wreck'. 'Non-wreck' includes things such as prehistoric flint artefacts that were lost on land that has since become submerged by rising sea level, or artefacts that have been eroded from sites on the shore.

A third category of find, 'treasure' as defined by the Treasure Act 1996, is not relevant to this Protocol, as the Treasure Act is limited in its application to land above mean low water.

Ownership of Wreck

Statutory law relating to 'wreck' is set out principally in the Merchant Shipping Act 1995. The common law relating to wreck is to be found in legal cases and commentaries.

All wreck is presumed to have an owner, and ownership is not lost through the passage of time. It is a legal requirement under section 236 of the Merchant Shipping Act 1995 that wreck material be reported to the Receiver of Wreck, in order to establish ownership and settle salvage claims. If ownership cannot be established by the Receiver within one year of receipt of the report, the wreck becomes 'unclaimed wreck'.

Original Owners

Owners of wreck who are able to prove their ownership to the satisfaction of the Receiver of Wreck are entitled to have their property returned to them on payment of a salvage award.

Unclaimed Wreck in Territorial Waters

Under the Merchant Shipping Act 1995, wreck that is found in Territorial Waters and is not claimed within a year automatically becomes the property of the Crown. In some areas – usually close to the shore – the Crown's right to unclaimed wreck has been granted to another beneficiary.

Ownership of Non-Wreck

The law applicable to 'non-wreck' is largely common law, to be found in legal cases and commentaries.

Original Owners

Finds that are successfully claimed by their owners continue to belong to that owner, though the owner may be obliged to reward the finder for having found and returned their property.

Unclaimed Non-wreck Material in Territorial Waters

On land, archaeological material is considered to belong to the owner of the land in which it was found. The Crown generally owns the seabed within territorial waters, hence unclaimed non-wreck material found within territorial waters is considered to belong to the Crown. In some cases a party other than the Crown owns the seabed, and in such instances unclaimed non-wreck material will be considered to belong to that party.

Discoveries on the Seabed

Tell the Site Champion

If an anomaly such as resistance the dredge head or interruption in the flow of dredged material indicates that an object or structure has been encountered on the seabed, the Officer on Watch shall inform the Master, who will normally be the Site Champion.

Where it is possible to identify the position of the anomaly, the Officer on Watch shall avoid further dredging of the seabed location until archaeological advice has been obtained.

The Officer on Watch will arrange for the dredging gear to be examined as soon as possible to see if any archaeological material is trapped within it, and will inform the Master accordingly.

Actions by the Master (Site Champion)

The Master shall note the occurrence as soon as possible in the vessel's log together with the time and exact vessel position. Where possible, the log entry should include a close approximation of the original position of the anomaly on the seabed. Additionally, the area shall be marked on navigational software. The Master shall compile a preliminary record of the occurrence, as shown below.

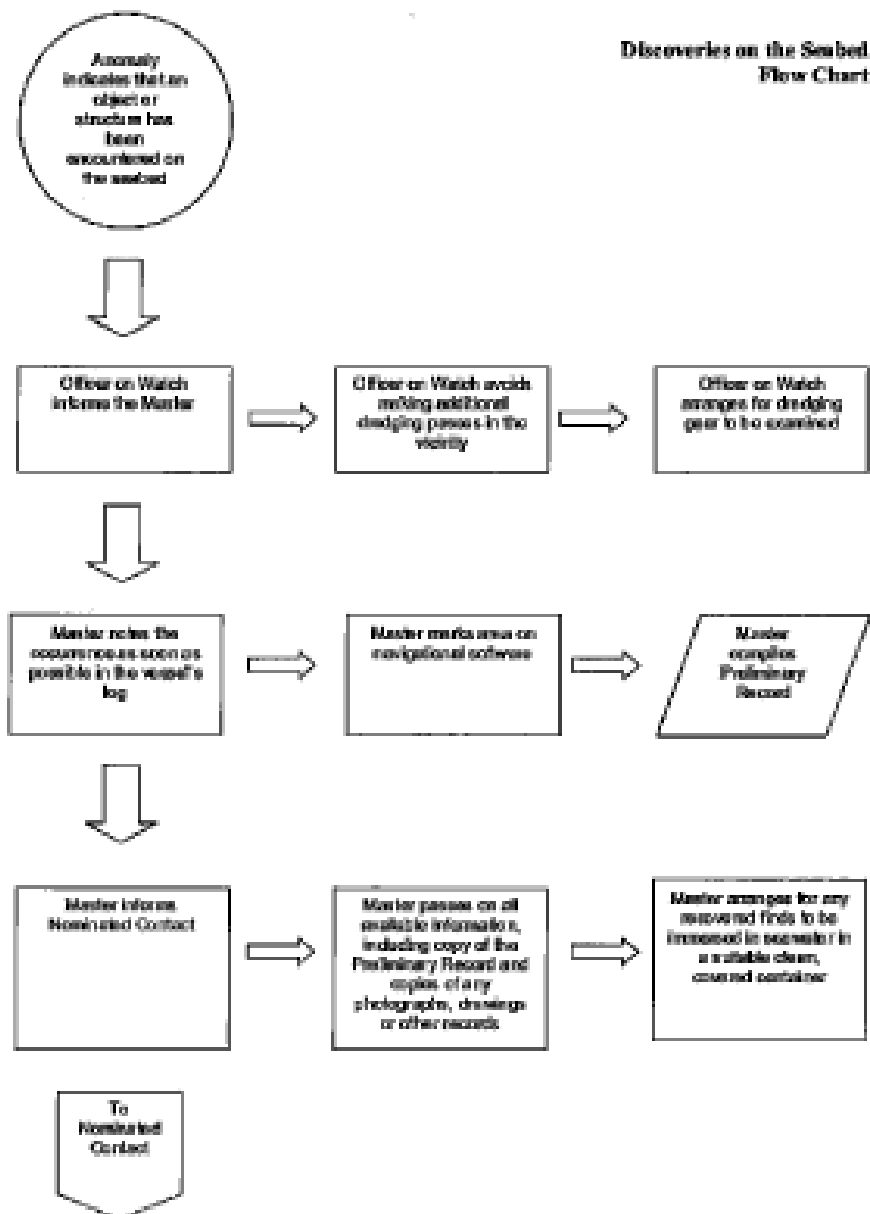
The Master shall inform the Nominated Contact of the occurrence as soon as possible and pass on all available information, including a copy of the Preliminary Record and copies of any photographs, drawings or other records that have been made.

If any finds have been recovered, the Master shall arrange for them to be immersed in seawater in a suitable clean container, which should be covered. Any rust, concretion or marine growth should not be removed.

If no archaeological material has been recovered, then no additional actions are required of staff on the vessel.

<p>Vessel Name: Area: Date: Time of compiling information: Name of compiler (Master/Site Champion): Name of Officer on Watch: Name of finder (if different to above): Time at which anomaly encountered: Vessel position at time when anomaly was encountered: Original position of the anomaly on the seabed: Notes on likely accuracy of original position stated above: Description of the anomaly: Apparent extent of the anomaly: Details of examination of trenching gear: Were any finds recovered?: Description of the find(s): Details of photographs taken of the find(s): Details of any drawings or other records made of the find(s): Details of treatment given to find(s): Any other notes: Date and time at which Nominated Contact informed:</p>
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Discoveries on the Seabed: Preliminary Record (There is a record form at the back of these notes that can be photocopied and filled-in)



(Flow chart copied from the Protocol for reporting finds of archaeological interest during aggregate dredging prepared by Wessex Archaeology for the British Marine Aggregate Producers Association (BMAPA) and English Heritage (Wessex Archaeology 2005)

Discoveries on Board

Tell the Site Champion

If a find of archaeological interest is made on board the dredging vessel, trapped in dredging gear, the vessel staff should inform the Officer on Watch. The Officer on Watch shall inform the Master, who will normally be the Site Champion.

Where it is possible to identify the seabed position from which the find originated, the Officer on Watch shall avoid dredging in the vicinity of the seabed location until archaeological advice has been obtained.

Actions by the Master (Site Champion)

The Master shall note the occurrence as soon as possible in the vessel's log together with the time and exact position. The log entry should include a close approximation of the original position of the find/anomaly on the seabed.

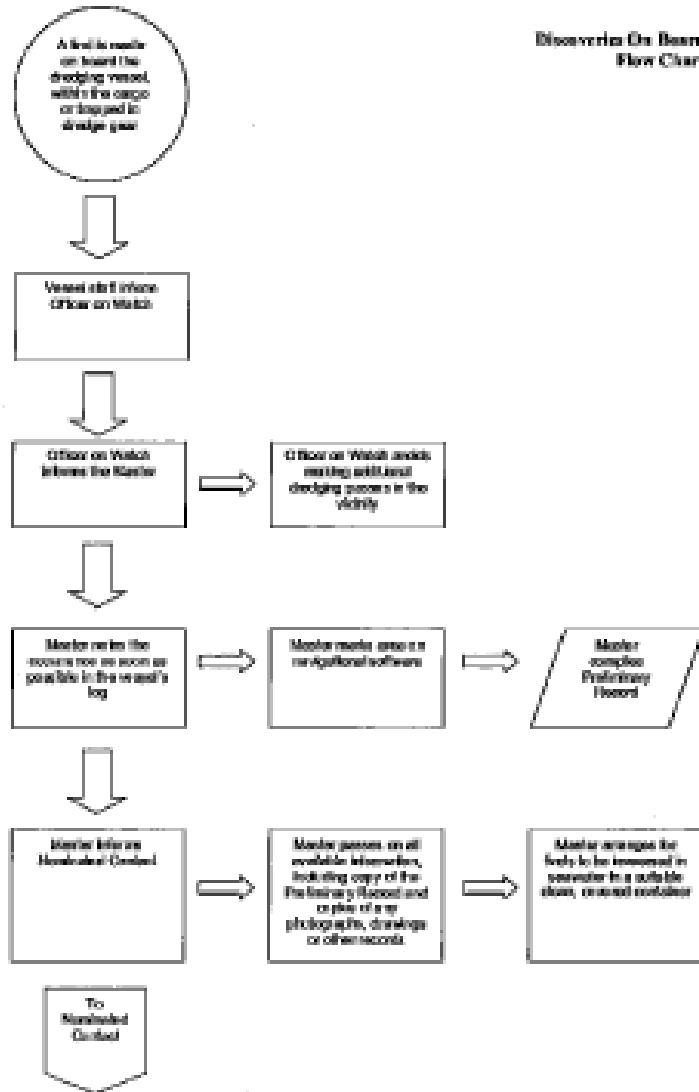
Additionally, the area shall be marked on navigational software. The Master shall compile a preliminary record of the occurrence, as shown below.

The Master shall inform the Nominated Contact of the occurrence as soon as possible and pass on all available information, including a copy of the Preliminary Record and copies of any photographs, drawings or other records that have been made.

The Master shall arrange for the find to be immersed in seawater in a suitable clean container, which should be covered. Any rust, concretion or marine growth should not be removed.

<p>Vessel Name:</p> <p>Area:</p> <p>Date:</p> <p>Time of compiling information:</p> <p>Name of compiler (Master/Site Champion):</p> <p>Name of Officer on Watch:</p> <p>Name of finder (if different to above):</p> <p>Time at which find(s) made:</p> <p>Vessel position at time of making find:</p> <p>Original position of the find(s) on the seabed:</p> <p>Notes on likely accuracy of original position stated above:</p> <p>Description of the find(s):</p> <p>Details of photographs taken of the find(s):</p> <p>Details of any drawings or other records made of the find(s):</p> <p>Details of treatment given to find(s):</p> <p>Any other notes:</p> <p>Date and time at which Nominated Contact informed:</p>
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Discoveries on Board: Preliminary Record (There is a record form at the back of these notes that can be photocopied and filled-in)



(Flow chart copied from the Protocol for reporting finds of archaeological interest during aggregate dredging prepared by Wessex Archaeology for the British Marine Aggregate Producers Association (BMAPA) and English Heritage (Wessex Archaeology 2005)

Actions by the Nominated Contact

Inform CAU

Once informed of a find by a Site Champion, the Nominated Contact shall inform CAU as soon as possible.

The Nominated Contact will confirm with the Site Champion that all the details set out in the Preliminary Record are comprehensive and correct. The Nominated Contact shall pass on to English Heritage all available information relating to the circumstances of the occurrence, including a copy of the Preliminary Record and copies of any photographs, drawings or other records that have been made.

The CAU contact will be

Charlie Johns, Senior Archaeologist

Tel: 01872 322056

Mob: 07973 813593

e-mail: chjohns@cornwall.gov.uk

Implement Temporary Exclusion Zone

Where the position of an anomaly or find is reasonably certain, the Nominated Contact shall implement a temporary exclusion zone to ensure all dredging operations by the Company are excluded until archaeological advice has been obtained.

If Any Finds Have Been Recovered...

The Nominated Contact shall make any recovered finds available for inspection by CAU.

If the find is, or appears to be 'wreck', the Nominated Contact shall as soon as possible give notice that a find has been recovered to the Receiver of Wreck in accordance with Section 236(1) of the Merchant Shipping Act 1995. This is a legal requirement.

Receiver of Wreck

Spring Place	tel: 023 8032 9474
105 Commercial Road	fax: 023 8032 9477
SOUTHAMPTON	e-mail: row@mega.gov.uk
SO15 1EG	web: www.mega.gov.uk/row

Actions by CAU

Advice

CAU shall advise the Nominated Contact of any such further actions as might be required, including:

- advice on immediate actions to be taken in respect of the find;
- advice on the identification of finds and the character of their seabed locations;
- advice on proposals to further evaluate any finds;
- advice on proposals to mitigate the effects of dredging on any finds.

Liaison

CAU shall liaise, as appropriate, with:

- the Marine Management Organisation
- English Heritage (South West) Science Advisor
- the Historic Environment Planning Advice Officer, Cornwall Council
- the Portable Antiquity Scheme's Finds Liaison Officer for Cornwall
- the Receiver of Wreck;
- the Ministry of Defence;
- The Crown Estate;
- other individuals/institutions having previously declared an interest to Mace.

CAU shall take account of the advice and views of the above and inform them of subsequent actions.

CAU shall pass details of the find, and subsequent data, to the National Record of the Historic Environment (NRHE) and to the Cornwall and Scilly Historic Environment Record.

If Any Finds Have Been Recovered...

CAU shall make arrangements for Mace to hold in possession any recovered finds, subject – in the case of wreck – to agreement with the Receiver of Wreck.

CAU shall advise Mace on any additional work required to stabilise, conserve or record recovered finds. BT may regard any such additional work as a service and seek to recover any costs from the owner of the find.

CAU shall advise Mace on the implementation of procedures for resolving ownership and for disposing of any finds.

References

Wessex Archaeology 2005. *Protocol for reporting finds of archaeological interest*, British Marine Aggregate Producers Association and English Heritage

Annex 1: Guidelines to identifying finds of archaeological interest

Rubber, Plastic etc.

In most cases, rubber, plastic, bakelite and similar modern materials are not of archaeological interest and can be disregarded.

One exception is where such materials are found in the same area as aluminium objects and structures, which may indicate aircraft wreckage from World War Two. Such material should be reported.

Iron and Steel

The potential range and date of iron and steel objects is so wide that it is difficult to provide general guidance. In broad terms, iron and steel objects which are covered by a thick amorphous concrete-like coating ('concretion') are likely to be of archaeological interest and should be reported.

Pieces of metal sheet and structure may indicate a wreck and should be reported.

A Munitions Code of Practice applies in respect of ordnance (cannonballs, bullets, shells) which should take precedence over archaeological requirements. However, discoveries of ordnance may be of archaeological interest, and they should be reported.

Other Metals

Items made of thin, tinned or painted metal sheet are unlikely to be of archaeological interest.

Aluminium objects may indicate aircraft wreckage from World War Two, especially if two or more pieces of aluminium are fixed together by rivets. All occurrences should be reported.

Copper and copper alloy (bronze, brass) objects might indicate a wreck, or they may be very old. All occurrences should be reported.

Precious metal objects and coins are definitely of archaeological interest because they are relatively easy to date. All occurrences should be reported.

Bone

Occasional discoveries of animal bone, teeth and tusks are of archaeological interest because they may date to periods when the seabed formed dry land, and should be reported. Such bones, teeth, tusks etc. may have signs of damage, breaking or cutting that can be directly attributed to human activity.

Large quantities of animal bone may indicate a wreck (the remains of cargo or provisions) and should be reported.

Human bone is definitely of archaeological interest, and is also subject to special legal requirements under the Burial Act 1857. Any suspected human bone should be reported, and treated with discretion and respect.

Objects made out of bone – such as combs, harpoon points or decorative items – can be very old and are definitely of archaeological interest. All occurrences should be reported.

Wood

Light coloured wood, or wood that floats easily, is probably modern and is unlikely to be of archaeological interest.

In Scilly, 'Roundwood' with bark – such as branches – is likely to be of archaeological interest; roundwood that has clearly been shaped or made into a point should also be reported.

Pieces of wood that have been shaped or jointed may be of archaeological interest, especially if fixed with wooden pegs, bolts or nails. All occurrences should be reported.

Objects made out of dark, waterlogged wood – such as bowls, handles, shafts and so on – can be very old and are definitely of archaeological interest. All occurrences should be reported.

Stone

Small to medium size stones that are shaped, polished and/or pierced may be prehistoric axes. All occurrences should be reported.

Objects such as axe heads or knife blades made from flint are of prehistoric date and should be reported.

Large blocks of stone that have been pierced or shaped may have been used as anchors or weights for fishing nets. All occurrences should be reported.

The recovery of numerous stones may indicate the ballast mound of a wreck, or a navigational cairn. All occurrences should be reported.

Pottery

Any fragment of pottery is potentially of interest, especially if it is a large fragment.

Items which look like modern crockery can be discarded, but if the item has an unusual shape, glaze or fabric it should be reported.

Brick

Bricks with modern proportions and v-shaped hollows ('frogs') are of no archaeological interest. Unfrogged, 'small', 'thin' or otherwise unusual bricks may date back to Medieval or even Roman times and should be reported.

Peat and Clay

Peat is black or brown fibrous soil that formed when sea level was so low that the seabed formed marshy land, on the banks of a river or estuary for example. The peat is made up of plant remains, and also contains microscopic remains that can provide information about the environment at the time it was formed. This information helps us to understand the kind of landscape that our predecessors inhabited, and about how their landscape changed. It can also provide information about rising sea-level and coastline change, which are important to understanding processes that are affecting us today.

Prehistoric structures (such as wooden trackways) and artefacts are often found within or near peat, because our predecessors used the many resources that these marshy areas contained. As these areas were waterlogged, and have continued to be waterlogged because the sea has risen, 'organic' artefacts made of wood, leather, textile and so on often survive together with the stone and pottery which are found on 'dry' sites.

Fine-grained sediments such as silts and clays are often found at the same places as peat. These fine-grained sediments also contain the microscopic remains that can provide information about past environments and sea-level change.

Any discoveries of such material would be of archaeological interest, and their occurrence should be reported.

Annex 2: Mitigation

Temporary Exclusion Zones

Temporary exclusion zones (TEZs) will be implemented by Nominated Contacts where the position of an anomaly or find is reasonably certain.

Where a TEZ has been introduced, it shall remain in place until the formal advice of English Heritage has been obtained.

Where a TEZ has been introduced, the subsequent options are:

- for it to be revoked if it can be reasonably concluded that no important wreck or other feature on the seabed is present; or
- for it to be formalised in the longer term as an Archaeological Exclusion Zone (AEZ)

if either:

- the presence of an important wreck or other feature on the seabed can be reasonably concluded;
- no conclusion can be drawn because data is insufficient and/or the Mace does not wish to resolve the situation by further investigation.

If no Further Data is Available...

If no further data is available, the temporary exclusion zone will be formalised as an Archaeological Exclusion Zone (AEZ) applicable to all dredging in the licence area.

If Additional Data is Available...

If additional data is available, CAU shall review the available data in consultation with English Heritage.

It may be advantageous for CAU to acquire data to inform their discussions with English Heritage by, for example, geophysical survey (and see 'Additional archaeological investigations', below).

If, on the basis of all the data, English Heritage thinks that it can be reasonably concluded that the anomaly and/or recovered finds indicates the presence of an important wreck or other feature on the seabed, then the temporary exclusion zone will be formalised as an AEZ.

If, on the basis of all the data, English Heritage thinks it can be reasonably concluded that no important wreck or other feature on the seabed is present, then BT may revoke the temporary exclusion zone.

If English Heritage thinks that the available data is insufficient to reasonably conclude whether an important wreck or other feature is present, then Mace can either formalise the temporary exclusion zone as a precautionary AEZ, or carry out additional archaeological investigations to resolve the situation.

Additional Archaeological Investigations

Additional archaeological investigations may comprise, for example, inspection of the temporary exclusion zone by archaeologists that dive or use ROVs, or high-resolution geophysical survey to a suitable archaeological specification.

Where additional archaeological investigations are to be carried out, English Heritage shall advise Mace of the specification for the investigation. On the basis of the specification Mace shall submit a Method Statement to English Heritage for its approval.

Penzance Harbour Dredging Archaeology Protocol, Rev00, CI,3010/2014

Mace shall carry out the investigation in accordance with the approved Method Statement.

The results of the investigation shall be reported in writing to English Heritage.

The results of the investigation shall be reviewed by BT in consultation with English Heritage in order that the temporary exclusion zone be revoked, or formalised as an AEZ (see 'If additional data is available...', above).

Archaeological Exclusion Zones (AEZs)

If a temporary exclusion zone is to be formalised as an AEZ, Companies should seek advice on the specification for the AEZ from English Heritage.

Specifications may include provision for a programme to monitor the zone before, during and after continued dredging in the vicinity of the AEZ.

On the basis of the specification BT shall submit an AEZ Design to English Heritage for approval.

BT will implement the AEZ in accordance with the AEZ Design.

Other Forms of Mitigation

Subject to agreement with English Heritage, BT may institute a form of mitigation other than an AEZ (e.g. a programme of archaeological recording and/or recovery).

Statutory Protection

If a wreck or other feature is of sufficient archaeological importance to warrant statutory protection, English Heritage shall advise BT on the implementation of procedures under the Protection of Wrecks Act 1973 or the Ancient Monuments and Archaeological Areas Act 1979.

Discoveries on the Seabed: Preliminary Record Form		June 2104
Vessel Name:		
Area:		
Date:		
Time of compiling information:		
Name of compiler: (Master/Site Champion)		
Name of Officer on Watch:		
Name of finder (if different from above):		
Time at which anomaly encountered:		
Vessel position when the anomaly was encountered:		
Original position of the anomaly on the seabed:		
Notes on likely accuracy of the original position stated above:		
Description of the anomaly:		
Apparent extent of the anomaly:		
Details of the ROV excavation gear:		
Were any finds recovered:		
Description of the find(s):		
Details of photographs taken of the find(s):		
Details of any drawings or other records made of the find(s):		
Details of treatment given to find(s):		
Any other notes:		
Date and time at which Nominated Contact Informed:		
Signed:		Date:

Penzance Harbour Dredging Archaeology Protocol, Rev00, CJ,2010/2014

Discoveries on the Board: Preliminary Record Form		June 2104
Vessel Name:		
Area:		
Date:		
Time of compiling information:		
Name of compiler: (Master/Site Champion)		
Name of Officer on Watch:		
Name of finder (if different from above):		
Time at which anomaly encountered:		
Vessel position at time of making find(s):		
Original position find(s) on the seabed:		
Notes on likely accuracy of the original position stated above:		
Description of the find(s):		
Apparent extent of the anomaly:		
Details of the ROV excavation gear:		
Were any finds recovered:		
Description of the find(s):		
Details of photographs taken of the find(s):		
Details of any drawings or other records made of the find(s):		
Details of treatment given to find(s):		
Any other notes:		
Date and time at which Nominated Contact informed:		
Signed:		Date: