

**London Gateway Port: Channel Clearance and Dredging  
Maritime Archaeology Summary Report**

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**15/12/08**

## **London Gateway Port: Channel Clearance and Dredging**

### **Maritime Archaeology Summary Report**

#### **1. INTRODUCTION**

- 1.1. This document is a summary of the archaeological investigations and mitigation that are to accompany channel clearance and dredging for London Gateway Port.
- 1.2. The Port of London Authority (PLA) is to carry out clearance of wrecks in advance of dredging. The dredging is to be carried out by London Gateway Port Limited (LGPL) in the course of developing London Gateway Port. Both clearance and dredging may have implications for archaeology. Proposals for archaeological investigations have been submitted to the English Heritage Maritime Team (EHMT) for their agreement.
- 1.3 Three major phases of work were anticipated:
  - Pre-clearance works, comprising geophysical survey and diving inspections by the PLA, and archaeological investigations by WA.
  - Clearance Operations by the PLA and by salvage contractors, accompanied where necessary by archaeological investigations.
  - Dredging by a dredging contractor, accompanied by a protocol for archaeological discoveries in the course of dredging, and by monitoring of archaeological exclusion zones.

## 2. BACKGROUND

- 2.1. The PLA's powers and responsibilities with respect to clearance and other port-related activities are set out in the Port of London Act 1968 (PoLA 1968). Some of the clearance extends beyond the statutory boundary of the Port of London Act, where the relevant provisions of the Merchant Shipping Act 1995 will apply. The PLA's actions in respect of archaeology are co-ordinated by the PLA River Regime and Environment Manager (PLA RREM).
- 2.2. London Gateway Port is being developed under a variety of consents, including a Harbour Empowerment Order. The application for consents was accompanied by Environmental Statements, which assessed effects on the historic environment and set out a framework for their mitigation, namely the Archaeological Mitigation Framework (AMF – Appendix T, March 2003). The AMF made provision for the appointment of an Archaeological Liaison Officer (ALO) who is responsible for providing archaeological advice to LGPL. The archaeological methods and procedures that accompany clearance and dredging will accord with the AMF.
- 2.3. In addition to curatorial advice sought from EHMT, advice relating to procedures relating to 'wreck' under the Merchant Shipping Act 1995 (MSA 1995), and about the ownership of named wrecks, has been sought from the Receiver of Wreck (RoW). Authorities with continuing interests in some of the named wrecks include Trinity House (TH), Department for Transport (DfT) and the Ministry of Defence (MOD).
- 2.4. None of the wrecks to be cleared are subject to additional statutory protection under the Protection of Wrecks Act 1973 or the Protection of Military Remains Act 1986. Sites 5029 "London" & 5019 "King" are thought to be two sites of the "London" and are subject to statutory protection under the Protection of Wrecks Act 1973. As part of the statutory protection the sites are subject to Restricted Areas. Additional protection will also be offered to these sites by an Archaeological Exclusion Zone (AEZ) during dredging operations. Further details of the AEZ including the statutory restricted areas are given in the Appendix VIII of the London Gateway Maritime Archaeology Methods and Procedures (2008).

**3. DEVELOPMENT OF MITIGATION STRATEGY**

**3.1. OUTLINE**

3.1.1. The archaeological approach to channel clearance and dredging for London Gateway Port is based upon:

- Studies undertaken in support of the ES that accompanied the London Gateway HEO application.
- Mitigation proposals developed in 2005.
- Clearance Mitigation Statements for individual wrecks and anomalies, initiated in 2006, as informed by geophysical, diving and desk-based investigations.

**3.2. MITIGATION STAGES**

3.2.1. A general staged approach to mitigation was developed in the course of the EIA, whereby archaeological mitigation overlapped with other forms of investigation or activity. The forms of mitigation that were anticipated were as follows:

<b>Pre-Clearance</b>	A	<b>Documentary investigation</b> to establish relative importance.
	B	<b>Archaeological inspection</b> by diver and/or remote operated vehicle (ROV) to prove/disprove their character by direct observation.
	C	<b>Site-specific multibeam</b> bathymetric survey to quantify site topography.
	D	<b>Site-specific geophysical survey</b> comprising sub-bottom and magnetometer survey to establish extents of buried/ferrous material.
	E	<b>Intrusive investigation</b> to gauge the complexity of stratigraphy, survival of artefacts, conservation needs and coherence of structural remains.
<b>Clearance</b>	F	<b>Avoidance</b> , to include monitoring.
	G	<b>Clearance without</b> further archaeological recording.
	H	<b>Clearance with</b> limited archaeological observation and recording in the course of dispersal/recovery operations.
	I	<b>Archaeological recording</b> (to include limited excavation) prior to controlled dispersal/clearance, recovery being limited to finds rather than structure.
	J	<b>Archaeological recovery</b> , i.e. recording (to include excavation) and recovery of all or part of the wreck structure and its contents.
<b>Dredging</b>	K	<b>Archaeological Protocol</b> , to alert archaeologists to discoveries made during dredging and provide for their assessment/evaluation and management.
	L	<b>Periodic inspection</b> of the base and sections of dredged areas, to include assessing/evaluating and managing sites that are uncovered.
	M	<b>Periodic survey</b> of areas (e.g. channel sides) where sediment movement occurs following dredging or following increases in size and volume of traffic, to include assessing/evaluating and managing sites that are uncovered.

**Table 1: Forms of Mitigation**

3.2.2. Some of the forms of mitigation set out above have already been implemented.

**3.3. SITE GROUPS**

3.3.1. As part of the mitigation proposals developed in 2005, wreck sites and features were ascribed to one of the following groups:

- Certain            Used for the small number of sites that are clearly of archaeological interest, with remains present on the seabed that are likely to be considered of high importance.
- Probable           Used for sites where there are certainly remains present that are likely to be considered at least moderately important, plus sites where the presence of remains is less certain, but if present the remains will be considered moderately-highly important.
- Possible            Generally used for sites where there are certainly remains present, where those remains may be of low to moderate importance, or important to a specific sector. This category largely comprises known wrecks lost in WWI and WWII, plus debris relating to the submarine boom. The level of importance will depend on the details of the site.
- Uncertain           Used for anomalies and fouls, that is to say sites where there appears to be anomalous features on the seabed, but where the character of the anomalies is difficult to ascribe with certainty to any of the other categories, archaeological or non-archaeological. The 'uncertain' therefore include sites which may prove to be of archaeological origin/interest, but which may not.

3.3.2. A number of other wrecks and features were filtered out because no mitigation was required. Typically, these sites lay outside the horizontal footprint of proposed channel dredging, were below the proposed dredge depth, or had been shown to be clear.

3.3.3. Where a wreck site or feature was classed as 'Certain', 'Probable', 'Possible', or 'Uncertain - ?archaeological feature', proposed mitigation was set out that referred to the forms of mitigation in Table 1. Reference was also made to the level of record that the stage of mitigation was intended to achieve, using the system of Recording Levels developed by WA (see Appendix I of the LG Maritime Archaeology Methods and Procedures document).

**3.4. CLEARANCE MITIGATION STATEMENTS**

3.4.1. For the sites identified as 'Certain', 'Probable' and 'Possible', site-specific Clearance Mitigation Statements (CMS) were developed. The CMS were intended to cover the point up to which dredging starts, i.e. the dredging contractor could be handed a series of CMS setting out the situation in respect of each site at the end of clearance activities, describing the current form of the site (e.g. 'cleared to -15mCD'; 'extensive remains present to north of dredging area') and outlining any work still required (e.g. monitoring; reporting) in the course of construction.

3.4.2. One or two iterations of the CMS have been undertaken, setting out the investigations that are required during pre-clearance and clearance, and informed by the investigations that have taken place up to that point. As such, the phasing of the CMS was expected to be as follows:

First Draft	Informed by historical and existing data, to include high-res multibeam. To set out scope of any further investigations during pre-clearance or clearance. In some instances, this first draft might conclude that no further pre-clearance or clearance mitigation is required (e.g. where site is to be avoided).
Final Draft	Informed by archaeological diving inspection (if required) or other pre-clearance investigations (e.g. documentary research). To set out scope of clearance mitigation (dispersal, recovery, recording etc.). As above, the final draft may conclude that no mitigation is required during clearance.

- 3.4.3. First draft CMS were submitted to and agreed by EHMT in April 2006. Final drafts were agreed with EHMT in August 2008.

### **3.5. PREPARATIONS 2006-08**

- 3.5.1. Proposals to carry out a first tranche of pre-clearance diving (i.e. archaeological inspection (Mit B)) were agreed for May-June 2006. It was anticipated that a further tranche of diving (i.e. intrusive investigation (Mit E)) would commence immediately thereafter, where a need was identified from the first tranche. In the event, this programme was postponed.
- 3.5.2. Subsequent discussion has addressed diving proposals in the light of revisions to the channel alignment and the historical sensitivities of certain sites.
- 3.5.3. Further data has been acquired since the CMS were initially drafted, through inspections by PLA divers, through a combined PLA/WA diving operation in 2006, and through geophysical survey. Further diving work was undertaken in 2007 by Wessex Archaeology divers and in 2008 by a combined PLA/ WA operation.
- 3.5.4. The dredging contractor has been made aware of the position of the 'Uncertain - archaeological features' and is aware of their archaeological potential.
- 3.5.5. New geophysical data from the channel has been reviewed for possible features by the PLA. Results have been incorporated into the archaeological mitigation programme where appropriate.

#### 4. PRE-CLEARANCE

##### 4.1. ARCHAEOLOGICAL INSPECTION (MIT B)

- 4.1.1. Archaeological inspection by diver was intended to achieve a level of recording that exceeds Level 1b and covers some aspects of Level 2a, within approximately 90-120 minutes of bottom time.
- 4.1.2. The sites identified for Archaeological Inspection in the first tranche of diving (from 05/11/07) fall into two principal groups. The first group is as follows:
- 5056 East Oaze Light Ship
  - 5100 Dynamo
  - 5960 Storm
  - 5961 Erna Boldt
- 4.1.3. As can be seen, the first group are sites that are mostly known by name, lost in the C20th as a result of military action during WWI and WWII. Lives were lost on these wrecks, and not all of the casualties were recovered. Two of these wrecks – 5056 and 5100 – will be ‘resettled’ below the dredging depth, rather than being cleared, because of sensitivities in relation to the casualties.
- 4.1.4. After further consideration of the most effective course of action to mitigate the disturbance of these wrecks English Heritage agreed that diving operations would not definitively prove the presence or absence of human remains on them. They also agreed that the progression of archaeological knowledge would best be served by further desk based research, which has been undertaken and included in the CMSs.
- 4.1.5. The second group of sites subject to Archaeological Inspection in the first tranche of diving were as follows:
- 5012 Dovenby (North)
  - 5046 Wreck NW of SR1
  - 5050 Mound
  - 5051 Old Timbers and Concrete
  - 5124 Unknown Wreck
  - 5185 Ancient Wreck
  - 5230 Brick Barge
  - 7345 Carvel Planking
  - 7404 60m Feature
  - 7563 Complex Anomaly
- 4.1.6. All of these sites have been dived and the objectives have been met for each site to the degree that mitigation measures have been agreed, with English Heritage, for each site.

**5. SITES NOT SUBJECT TO FURTHER ARCHAEOLOGICAL MITIGATION**

**5.1. SITES SUBJECT TO AVOIDANCE**

5.1.1. The following sites that were subject to CMS in 2006 are to be avoided by changes to navigation, including the positioning of buoys. No further archaeological mitigation is proposed for.

5005	Letchworth	Additional site-specific sidescan data has been acquired to augment the CMS.
5008	Argus	Additional site-specific sidescan data has been acquired to augment the CMS.
5011	Atherton	Additional site-specific sidescan data has been acquired to augment the CMS.

**5.2. SITES NOT SUBJECT TO FURTHER FIELDWORK**

5.2.1. Several sites that were subject to CMS in 2006 will not be subject to further mitigation, for the reasons set out below:

5070	Ryal	No longer within footprint
6595	Halcrow A5	No material present; now considered to have been highlighted by Halcrow as a result of a positioning typo.
5041	Aircraft	No material present.
5195	Submarine Boom	Material within footprint recovered; material outside channel to remain in situ. Documentary research being carried out to enhance existing record.
7543	German aircraft	Engine recovered and accessioned by Duxford; no further material present.
5050	Unknown	Natural bed feature.
5185	Unknown	No material present.
5124	Unknown	No longer within footprint.
7345	Unknown	Reclassified as archaeological 'uncertain'.
7563	Unknown	Not of archaeological interest.
7404	Unknown	Not of archaeological interest.

5.2.2. The following sites subject to CMS in 2006 will be cleared without further mitigation, for the reasons set out below:

5013	Ash	Admiralty trawler lost 1941. No loss of life. Additional site-specific sidescan data has been acquired to augment the CMS. This has achieved a level 1b record of the site. No further archaeological information would be gained from further archaeological fieldwork on this site.
5063	Amethyst	Requisitioned trawler lost 1940. No loss of life. Additional site-specific sidescan data has been acquired to augment the CMS. This has achieved a level 1b record of the site. No further archaeological information would be gained from further archaeological fieldwork on this site.
5010	Dovenby	Sailing merchant ship lost 1914. No further archaeological information would be gained from further archaeological fieldwork on this site.
5046	Unknown	Late twentieth century vessel. Not of archaeological interest.



5057	Aisha	Named vessel. Documentary research and site specific multi-beam and sidescan data has been acquired to augment the CMS. This has achieved a level 1b record of the site. No further archaeological information would be gained from further archaeological fieldwork on this site.
5204	Pottery Wreck	This site has been substantially cleared with in-water archaeological observation and recording. No further archaeological information would be gained from further archaeological fieldwork on this site.
5960	Storm	Named vessel. Documentary research and site specific multi-beam and sidescan data has been acquired to augment the CMS. This has achieved a level 1b record of the site. No further archaeological information would be gained from further archaeological fieldwork on this site.
5961	Erna Boldt	Named vessel. Documentary research and site specific multi-beam and sidescan data has been acquired to augment the CMS. This has achieved a level 1b record of the site. No further archaeological information would be gained from further archaeological fieldwork on this site.

## 6. CLEARANCE

### 6.1. AVOIDANCE: ARCHAEOLOGICAL EXCLUSION ZONES (MIT F)

6.1.1. The following sites are being avoided by changes to the design of the channel on account of their archaeological sensitivity. Mitigation will be achieved by establishing and monitoring Archaeological Exclusion Zones:

5019	'King'	
5029	London	Additional site-specific sidescan data has been acquired to augment the CMS.
5020	Iron Bar Wreck	

6.1.2. The Method Statement for establishing and monitoring Archaeological Exclusion Zones is set out in the relevant Method Statement (see Appendix VIII of London Gateway Maritime Archaeology Methods & Procedures (2008)).

### 6.2. AVOIDANCE: NAVIGATION MANAGEMENT

6.2.1. As noted in Section 5.1, the Letchworth, Argus and Atherton are to be avoided by changes to navigation management, specifically by placing channel marker buoys adjacent to them. No further archaeological recording is to take place.

### 6.3. CLEARANCE WITHOUT FURTHER ARCHAEOLOGICAL RECORDING (MIT G)

6.3.1. As noted in Section 5.2, the following wrecks are to be cleared without further archaeological recording:

5013	Ash
5063	Amethyst
5010	Dovenby
5046	Unknown
5057	Aisha
5204	Pottery Wreck
5960	Storm
5961	Erna Boldt

6.3.2. A specialist contractor will be employed by the PLA to carry out clearance of sites that are large and/or retain some degree of structural coherence. The PLA is in the process of putting out a tender to potential contractors. The methodology for clearance will form part of each bidders' proposal.

### 6.4. RESETTLEMENT

6.4.1. As noted in paragraph 4.1.3., the Dynamo and the East Oaze Light Vessel will be 'resettled'. The methodology to be adopted in resettling these vessels is still under development. The scope for archaeological observation, monitoring and/or recording in the course of resettlement has yet to be established, though it is expected that all material will remain on the seabed (i.e. no wreck material is to be recovered).

**6.5. CONTROLLED CLEARANCE (MIT H)**

**In-Water Archaeological Observation and Recording**

- 6.5.1. The Pottery Wreck (5204) site was cleared with in-water archaeological observation and recording. Old timbers and concrete (5051) was investigated with in-water archaeological observation and recording but it was felt that onboard archaeological observation and recording during mechanical clearance would be a more appropriate form of mitigation.

**Onboard Archaeological Observation and Recording**

- 6.5.2. Brick barge (5230) and Old timbers and concrete (5051) have been highlighted for clearance accompanied by onboard archaeological observation and recording.

## **7. DREDGING**

### **7.1. SCOPE OF DREDGING OPERATIONS**

- 7.1.1. Dredging operations will be carried out by a dredging contractor commissioned by LGPL. The details (types and numbers of vessels; phasing; methodologies; environmental management) of the dredging have yet to be confirmed.
- 7.1.2. The AEZs will apply to dredging and will be monitored. The definition of AEZs and method statement for monitoring has been submitted by LGPL to EHMT and comments received.

### **7.2. ARCHAEOLOGICAL PROTOCOL FOR DREDGING (MIT K)**

- 7.2.1. A protocol for discovery of obstructions during dredging will be implemented. This protocol has been drafted and submitted to EHMT by LGPL and comments received. This will be particularly important where dredging occurs in or around archaeological uncertain sites.

## **8. REFERENCES**

London Gateway Port: Channel Clearance and Dredging Maritime Archaeology Methods and Procedures (2008).

**ANNEX I SITE STATUS**

<b>Site</b>	<b>Site Name</b>	<b>CMS Date</b>	<b>Archaeological Mitigation Measures</b>
5005	Letchworth	Dec 2007	To be buoyed.
5008	Argus	Dec 2007	To be buoyed.
5011	Atherton	Dec 2007	To be buoyed.
5010	Dovenby	Jan 2008	No further archaeological work.
5013	Ash	Dec 2007	No further archaeological work.
5019	King	Jan 2008	Monitoring – to remain in-situ and be avoided.
5020	Iron Bar Wreck	Jan 2008	Monitoring – to remain in-situ and be avoided.
5029	London	Dec 2007	Monitoring – to remain in-situ and be avoided.
5041	Unknown Aircraft	Dec 2007	No further archaeological work.
5046	Wreck NW SR1	Aug 2008	No further archaeological work.
5050	Unknown	Jan 2008	No further archaeological work.
5051	Old Timbers	May 2008	In-water archaeological observation and recording complete. Archaeological supervision during recovery.
5056	East Oaze Light Vessel	Jan 2008	Resettlement documentation.
5057	Aisha	April 2008	No further archaeological work.
5063	Amethyst	Dec 2007	No further archaeological work.
5070	Ryal	Dec 2007	No further archaeological work.
5100	Dynamo	Jan 2008	Resettlement documentation.
5124	Unknown	Aug 2008	No further archaeological work.
5185	Unknown	Jan 2008	No further archaeological work.
5204	Pottery Wreck	Jan 2008	In-water archaeological observation and recording complete. No further archaeological work.
5230	Brick Barge	Jan 2008	Archaeological supervision during recovery
5960	Storm	Jan 2008	No further archaeological work
5961	Erna Boldt	Jan 2008	No further archaeological work
6595	Halcrow A5	Dec 2007	No further archaeological work
7404	Unknown	Jan 2008	No further archaeological work
7345	Unknown	Jan 2008	No further archaeological work. Category reduced to archaeological uncertain
7543	German Aircraft	Dec 2007	No further archaeological work
7563	Unknown Wreck	Jan 2008	No further archaeological work