

Report Information

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London Gateway

Methodology for the compilation of the marine archaeological archive

1 INTRODUCTION

1.1 Project background

- 1.1.1 Prior to the construction of the London Gateway (LG) Port, a major development on the north bank of the River Thames, extensive marine archaeological investigations were undertaken. Wessex Archaeology became involved with the project in 2001 and has been integral to these investigations which included the subsequent post-excavation analysis and reporting since that time.
- 1.1.2 At present Wessex Archaeology are preparing the archive for the marine archaeological element of the LG Port project, which includes a wealth of information from the various methods of investigation utilised, for instance diver observation, geophysical survey or capital dredging, all of which generated an extensive assemblage of archaeological material and data.
- 1.1.3 Most of the recovered artefacts have already been deposited with several museums and institutions, however the physical and digital archive are yet to be deposited. Southend Museums Service (SMS), who accessioned a majority of the finds, have agreed for the remainder of the archive to be deposited with them.
- 1.1.4 Whilst preparing the marine archive for deposition, it has become apparent that the archive guidelines available are not suitable for a project of this scale and therefore the methodology presented in this document has been developed from available guidance to provide a more practical approach to successfully archiving the project-related material. This document will summarise the marine archive that needs to be deposited and the methodology used to ensure it is prepared to archival standards.
- 1.1.5 Appendix 1 details the types of archive that exist for the project with a brief description and summary of the quantity where known. The remaining tasks and estimated time scales for preparing the archive ready for deposition are also included along with our proposals for rationalising the archive and any other notes.

1.2 Project chronology

- 1.2.1 A summary of marine archaeological investigations undertaken by Wessex Archaeology for the LG Port development are as follows:
- 2001 – Wessex Archaeology first became involved with the London Gateway (LG) project during the early stages of developing the Environmental Impact Assessment (EIA) to accompany the application for consent to build the proposed LG Port.
 - 2002-2003 – EIA submitted.
 - 2003 – A *Statement of Common Ground on the Topic of Cultural Heritage for the HEO* (Andrews *et al.* 2003) was prepared that stipulates archive requirements.

- 2006 – first drafts of Clearance Mitigation Statements (CMS) submitted to English Heritage (now Historic England).
- 2006-2008 – Wessex Archaeology commissioned to assist with the archaeological aspects of the wreck clearance programme, including pre-clearance inspection diving and geophysical surveys.
- 2006, 2007, 2008 – Diving operations undertaken either by Wessex Archaeology alone or in a combined effort along with the Archaeological Dive Unit.
- 2006 – Geophysical surveys undertaken using multibeam bathymetry.
- 2008 – All CMS documents completed.
- 2010-2014 – A programme of capital dredging was undertaken. A protocol for reporting archaeological objects was established and archaeological watching briefs were used for targeted areas considered to comprise significant artefactual material. Many individual and groups of finds or obstructions considered to be of archaeological interest were encountered, many of which were recovered and reported via the archaeological protocol. In order to characterise the nature of the sites/obstructions, geophysical surveys were undertaken along the dredging tracks followed by diving inspections of a selection of sites.
- 2011 – Geophysical survey was undertaken for three previously dredged sections of the deep-water approach to the LG Port site, generating sidescan sonar, multibeam bathymetry and magnetometer data.
- 2011 – First strike¹ and track-plot report submitted, compiled as a result of the dredging operations.
- 2012 – Wessex Archaeology diving investigations were undertaken on various sites.
- 2012 – Remains of a Junkers 88 aircraft were recovered and retained, totalling over 350 pieces of wreckage (Strike 8024). Subsequent post-excavation analysis and reporting.
- 2014 – Clearance of a 19th century paddle tug wreck site, with the recovery of approximately 80 tons of material with 346 elements being archaeologically recorded (Strike 8033). Subsequent post-excavation analysis and reporting.
- 2015 – Second strike and track-plot report submitted, compiled as a result of the dredging operations.
- 2016 – Third strike and track-plot report submitted, compiled as a result of the dredging operations.

¹ A 'strike' indicated coherent material of possible archaeological interest, i.e. ordnance, human remains, aircraft remains or wreck.

2 OVERVIEW OF THE PROJECT ARCHIVE

- 2.1.1 Wessex Archaeology has been involved with the LG Port project for over 18 years and in that time has amassed an enormous physical and digital archive. The project area investigated is just over 100 km in length and ranges in width between 360 m in the outer channel and almost a kilometre wide at the port location.
- 2.1.2 As a result of the various phases of fieldwork that has included many different methods of assessment, over 40 archaeological sites of varying complexities were investigated, over 400 geophysical anomalies were identified, and over a thousand archaeological objects were recovered. In terms of the primary archive to accompany this fieldwork, there are over 15,000 photographs, over 250 reports relating to protocol and watching brief finds, 64 reports relating to CMS and over 30 other project-related deliverables.
- 2.1.3 Consequently, the archive is not only large, but also incredibly complex due to there being multiple sites, each with several phases of fieldwork and investigation. As a result, the scale of the number of sites/areas of seabed assessed was also particularly large and occurred over a very long time.
- 2.1.4 To reduce the number of known sites and geophysical anomalies that required additional investigation, a Mitigation Grouping methodology was prepared to further discriminate those features thought to be of an archaeological nature. This methodology was devised in 2005 in order to make the data more realistic in terms of numbers of anomalies that would require further investigation. Further details are provided in Appendix 2.
- 2.1.5 The material archive was also substantial in quantity, object size, material type, fragility and significance, all of which had an impact on their conservation requirements. Due to the quantity and complexity of this assemblage, archiving this material and depositing it with various institutions was the initial focus. The remaining archive, though, is equally substantial including geophysical data, photographs, project/fieldwork/diving generated data, reports, x-ray, research, etc.
- 2.1.6 To start compiling the physical archive, over 30 boxes of material related to the project and amassed over the past 18 years needed to be looked through and relevant 'archive' extracted.

3 ARCHIVE GUIDELINES

3.1 Introduction

- 3.1.1 A *Statement of Common Ground on the Topic of Cultural Heritage for the HEO* (Andrews *et al.* 2003) was prepared that stipulates archive requirements for the LG Port project with the Archaeological Mitigation Framework section. These include:
- that the complete archive will be prepared in accordance with Appendix 3 of English Heritage's (now Historic England) 1991 document, *Management of Archaeological Projects* and with reference to current professional practice;
 - the archive, including the finds, will be deposited with an appropriate local museum in accordance with their guidelines;
 - all reports will be lodged with the Essex County Council Heritage Conservation Record (now Essex Historic Environment Record);

- prior to the commencement of fieldwork, arrangements will be made to ensure agreement between P&O (now DP World London Gateway port Ltd.) and the appropriate local museum over requirements for archive preparation, storage and conservation; and
- additional copies of the archive will be deposited with the National Monuments Record (now the National Record of the Historic Environment (NRHE)) and a suitable depository for the digital archive will also be identified.

3.1.2 At present only the project finds have been deposited with several repositories including Southend Museum.

3.1.3 With regards the remaining archive, currently there are no specific guidelines for the preparation, deposition and curation of marine projects. As a result, guidance with a focus on terrestrial projects must be utilised, and those most pertinent documents are provided in sections 3.2 to 3.4 below. These have replaced English Heritage's *Management of Archaeological Projects*, which was included in the *Statement of Common Ground* document.

3.1.4 Equally, there is no guidance available that provides advice for compiling archives for projects the size and complexity of the LG project, which comprises an enormous study area, just over 100 km in length and varying in width, most of which was archaeologically assessed using geophysical survey and was found to contain multiple archaeological sites along the route, each of which was further assessed and in some cases were recovered from the seabed entirely generating a large archive in itself. The complexity of the project is also emphasised by the different fieldwork methods utilised, which include geophysical survey, diver investigation, channel clearance and capital dredging, recovery of archaeological sites from the seabed – all of which, again, generated a large associated archive and a considerable number of objects each requiring archaeological recording and specific conservation plans.

3.1.5 Due to the amount of time that has passed between the start of Wessex Archaeology's involvement with the project in 2001 to the present day, the guidelines for compiling archaeological archives that were in use at the project's inception are very different to the ones that are currently in use. Therefore, it was not practicable for Wessex Archaeology to compile the archive as the project progressed.

3.1.6 Furthermore, the requirements of data analysis to be compiled for a technical report compiled by Wessex Archaeology are different to the compilation of the data into an archive for an accessioning museum.

3.1.7 Since the Essex County Council Heritage Conservation Record does not exist anymore, and following confirmation from SMS, relevant reports will be deposited with the Archaeological Data Service (ADS). It is proposed in this document that the digital archive will be deposited with various institutions depending on its content and format. Therefore, none of the archive will be deposited with the NRHE at this time.

3.2 Essex County Council guidelines

3.2.1 For compiling the LG marine archive, Essex County Council's guidelines have been consulted. The document *Archaeological Archives in Essex - Guidelines for preparation and deposition* (Essex County Council 2015) details SMS's requirements for the creation, compilation and deposition of archaeological archives.

3.2.2 With regards depositing the LG archive, details of the contacts at SMS are:

- Ellie Broad (EllieBroad@southend.gov.uk), Assistant Curator – Archaeology;
- Ciara Phipps (CiaraPhipps@southend.gov.uk); and
- Claire Reed (ClaireReed@southend.gov.uk).

3.2.3 SMS confirmed the accession code for the LG Port marine archive as: SOUMS: A2018.4-5

3.3 National guidelines

3.3.1 Wessex Archaeology has experience in compiling and depositing archaeological archives and use the following guidelines for physical and digital records:

- *Standard and guidance for the creation, compilation, transfer and deposition of archaeological archives* (Chartered Institute for Archaeologists 2014);
- *Archaeological Archives - A guide to best practice in creation, compilation, transfer and curation* (Archaeological Archives Forum 2011);
- *Selection, Retention and Dispersal of Archaeological Collections* (Society of Museum Archaeologists 1993); and
- *Caring for Digital Data in Archaeology: A Guide to Good Practice* (Archaeological Data Service 2013).

3.3.2 Recently initiated by the Archaeological Archives Forum and funded by Historic England, DigVentures have been commissioned to develop guidance specifically for digital archives. A draft document, *Work digital / think archive - A guide to managing digital data generated from archaeological investigations* (DigVentures 2019), is currently under review with interested parties.

3.4 Wessex Archaeology guidelines

3.4.1 In general Wessex Archaeology undertakes limited archiving for marine projects. It is often difficult to find a repository willing to accept marine material and associated archives. This is exacerbated by the fact there are no guidelines or policies that specifically refer to archiving marine projects.

3.4.2 Wessex Archaeology has its own guidance for preparing archaeological archives, which have and will be utilised for the preparation of the LG archive:

- *Finds recovery and Selection/retention policy* (Wessex Archaeology, draft 2017); and
- *Preparing Digital Data and Metadata* (Wessex Archaeology 2018).

4 LG ARCHAEOLOGICAL ARCHIVE

4.1.1 The LG Port archaeological archive consists of the documentary archive and the material archive. The documentary archive comprises all archaeological records or data generated as a result of fieldwork associated with the LG Port project. This includes recording forms, drawings, x-rays, photographs, reports, etc. The material archive comprises any archaeological objects or samples that were recovered during fieldwork associated with the LG Port project.



- 4.1.2 Since the material archive has predominantly been accessioned, the remaining archive to be deposited is the documentary records. This can be divided between the physical archive, which will be compiled and stored in labelled and numbered archive boxes, and the digital archive, which will be stored in a clear folder structure on a hard drive/archival CD-ROMs. Appendix 1 summarises the types of physical and digital archive that exists for the project.

5 PHYSICAL ARCHIVE

5.1 Introduction

- 5.1.1 Following consultation with SMS, the physical element of the archive will include a selection of the reports and all the x-rays. Further details regarding the methodology to prepare each format of physical archive is presented in the sections below, along with suggestions for rationalising the preparation of the archive based on a compromise between what is stipulated within SMS's archive guidelines and the reality of the quantity of the actual archive. This information is also summarised in Appendix 1 along with the remaining tasks..
- 5.1.2 An Index to Paper Archive document will be prepared and details each element of the physical archive along with its format, quantity and which archive box it is stored in.

5.2 Reports

- 5.2.1 There are around 350 digital reports generated as a result of fieldwork associated with the LG Port project. At present these reports exist as digital copies only, none have been printed out. These documents comprise:
- 64 reports detailing CMS and diving reports for over 40 sites;
 - Over 250 LORDI² finds reports and associated Wessex Archaeology reports;
 - Two x-ray reports; and
 - Approximately 30 other project related documents.
- 5.2.2 SMS's archive guidelines requested all reports to be printed, bound and compiled within Manila files labelled with its contents and added to the archive boxes. Therefore, these reports will be turned from their current digital format to a paper format.
- 5.2.3 Due to the sheer number of reports generated, and following consultation with SMS, it has been agreed that only the project related documents, approximately 30, would be printed and archived with the physical archive element to SMS's standards.
- 5.2.4 See section 1.1 of Appendix 1 for a summary of this section along with the remaining tasks to be completed.

² LORDI refers to the dredging company, Laing O'Rourke and Dredging International, undertaking the capital dredging operations. LORDI notified Wessex Archaeology of any archaeological discoveries using a proforma accompanied with photographs, as per the Protocol for Reporting Archaeological Discoveries. Wessex Archaeology then researches these objects and prepared finds report which would be disseminated to the client.

5.3 X-rays

- 5.3.1 There are 76 x-rays associated with the project which need to be added to the physical archive. A document that details each of the x-rays by project and find will be compiled and archived along with the x-rays.
- 5.3.2 No suggestions are made to rationalise this process of the archive.
- 5.3.3 See section 1.2 of Appendix 1 for a summary of this section along with the remaining tasks to be completed and estimated time scales.

6 DIGITAL ARCHIVE

6.1 Introduction

- 6.1.1 The remainder of the archive is digital data and will either be deposited to SMS in this format or deposited with/curated by other relevant organisations. Further details regarding the methodology to prepare each format of digital archive is presented in the sections below, along with suggestions for rationalising the preparation of the archive based on a compromise between what is stipulated within SMS's archive guidelines and the reality of the quantity of the actual archive. This information is also summarised in Appendix 1 along with tasks remaining and predicted time scales.
- 6.1.2 A Digital Archive Index spreadsheet will be prepared and details each element of this archive along with its file name, format, size and file location. A separate tab will be compiled for, and made relevant to, each type of digital archive, i.e. report index, photograph index, finds index, scanned primary archive index, feature class index, databases index and geophysical survey index.

6.2 Reports

- 6.2.1 There are around 350 digital reports, in Word and .pdf format, generated as a result of fieldwork associated with the LG Port project, comprising:
- 64 reports detailing Clearance Mitigation Statements and diving reports for over 40 sites;
 - Over 250 LORDI finds reports and associated WA reports;
 - Two x-ray reports; and
 - Approximately 30 other project related documents.
- 6.2.2 According to SMS's archival guidelines all .pdf reports need to be submitted with the archive and each should be converted to a Portable Document Format for long term archiving (.pdf/a) and file names should use hyphens/underscores and without spaces, punctuation or full stops. The reports need to be coherently ordered within a clear folder structure on an archival quality high resolution CD-ROM.
- 6.2.3 In consultation with SMS, it has been agreed that only one OASIS (Online Access to the Index of archaeological investigationS) record is generated for the entire LG Port project. Wessex Archaeology's Archive Team will liaise with the ADS about depositing all the reports that correspond with the OASIS record and confirm the cost with London Gateway Port Ltd. prior to depositing.

6.2.4 Wessex Archaeology also recommends that only a selection, approximately 30, of the LORDI/associated Wessex Archaeology finds reports are added to the digital archive as an indication of the process that was undertaken. This would need to be agreed with SMS. The remainder of these reports would be archived and stored on Wessex Archaeology servers and can be requested if necessary.

6.2.5 See section 2.1 of Appendix 1 for a summary of this section along with the remaining tasks to be completed.

6.3 Photographs

6.3.1 There are approximately 30,000 .jpg images stored within almost 1,000 individual folders generated as part of the project. There are also images in other formats, e.g. .tif, that exist in addition to this.

6.3.2 More time needs to be spent to sort and consolidate these images further, ensuring they are stored in a manageable folder structure that includes the LG project number and ensure the folder names correlate to the photographic registers where possible.

6.3.3 The Digital Archives Index will be compiled for each project folder including the quantities of images in each folder, rather than listing the individual photographs, which is the standard for other archaeological archives.

6.3.4 SMS's archival guidelines request all photographs to be in .tiff format or high quality .jpps. It specifies that all photographs must be renamed to include the accession code and must relate to a site photographic register.

6.3.5 Due to the sheer quantity of photographs generated as part of the project, it will be impossible to rename every image. It is recommended that folders containing multiple images are renamed , which will still take a considerable amount of time. This will need clarifying and confirming with SMS.

6.3.6 Also, due to the nature of the photographs, there may not be accompanying site registers for all images, in particular those taken in the field, externally sourced/generated images, stills from video footage or images used for photogrammetry.

6.3.7 See section 2.2 of Appendix 1 for a summary of this section along with the remaining tasks to be completed.

6.4 Scanned primary archive

6.4.1 The scanned archive comprises over 125 .pdf files of hand-written primary registers and recording forms and drawings for the fieldwork and finds records elements of the project.

6.4.2 Registers and recording forms include context register and records, object registers and recording forms, photographic registers, graphic registers and graphics, timber recording forms, test pit recording forms, bucket registers, and environmental registers. Each file will be added to the Digital Archive Index with accompanying detail.

6.4.3 The hand-written diving logs associated with the dive fieldwork still need to be scanned and added to this element of the archive. And all .pdf files need to be converted to .pdf/a files.

6.4.4 SMS have requested only a scanned version of the primary record rather than the paper records themselves, i.e. turning something in a paper format into a digital format. These

records have all been scanned but need finalising into a clear structure with coherent file and folder names.

6.4.5 See section 2.3 of Appendix 1 for a summary of this section along with the remaining tasks to be completed.

6.5 Finds

6.5.1 Over one thousand artefacts were recovered as part of the project, ranging from individual objects to entire sites. This total includes: over 130 artefacts from known wreck sites investigated early in the project; over 250 artefacts recovered during the capital dredging phase; 350 artefacts recovered with the Junkers 88; and 346 artefacts recovered in association with the clearance of the paddle tug.

6.5.2 In accordance with the project specific retention and discard policy, objects were sorted on site for their archaeological relevance and were either retained or discarded. As the project progressed, recorded objects were offered to interested museums/organisations. If objects were not accepted by any of these institutions and were not considered for the Wessex Archaeology's own teaching collection, then they were often discarded. Any discard of this nature was undertaken in compliance with the legal requirements of the *Merchant Shipping Act 1995*, which gives the Receiver of Wreck one year to establish ownership of recovered wreck material.

6.5.3 Most of the remaining artefacts were deposited with SMS delivered in several batches, however finds were also accessioned with:

- Boscombe Down Aviation Collection, Salisbury;
- Coalhouse Fort Museum;
- University of Wales;
- Markham Grange Steam Museum;
- P&O Office, London;
- Bournemouth University;
- London Gateway; and
- Wessex Archaeology's handling collection.

6.5.4 For the purposes of the digital archive, a spreadsheet containing the detail of the LG finds will be compiled containing detail of where they are each currently stored. This needs to be in a .csv format.

6.5.5 No suggestions are made to rationalise this process of the archive.

6.5.6 See section 2.4 of Appendix 1 for a summary of this section along with the remaining tasks to be completed.

6.6 DIVA data

- 6.6.1 DIVA is Wessex Archaeology's recording system for diving fieldwork whereby the diver is tracked around the site along with any observations and positional information for objects/site elements. The data is stored as databases and needs to be collated and stored and named in a coherent manner, before being converted into .pdf/a files and added to the Digital Archive Index.
- 6.6.2 An access relationship diagram will also be compiled, which illustrates the individual tables that make up the access database and how they are linked. The data from each is extracted as tab delimited text files.
- 6.6.3 The quantity of files is currently unknown until archiving this element occurs, however overall there were two seasons of diving fieldwork in 2007 and 2012 that used the DIVA database that relate to diving investigations on multiple sites.
- 6.6.4 No suggestions are made to rationalise this process of the archive.
- 6.6.5 See section 2.5 of Appendix 1 for a summary of this section along with the remaining tasks to be completed.

6.7 Geophysical data

- 6.7.1 Archaeological assessments of geophysical data were undertaken in 2006, 2007 and 2011 and included magnetometer, sidescan sonar and multibeam bathymetry surveys.
- 6.7.2 In consultation with SMS, it has been agreed that the geophysical data will be archived with the UKHO and BGS rather than SMS, as is generally the case for projects that generate marine geophysical data.
- 6.7.3 Permission will need to be sought from London Gateway Port Ltd. that the data is not confidential and can be archived in this way making the data publicly accessible via these platforms. Once this has occurred, then Wessex Archaeology can generate an inventory of the data for the BGS to then provide a quote for the archiving to deposited. The UKHO agreed that there would not be an additional cost to deposit the data with them.
- 6.7.4 No suggestions are made to rationalise this process of the archive as SMS have already agreed for the data to be archived in Wessex Archaeology's usual manner for such data.
- 6.7.5 See section 2.6 of Appendix 1 for a summary of this section along with the remaining tasks to be completed.

6.8 Feature classes

- 6.8.1 Various feature classes and shapefiles were generated as a result of this project, detailing positional information including the study area for the project, the position of known archaeological sites, geophysical survey lines and anomalies, 'strikes' and dredger track-plots.
- 6.8.2 In consultation with SMS this data will be compiled and curated by Wessex Archaeology. Only a .csv spreadsheet of the data that exists will be compiled and delivered to SMS as part of the digital archive.
- 6.8.3 No suggestions are made to rationalise this process of the archive as SMS have already agreed for Wessex Archaeology to curate the data.

6.8.4 See section 2.7 of Appendix 1 for a summary of this section along with the remaining tasks to be completed.

7 GENERAL ARCHIVE

7.1.1 Time will be required for other general archive activities, which include:

- Liaising with SMS with regards rationalising the archive that will be deposited with them;
- Liaising with the Archives Team at Wessex Archaeology where necessary;
- Assembling the archive boxes with the Manilla folders containing the physical archive and labelling their exteriors;
- Preparing a Copyright form, Transfer of Ownership form, and an Archive Transmittal form for the archive;
- Purchasing a hard drive or multiple archival quality high resolution CD-ROMs depending on SMS's stipulations; and
- Deliver the archive to SMS.

7.1.2 These general archive tasks are also presented in section 3.1 of Appendix 1, along with estimated time scales.

8 CONCLUSION

8.1.1 The following points indicate the challenges that have been encountered whilst preparing the archive for the LG project:

- The longevity of Wessex Archaeology's involvement with the project has meant that the project has amassed an enormous material, digital and documentary archive;
- The multiple methods of archaeological investigations undertaken have each generated a large digital, paper and physical archive, for instance, the capital dredging and finds protocol;
- The large size of the project area means multiple complex archaeological sites were encountered and investigated further, together with multiple recoveries of individual objects through the dredging phase;
- The material archive was considered the focus for deposition and required an enormous amount of curation and conservation before being deposited with various organisations;
- There are no specific guidelines for archiving marine projects or projects of this scale, which comprise such a huge digital resource;
- The archaeological archive guidelines that were written at the outset of the LG Port project are much changed to the guidelines used today. Additionally, only general detail was provided within the Archaeological Mitigation Framework (Appendix Two of the *Statement of Common Ground* document) written in 2003 that specifically



deals with the project archive. Most of the guidance and organisations mentioned in this document are out of date;

- Considering the size and complexity of the archive, further compromise needs to be met with the stipulations in SMS's archive guidelines in addition to the agreed rationalising of several elements of the archive discussed, for instance only printing the project-related documents not all reports;

REFERENCES

- Archaeological Archives Forum 2011 *Archaeological Archives Forum Papers*. York: Archaeology Data Service [distributor] <https://doi.org/10.5284/1000078>
- Archaeological Data Service 2013 *Caring for Digital Data in Archaeology: A Guide to Good Practice*. <http://guides.archaeologydataservice.ac.uk/g2gp/Contents> (accessed May 2019)
- Andrews, G., Shepherd, N., Chandler, J., Firth, A. and Bates, M. 2003 *The (London Gateway Port) Harbour Empowerment Order 2002 – Archaeological Mitigation Framework*. Appendix Two of the Statement of Common Ground on the topic of cultural heritage.
- Chartered Institute for Archaeologists (CIfA) 2014 *Standard and guidance for the creation, compilation, transfer and deposition of archaeological archives*. https://www.archaeologists.net/sites/default/files/CIFAS&GArchives_2.pdf (accessed May 2019)
- DigVentures 2019 *Work digital / think archive - A guide to managing digital data generated from archaeological investigations - Draft*. Prepared for Archaeological Archives and Forum Historic England. Barnard Castle, Durham.
- English Heritage (now Historic England) 1991 *Management of Archaeological Projects (2nd Edition)*.
- Essex County Council 2015 *Archaeological Archives in Essex - Guidelines for preparation and deposition*. Essex Co. Co.
- Society of Museum Archaeologists 1993 *Selection, Retention and Dispersal of Archaeological Collections*. <http://socmusarch.org.uk/socmusarch/gailmark/wordpress/wp-content/uploads/2017/06/Selection-retention-and-dispersal-of-collections.pdf> (accessed May 2019)
- Wessex Archaeology 2007 *London Gateway Port: Channel Clearance and Dredging. Archaeological Methods and Procedures*.
- Wessex Archaeology 2011 *London Gateway Port: Strike and Track-plot Report. Preliminary Interpretation of Finds*. Unpublished report, ref. 72436.02
- Wessex Archaeology 2017 *Finds recovery and Selection/retention policy*. Salisbury
- Wessex Archaeology 2018 *Preparing Digital Data and Metadata*. Salisbury

APPENDICES
Appendix 1: Tasks and estimated time scales

Type of archive	Element of archive	Quantity	Task	Suggestions for rationalising archive for SMS	Status of rationalising	Notes
1. Physical	1.1 Reports (paper)	64 reports detailing Clearance Mitigation Statements and diving reports for over 40 sites; over 250 LORDI finds reports and associated WA reports; two x-ray reports; and approximately 30 other project related documents.	Update the Paper Archive Index with each report (30+ main project reports, not CMS/finds reports)			
			Print out and bind each of the 30+ project-related reports	Only print out and bind the project-related reports, no other reports.	Confirmed with SMS	Can this be reduced further?
			Compile printed reports, bound with treasury tags, by project number and store in Manilla files per project number. Write details of contents on the cover of Manilla files (accession number, project name, project number, report IDs).			
	1.2 X-rays (physical)	76 x-rays	Prepare a document that lists each of the x-rays by project and find ID			
			Add details of the x-rays to the Paper Archive Index			
2. Digital	2.1 Reports (digital)	64 reports detailing Clearance Mitigation Statements and diving reports for over 40 sites; over 250 LORDI finds reports and associated WA reports; two x-ray reports; and approximately 30 other project related documents.	Consolidate the LORDI reports and associated WA reports, removing duplicates.			
			Collate selected LORDI finds reports and associated WA reports and generate a combined pdf. Convert to pdf/a.	Only deposit a selection of LORDI reports, perhaps around 30, rather than all 250+	To be confirmed with SMS and how many they want (~30?)	
			Write a 'Read Me' document to explain what the LORDI reports are and that only a selection of best examples showing the process are provided	As above	To be confirmed with SMS	
			Ensure all report file names are to SMS's archival standards, i.e. no spaces.	As above	To be confirmed with SMS	
			Update the Digital Archive Index with all the CMS/diving reports, x-ray reports and other project-related reports, and the selected finds/LORDI reports (~30), and the 'Read Me' file			
			PDFA all reports (96+) @~10mins/report			
			Compile one OASIS record for the entire LG project		Confirmed with SMS	
			Liaise with ADS about giving them all the reports that correspond with the OASIS record and confirm cost		Confirmed with SMS	
	Deposit the reports to the ADS		Confirmed with SMS			
	2.2 Photographs	Approx. 30,000 .jpg images and additional images in other formats	Continue sorting and consolidating the images, ensuring no duplicates and other file types			
		Photos are very generally sorted but need consolidating by project number and ensure folder names correlate to the 'Scanned Archive' folder	Only provide a selection of photographs in the deposited archive, divided by project number which links	Ensure SMS are aware of the quantity of images - do they want them all? Make SMS aware that many photographs will not correspond with a		

Type of archive	Element of archive	Quantity	Task	Suggestions for rationalising archive for SMS	Status of rationalising	Notes	
2. Digital				images to existing photo registers	photo register. To be confirmed with SMS as they may want each image renamed with accession code, etc		
			Compile the Digital Archives Index for each project folder and describe the folders within and the number of photos contained in each folder	Compile by project folder and then folders of images, rather than for each individual photo, depending on what SMS have agreed to	To be confirmed with SMS		
	2.3 Scanned archive	Over 125 scanned .pdf files comprising recording registers, forms and drawings	Diving logs associated with the dive fieldwork still need to be scanned.				
			All .pdf files need to be converted to .pdf/a files				
			Finalise the digital scanned archive into coherent folder structure based on project numbers	Dividing the archive by project code rather than amalgamating everything together	To be confirmed with SMS		
			Compile the Digital Archive Index for the scanned archive				
	2.4 Finds	Over one thousand finds have been recovered (over 130 from known wreck sites investigated early in the project; over 250 recovered during the capital dredging phase; 350 recovered with the Junkers 88; and 346 recovered in association with the clearance of the paddle tug). Many finds were discarded during the project and the rest have been accessioned/curated by various organisations	Generate .csv spreadsheets for all the recovered finds that were recovered/brought to WA.				
			Write a 'Read Me' file about what's in each spreadsheet.				
			Add all files to the Digital Archives Index.				
	2.5 Databases (DIVA)	This element of the archive hasn't been prepared yet	Export all the DIVA related databases and compile into an archivable state.				
			Generate a relationship diagram for the data				
			Write a 'Read Me' file about what information the databases contain				
			Generate pdf/a's of the diving reports/primary obs/etc for the 2007 and 2012 diving events				
	2.6 Geophysical data	This element of the archive hasn't been prepared yet	Prep is required on the geophysical data in order for BGS to quote the cost of archiving geophysical data with them			To be confirmed with London Gateway Port Ltd. that none of the data is considered confidential	
			Compile the geophysics and bathymetry data for the project and make suitable for archive				
Deposit the geophysical information with the BGS rather than SMS.					Confirmed with SMS (if agreed with LGP)		



Type of archive	Element of archive	Quantity	Task	Suggestions for rationalising archive for SMS	Status of rationalising	Notes
			Deposit the bathymetry data with the UKHO rather than SMS.		Confirmed with SMS (if agreed with LGP)	
	2.7 Feature classes	This element of the archive hasn't been prepared yet	Generate a .csv spreadsheet listing all project related and relevant feature classes/shapefiles and their file location at WA.	WA will curate the shapefiles	Confirmed with SMS that we'll curate the shapefiles at WA	
			Add this .csv file to the Digital Archives Index.			
	3.1 General archives		Liaising with SMS with regards elements of the archive that need confirmation (see Notes column)			
			Liaison with the Archives Team at Wessex Archaeology			
			Assembling the archive boxes containing Manilla folders and labelling the exterior appropriately			
			Prepare a Copyright form; Transfer of Ownership form; and an Archive Transmittal form for the archive;			
			Purchase a hard drive / archival quality high resolution CD-ROMs		Type of storage needs to be confirmed with SMS	
			Transfer archive to SMS			

Appendix 2: Mitigation Groups

Known sites and geophysical anomalies were allocated to Mitigation Groups in 2005 (Wessex Archaeology 2007). Those features that were of little or no archaeological interest in the context of the dredge plan are as follows:

1.1	Feature of no archaeological interest	Predominantly moorings for navigational buoys, or items for which a non-archaeological origin can be given on the basis of existing evidence.
1.2	Site clear	Either reported as lifted by PLA, or geophysics shows no evidence of the presence of a previously recorded feature, implying it has already been recovered.
1.4	Site below dredge depth	As noted above, the current dredge line includes areas that are already deeper than the desired depth, so no further dredging is required. Sites in these areas have been allocated to 1.4, unless they (might) include upstanding elements within the dredge depth.
0.1	Duplicates	Some sites within the dataset are clearly duplicates of others, with minor differences in position. As far as possible, these duplicates have been integrated, leaving a set of 'sites' that are duplicates.

The 'archaeological' Mitigation Groups were originally ascribed to three subdivisions - certain, probable and possible - above and below Sea Reach 1. Subsequently they were then split 'possible' into 'possible' and 'uncertain', and further subdivided 'uncertain' into four more subdivisions. They have been used as follows:

2.n.1	Site of certain archaeological interest	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.
2.n.2	Site of probable archaeological interest	Used for sites where there are certainly remains present which 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.
2.n.3	Site of possible archaeological interest	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 during the First and Second World War, plus debris relating to the submarine boom. As above, the level of importance will depend on the details of the site, and may be debated.
2.n.4 (see table below)	Site of uncertain archaeological interest	Used for anomalies and fouts, 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.

Where n = 1 for sites upstream of Sea Reach 1, and 2 for sites seaward of Sea Reach 1

The sites of uncertain archaeological interest were further sub-divided as follows:

2.n.4a	Uncertain - ?bed feature	On the basis of the sidescan images, these sites seem likely to be bed features (sand banks, sand waves, disturbance to bed caused by trawling, anchoring etc.). This interpretation draws on the form of the anomaly and the character of the surrounding seabed.
2.n.4b	Uncertain - ?debris	These can be reasonably interpreted as artificial, i.e. of human origin, but are more likely to be 'modern' than of archaeological origin or interest. This group includes linears (?lost chains and cables) and generally isolated single items. It should be noted that some of these isolated items may prove to be quite old and of some archaeological interest, but as they seem to be isolated depositions they will not have much in the way of context. It should also be noted that the features identified as debris may need to be cleared to facilitate dredging.
2.n.4c	Uncertain - ambiguous	These are features that can't adequately be ascribed to another group. They may prove to be of archaeological importance, but they may prove to be modern, or even natural, in origin.
2.n.4d	Uncertain - ?archaeological feature	These seem reasonably likely – on the basis of currently available data – to have an archaeological origin, or at least to be a class of anomalies that includes features of archaeological origin and importance. They can be reasonably interpreted as being artificial, and are either more extensive than 'debris' or are made up of several elements. This classification does not consider the level of importance that might apply – i.e. some of these features may prove to be of archaeological origin, but of low importance. However, some of the may prove to be of high importance. These attributions have been made while bearing in mind that some of the most important sites (Medieval, Roman, Prehistoric) may be very ephemeral.
Where n = 1 for sites upstream of Sea Reach 1, and 2 for sites seaward of Sea Reach 1.		

These tables have been taken from Appendix IV of *London Gateway Port: Strike and Track-plot Report. Preliminary Interpretation of Finds* report compiled in 2011 (Wessex Archaeology).