A Late Saxon to Medieval Saltern at Marsh Lane
King's Lynn
Norfolk

Post-Excavation Assessment
and Updated Project Design

March 2016

Client: Lovell Partnerships Limited

OA East Report No: 1866
OASIS No: oxfordar3-229639
NGR: TF 6331 2163
A Late Saxon to Medieval Saltern at Marsh Lane, King's Lynn, Norfolk

Post-extraction Assessment and Updated Project Design

By Graeme Clarke BSc PCIfA

With contributions by Sue Anderson BA Mphil MCIfA FSA (Scot), Steve Boreham BSc PhD MCIfA, Rachel Fosberry HNC ACIfA, Anthony Haskins BSc MSc ACIfA, Dr Caroline Hillier MCIEEM, Sarah Percival BA MA MCIfA, Alexandra Scard BA PCIfA

Editor: Rachel Clarke BA MCIfA

Illustrators: Daria Tsybaeva MA MA & Séverine Bézie BA MA

Report Date: March 2016
Report Number: 1866
Site Name: Medieval Saltern at Marsh Lane, King's Lynn, Norfolk
HER Event No: ENF137496
Date of Works: May-July 2015
Client Name: Lovell Partnerships Limited
Client Ref: na
Planning Ref: Pre-application
Grid Ref: TF 6331 2163
Site Code: ENF137496
Finance Code: XNFMLL15
Receiving Body: Norfolk Museum
Accession No: To be confirmed by Norfolk Museum. Request by OA East on 29th February 2016
Prepared by: Graeme Clarke
Position: Project Officer
Date: 29th February 2016
Checked by: Dr Matthew Brudenell
Position: Senior Project Manager
Date: 1st March 2016
Signed: [Signature]

Disclaimer
This document has been prepared for the titled project or named part thereof and should not be relied upon or used for any other project without an independent check being carried out as to its suitability and prior written authority of Oxford Archaeology being obtained. Oxford Archaeology accepts no responsibility or liability for the consequences of this document being used for a purpose other than the purposes for which it was commissioned. Any person/party using or relying on the document for such other purposes agrees and will by such use or reliance be taken to confirm their agreement to indemnify Oxford Archaeology for all loss or damage resulting therefrom. Oxford Archaeology accepts no responsibility or liability for this document to any party other than the person/party by whom it was commissioned.

Oxford Archaeology East,
15 Trafalgar Way,
Bar Hill,
Cambridge,
CB23 8SQ

t: 01223 850500
f: 01223 850599
e: oaeast@thehumanjourney.net
w: http://thehumanjourney.net/oaeast

© Oxford Archaeology East 2016
Oxford Archaeology Limited is a Registered Charity No: 285627
Table of Contents

Summary........................................................................................................................................... 7

1 Introduction........................................................................................................................................ 9
   1.1 Project Background.................................................................................................................. 9
   1.2 Geology and Topography....................................................................................................... 9
   1.3 Archaeological and Historical Background........................................................................ 10
   1.4 Acknowledgements............................................................................................................... 11

2 Project Scope.................................................................................................................................. 12

3 Interfaces, Communications and Project Review......................................................................... 12

4 Summary of Results....................................................................................................................... 12
   4.1 Introduction.......................................................................................................................... 12
   4.2 Saltmarsh Deposits (Group 240).......................................................................................... 13
   4.3 Period 1: Late Saxon (c.AD800 – 1066).............................................................................. 14
   4.4 Period 2: Medieval (c.AD1066 – 1250)................................................................................ 17
   4.5 Period 3: Post-medieval/modern (c.AD1500 – present)........................................................ 19

5 Factual Data and Assessment of Archaeological Potential...................................................... 21
   5.1 Stratigraphic and Structural Data.......................................................................................... 21
   5.2 Artefact Summaries............................................................................................................... 22
   5.3 Environmental Summaries................................................................................................... 24

6 Updated Research Aims and Objectives.................................................................................. 27
   6.1 Introduction.......................................................................................................................... 27
   6.2 Discussion............................................................................................................................ 27
   6.3 Site Specific Research Objectives........................................................................................ 29
   6.4 Revised Site Specific Research Objectives.......................................................................... 30
   6.5 Regional Research Objectives............................................................................................. 30

7 Methods Statements for Analysis.............................................................................................. 32
   7.1 Stratigraphic Analysis........................................................................................................... 32
   7.2 Illustration............................................................................................................................. 32
   7.3 Documentary Research......................................................................................................... 32
   7.4 Artefactual Analysis............................................................................................................. 35
   7.5 Ecofactual Analysis.............................................................................................................. 36

8 Report Writing, Archiving and Publication............................................................................... 37
   8.1 Report Writing....................................................................................................................... 37
   8.2 Storage and Curation............................................................................................................ 37
8.3 Publication................................................................................................................37

9 Resources and Programming..................................................................................38
  9.1 Project Team Structure.........................................................................................38
  9.2 Stages, Products and Tasks..................................................................................38
  9.3 Project Timetable.................................................................................................39

10 Ownership............................................................................................................40

Appendix A. Context Summary with Provisional Phasing........................................41

Appendix B. Finds Reports........................................................................................47
  B.1 Pottery..................................................................................................................47
  B.2 Ceramic Building Material..................................................................................53
  B.3 Clay pipes.............................................................................................................54
  B.4 Baked Clay...........................................................................................................55
  B.5 Slag.......................................................................................................................57

Appendix C. Environmental Reports........................................................................60
  C.1 Faunal remains.....................................................................................................60
  C.2 Shell.....................................................................................................................60
  C.3 Environmental samples.......................................................................................62
  C.4 Pollen analysis.....................................................................................................68
  C.5 Diatoms...............................................................................................................79
  C.6 Radiocarbon Dating Certificates.......................................................................84

Appendix D. Product Description............................................................................94

Appendix E. Risk Log.................................................................................................94

Appendix F. Bibliography.........................................................................................95

Appendix G. OASIS Report Form.............................................................................99
List of Figures

Fig. 1 Site location showing overall development (red) and excavation areas
Fig. 2 Map showing location of NHER records & pre-existing tidal creeks mapped from historic photograph
Fig. 3 Site layout plan
Fig. 4 Period 1: (mid-) Late Saxon salt-making features (excavation phase 3)
Fig. 5 Period 1: Late Saxon salt-making features (excavation phase 2)
Fig. 6 Evaluation and strip & map excavation (excavation phase 1)
Fig. 7 Plan of Period 2 brine boiling hearth 205
Fig. 8 Selected sections

List of Plates

Plate 1 Marine deposits, group 240, looking north-west
Plate 2 Silt filtration unit 253 with clay lining, looking south-west
Plate 3 Silt filtration unit 258 with clay lining and turves, looking south
Plate 4 Hearth waste group 200 in plan, looking west
Plate 5 Hearth waste group 200, in section looking west
Plate 6 Hearth 205 with superstructure 107 and hearth base 115, looking north-east
Plate 7 Hearth 205 showing section of hearth base 115
Plate 8 Working shot of saltern feature group 1, looking east

List of Tables

Table 1 Group 1 filtration unit inventory
Table 2 Group 2 filtration unit inventory
Table 3 Quantity of written and drawn records
Table 4 Finds quantification
Table 5 Quantification of samples by feature type
Table 6 Radiocarbon dating results
Table 7 Project team
Table 8 Task list
Table 9 Context inventory
Table 10 Pottery quantification by fabric
Table 11 Summary pottery catalogue by context
Table 12 Pottery by context
Table 13 CBM by context
Table 14 Clay pipes by context
<table>
<thead>
<tr>
<th>Table</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Table 15</td>
<td>Quantity and weight of baked clay by fabric</td>
</tr>
<tr>
<td>Table 16</td>
<td>Quantity and weight of baked clay by feature</td>
</tr>
<tr>
<td>Table 17</td>
<td>Quantity and weight of slag by feature</td>
</tr>
<tr>
<td>Table 18</td>
<td>Animal bone by context</td>
</tr>
<tr>
<td>Table 19</td>
<td>Overview of identified, quantified shell</td>
</tr>
<tr>
<td>Table 20</td>
<td>Quantified common mussel shell</td>
</tr>
<tr>
<td>Table 21</td>
<td>Quantified freshwater mussel shell</td>
</tr>
<tr>
<td>Table 22</td>
<td>Quantified cockle shell</td>
</tr>
<tr>
<td>Table 23</td>
<td>Bulk samples from saltmarsh deposits</td>
</tr>
<tr>
<td>Table 24</td>
<td>Bulk samples from saltern Feature Group 1</td>
</tr>
<tr>
<td>Table 25</td>
<td>Bulk samples from saltern Feature Group 2</td>
</tr>
<tr>
<td>Table 26</td>
<td>Filtration pits 78 and 168</td>
</tr>
<tr>
<td>Table 27</td>
<td>Bulk samples taken from hearth waste deposits</td>
</tr>
<tr>
<td>Table 28</td>
<td>Bulk samples taken from hearth waste tip 200</td>
</tr>
<tr>
<td>Table 29</td>
<td>Bulk samples taken from Saltern Group 3</td>
</tr>
<tr>
<td>Table 30</td>
<td>Results of pollen analyses. Percentage pollen data</td>
</tr>
<tr>
<td>Table 31</td>
<td>The halobian classification system (Hemphill-Haley, 1993)</td>
</tr>
<tr>
<td>Table 32</td>
<td>Diatom ecology</td>
</tr>
</tbody>
</table>
Summary

Between the 26th May and 28th of July 2014, Oxford Archaeology East conducted an archaeological evaluation and excavation on land at Marsh Lane, King's Lynn, Norfolk (TF 6331 2163). A medieval saltern mound (NHER 27899) was believed from cartographic evidence to be located in the western part of the site.

This report includes the results of the initial phase of evaluation, comprising twelve trenches and test pits, followed by a strip & map excavation. The trenches in the western part of the site revealed archaeological remains associated with salt-making in the medieval period. These included elements of four enclosed hearths for brine boiling comprising hearth floors, flues and superstructures. Two of these hearths were found to truncate clay lined pits which probably represented silt filtration units for an earlier phase of brine production. Layers of burnt deposits representing hearth waste tips were also present containing fragments of baked clay and slag. The trenches in the eastern part of the site were devoid of archaeology.

A programme of further excavation was required to investigate the saltern mound deposits in the area to be impacted at depth by the proposed development. Further archaeological features were uncovered including silt filtration units and evidence for less substantial open hearths associated with salt-making. These features and deposits yielded some burnt Thetford-type ware pottery fragments indicating a Late Saxon date to the earlier salt-making activity revealed within the mound. This early date was reiterated by a series of radiocarbon dates that indicate that salt-making was carried out here from the mid-late Saxon to the medieval period (c.8th to 13th centuries AD). The pottery assemblage suggests that activity on the site had probably ceased by the mid 13th century.

The excavation has provided a fairly well dated sequence of salt-making on the site extending from the Late Saxon period through to the mid-13th century. The archaeological remains uncovered will contribute to current understanding of the evolution of the salt-making industry of King's Lynn and the environmental setting in which this industry was situated.
1 INTRODUCTION

1.1 Project Background

1.1.1 Between the 26th May and 28th of July 2015, Oxford Archaeology East (OA East) conducted an archaeological evaluation and excavations on the site of a known saltern (NHER 27899) on land at Marsh Lane, King's Lynn, Norfolk (Fig. 1). The project was commissioned by Lovell Partnerships Limited in respect of a proposed residential development on the site.

1.1.2 An initial phase of archaeological 'strip & map' excavation across the development area was conducted in conjunction with evaluation trenching to determine the extent of any saltern mound deposits encountered. This phase of work formed the basis for further archaeological investigations into the saltern mound deposits. These works were undertaken in accordance with a Written Scheme of Investigation (Brudenell 2015a) prepared by OA East and approved by James Albone of Norfolk County Council Historic Environment Service (NCC/HES).

1.1.3 A Revised Written Scheme of Investigation (Brudenell 2015b) was prepared by OA East (and approved by NCC/HES) detailing the further programme of excavation required in the western part of the site to mitigate the impact of the proposed development on the medieval saltern mound (NHER 27899) revealed by the initial phase of excavation.

1.1.4 This assessment has been conducted in accordance with the principles identified in English Heritage's guidance documents Management of Research Projects in the Historic Environment, specifically The MoRPHE Project Manager's Guide (2006) and PPN3 Archaeological Excavation (2008).

1.2 Geology and Topography

1.2.1 The site is located within the urban reach of King's Lynn, c. 2.2km east of the River Great Ouse, on the eastern edge of the fen-basin. It falls within a wider plot of overgrown scrubland immediately north of Marsh Lane, which is surrounded by residential and commercial developments on all sides. The 1.5ha site is situated to the west of a deep, approximately north to south running drain that divides the wider scrubland plot in two. It is bounded by Marsh Lane to the south, and where residential properties lie to the north and west.

1.2.2 The underlying geology of the site comprises Jurassic Kimmeridge Clay Formation mudstone overlain by a series of intercalated Flandrian clays, silts and peat horizons which fill the wider fen-basin, and reflect a complex history of marine and freshwater inundation over the course of the Holocene (Waller 1994, 10-17). A simple four-fold stratigraphic division of Flandrian deposits is often used (Waller 1994, 13). The latter comprising marine silts of the sequence commonly known as the Terrington Beds (or Upper Silts), and result from a transgression which caused marine and brackish water silt and fine-grained sand to be deposited, giving rise to extensive mud flat and salt-marsh environments. These overly peat deposits, the Nordelph Peat (or Upper Peat), which in turn overlie the Barroway Drove Beds (or Fen Clay). This shares a similar lithology to the Terrington Beds, and comprises soft grey clays and silty clays which were deposited in salt marshes and shallow water brackish lagoons. At the base of the sequence is Lower Peat which formed on the pre-Flandrian land surface.

1.2.3 Ground investigation data from approximately 300m to the south-east of the site (three cable percussive boreholes to c. 15m below ground surface; and 12 window sample boreholes, ten to c. 3-4m below ground surface and two to c. 8.5-9m below ground
level) revealed parts of the Flandian sequence with the upper surface of the Nordelph Peat recorded at depths of 1.25-4m below ground surface (Grey 2015). This peat was up to 2m thick in the western half of the site, but was absent from boreholes at the far eastern edge of the site. There was no indication of a Lower Peat in the boreholes.

1.2.4 An archaeological evaluation was also carried out at the same location to the south-east of the site by Oxford Archaeology in 2015 (Webster 2015a). Two peat horizons were recorded immediately below the upper silts representing the Terrington Beds the lower of which was radiocarbon dated to the Early Iron Age (786 – 537 cal. BC 95.4% SUERC-61520 GU38211). At the far eastern side of the site the marine silts abutted sands and gravels representing a prehistoric raised beach shoreline which seems to mark the transition to higher ground further to the east.

1.2.5 The site is situated on a flat area of ground at approximately 4m OD (above Ordnance Datum).

1.3 Archaeological and Historical Background

1.3.1 A Desk-Based Assessment for the site by Mott MacDonald for Lovell Partnerships Ltd (Adams 2014) details the archaeological potential of the site and should be referred to for the full background. The following is a brief summary of the assessment produced for the Written Scheme of Investigation (Brudenell 2015a). A map of the Norfolk Historic Environment Records (NHER) described in the summary is shown on Figure 2.

**Prehistoric (c. 4000 BC – AD 43)**

1.3.2 Very few prehistoric finds have been recorded within the vicinity of the site, which was subject to episodes of marine sedimentation from the Neolithic, and subsequently freshwater inundation during the Iron Age leading to peat formation. For much of the prehistoric period, however, the site would have been location close to the boundary between marine and freshwater, and was most likely a saltmarsh environment unsuitable for habitation. The area to the east of the site may have been drier and as such this is from where most of the finds derive. A Neolithic axehead was found during ploughing in the vicinity of Marsh Lane (NHER 5491) and Neolithic to Bronze Age flints and pottery have been found 0.5km to the north-east of the site (NHER 35624 and 16836). There is a possible burnt-mound 0.8km to the east of Marsh Lane (NHER 11982), although evidence for this consists of only a collection of burnt flints. The absence of Iron Age finds from the area suggests that it was inundated during this period.

**Roman (c. AD 43 - 410)**

1.3.3 The almost complete absence of Roman finds from the immediate environs of the site suggests that it was still too wet for permanent settlement during this period. The exceptions to this are three coins and a piece of metalwork (NHER 5519; 11990; 11997 and 14628), although even these may represent casual loss. Salterns are characteristic of the fen-edge during this period and these and other signs of Roman industry, such as pottery kilns, are to be found in the wider landscape.

**Saxon & medieval (c. AD 410 - 1500)**

1.3.4 The earliest post-Roman finds from the environs of the site are fragments of a Saxon spearhead from 0.5km to the south-east (NHER 14673). A medieval pottery scatter is recorded to the west (NHER 16833) and it is noted in the Norfolk HER that briquetage was found beneath this at an unspecified location. The scatter partially overlaps with the rounded earthwork of a saltern mound recorded by aerial photography in 1945 in the western part of the site (NHER 27899). A complex of saltern features are also
recorded to the south of Marsh Lane (NHER 27864), and are likely to represent the traces of tanks, ponds and other auxiliary fixtures associated with the salt-making industry.

**Post-medieval & modern (c.AD 1500 - present)**

1.3.5 The salt-making industry declined during the post-medieval period, however, several of the saltern mounds were put to other uses during this time, often associated with the siege of King's Lynn during the Civil War. One of these (NHER 13784), 0.4km to the north, was used as a fort during the Civil War or possibly even earlier, during the time of the Spanish Armada. An adjacent mound (27130) to the east of NHER 13784 was used as a bastion as part of the 1643 siege works. In 2014, archaeological monitoring during the removal of 1960s building footings on the saltern at the site (NHER 27899) revealed a rubble spread with 17th to 18th century bricks, suggests the presence of a later structure on the mound. The form and status of the building is as yet unknown, but is further evidence for the reuse of saltern mounds in the vicinity (NCC/HES Event no. ENF135847; OA East Report 1755).

1.3.6 The drainage of the Fens during the 17th century exposed a large area of land in the environs of the site and made it available for cultivation. The earliest maps (not illustrated) of the development area are Faden's Map of 1787 and the 18th century Gaywood Bawsey Drainage map. The former of these shows the site divided between Gaywood Common and Wootten Green. The Gaywood Enclosure map of 1810 (not illustrated) shows the development area as two fields.

1.3.7 The 1884 and 1904 OS maps show the development area as farmland with the earlier map also showing a sheepfold in its southern part.

1.3.8 An aerial photography search of the Norfolk Historic Environment Record (NHER) centred on the site shows a large building in 1946 located on the presumed saltern mound in the western part of the site (NHER reference: TF62_TF6321_A_RAF_16Apr1946).

**Previous work**

1.3.9 Prior to this phase of works a programme of archaeological monitoring was undertaken by OA East in December 2014 during the demolition of the structures associated with the sites previous use as a pig farm complex. These works exposed post-medieval demolition layers from possible earlier structures on site but no evidence of salt making (Webster 2015b). The evaluation conducted by Oxford Archaeology in 2015, to the east of the site at Marsh Lane, was carried out in conjunction with the initial evaluation and strip & map phase of the current phase of work on the saltern site (Webster 2015a). These works did not encounter any archaeological remains associated with salt-making.

**Acknowledgements**

1.4 The author would like to thank Lovell Partnerships Limited, particularly Darron Keen and Roger Bowers (site manager), for commissioning the work. Dr Matthew Brudenell managed the project and James Albone, Planning Archaeologist of Norfolk County Council (NCC) monitored the works. The field work was supervised by the author and Michael Webster with the assistance of Robin Webb, Kathryn Nicholls, David Browne, John Diffe, Nick Cox, Matt Brooks, Mary Andrews, Malgorzata Kwiatkowska and Rebecca Pridmore. The site survey was conducted by Stuart Ladd and David Brown with georectified photography carried out by Lindsey Kemp. The illustrations were produced by Daria Tsybaeva and Séverine Bézie.
2 PROJECT SCOPE
2.1.1 This report deals solely with the 2015 evaluation and excavation undertaken by OA East at the medieval Saltern (NHER 27899; Figs. 3-6) at Marsh Lane (West), King's Lynn, Norfolk. Relevant parts of the desk-based assessment for the site by Mott MacDonald (Adams 2014) will be referred to during the assessment where appropriate.

3 INTERFACES, COMMUNICATIONS AND PROJECT REVIEW
3.1.1 The Post-Excavation Assessment has been undertaken principally by Graeme Clarke (GC) and edited and quality assured in-house by Project Manager Matt Brudenell (MB) and Post-Excavation Editor Rachel Clarke (RC). It will be distributed to the Client (Lovell Partnerships Limited and James Albone (JA) from NCC for comment and approval.

3.1.2 The report provides a summary of results, an assessment of the stratigraphic and structural data from the project, and an assessment of the content and potential of the artefactual remains and environmental samples recovered during fieldwork. It also provides an Updated Project Design, which considers the research objectives of the project, specifies areas for further analysis, and sets out a task list and time table for their completion.

3.1.3 Following approval of the Post-Excavation Assessment, further analysis will be conducted on those areas of the project identified in the Updated Project Design. The results for the analysis will then be compiled in a Full Archive Report which will be produced alongside a Publication Synopsis.

3.1.4 Meetings will be arranged at relevant points during the post-excavation analysis with JA, or be conducted via email or telephone as appropriate.

4 SUMMARY OF RESULTS
4.1 Introduction
4.1.1 The excavation into the suspected saltern (NHER 27899; Fig. 1) revealed evidence for salt making activity commencing from the Late Saxon period through to the medieval period. Descriptions of the features identified and artefacts recovered are given in this section with a full context inventory presented in Appendix A, Table 9. A site layout plan is given as Figure 3. Feature locations in each excavation phase are shown in Figures 4 to 6. Detailed plans of the brine boiling hearth 205 are shown as Figure 7 and selected sections presented as Figure 8.

4.1.2 The proposed development area was subject to an initial evaluation and strip & map excavation across the 1.5ha site which revealed the upper horizon of the saltern remains in the northwestern corner of the site. The saltern was found to encompass an area of approximately 70m x 40m extending beyond the site's western and northern boundaries. A total of nine trenches (Trenches 1-9) and four test pits (Test Pits 1-4) were excavated in conjunction with the strip & map excavation to determine the thickness and extent of the saltern mound deposits (Fig. 6). No other archaeological remains were encountered in the rest of the development area.

4.1.3 A further two phases of excavation targeted the saltern mound defined by the previous phases of evaluation in order to mitigate the impact of the development on the surviving archaeological remains (Excavation phases 2 & 3; Figs. 4-5).

4.1.4 The second excavation phase (Fig. 5) encompassed an area of 0.162ha and targeted the saltern mound deposits to investigate in situ features associated with salt-making.
Silt filtration units and other features were encountered at a height of between 2.7m and 3.0m OD.

4.1.5 The third excavation phase (Fig. 4) extended down to the formation level of the development which was at the level of the basal deposits of the mound (approximately 2.5m OD). This excavation phase targeted any further in situ salt-making features buried by the mound deposits as well as the presumed natural marine deposits underlying the mound.

4.1.6 The chronological site phasing presented below is largely based on stratigraphic relationships of features within a sequence of hearth and silt filtration waste silt layers within the saltern mound. Spatial associations of features and groups of features are also considered. This phasing has been combined with dating evidence provided by stratified pottery sherds and radiocarbon dates from charcoal and macrofossils recovered from features and deposits.

4.1.7 The sequence of saltern mound deposits was recorded to commence from heights of between approximately 1.5m OD and 2m OD and directly overlay natural saltmarsh deposits (Group 240). These extended to a maximum height of approximately 3.2m OD where the mound was truncated by modern disturbance associated with the pre-existing farm buildings on the site.

4.1.8 Three periods of activity have been identified within the saltern:

- **Period 1: Late Saxon (c.AD800 – 1066)**
- **Period 2: medieval (c.AD1066 – 1250)**
- **Period 3: post-medieval/modern (c.AD1500 – present)**

4.2 Saltmarsh Deposits (Group 240)

4.2.1 Extending beneath the saltern was a sequence of natural deposits indicative of a mudflat, saltmarsh and tidal creek environment (Plate 1). The top of these deposits was encountered at a height of approximately 2m OD. They comprised masses of clay, silt and sand (240, 242, 243, 244, 246, 247, 249, 252 & 280) with evidence of intertidal creeks (241, 245 & 248) cutting and reworking these deposits (Section 58; Fig. 8c). Deposit 246 contained lenses of organic macrofossil remains, with its upper horizon appearing to be heavily weathered (247). Organic remains including macrofossils were also encountered in deposit 252. Environmental bulk samples were taken from deposits 246 & 252 that yielded plant macrofossil remains indicative of a coastal saltmarsh environment (Appendix C3). This environment was further evidenced from samples taken from these deposits taken for pollen (Appendix C4) and diatom (Appendix C5) analyses.

4.2.2 Organic remains from deposit 246 were radiocarbon dated to 1883-1691 cal BC (95.4% SUERC-65061 GU39618) to the Early Bronze Age period (Appendix C6). This period around the Wash basin experienced several marine inundation events resulting in the Barroway Drove Beds. A post-clearance Iron Age mudflat/saltmarsh environment was interpreted from the pollen investigation of these deposits, indicative of the Terrington Beds (Appendix C4). The diatom investigation of these deposits also concluded the same environment (Appendix C5). It is probable that due to the high energy intertidal coastal environment, continual erosion, reworking and deposition of Barroway Drove Bed and Terrington Bed silts would have occurred.
4.3 **Period 1: Late Saxon (c.AD800 – 1066)**

**Summary** (Figs. 4 & 5)

4.3.1 This comprised two groups of features associated with salt-making, including silt filtration units, a water tank and the remains of open hearths. These occurred at successive levels within the lower part of the saltern mound and were separated by layers of mostly waste filtration silts and thin layers of burnt hearth waste deposits. A thin layer of what appears to have been a leached and weathered buried soil horizon was also recorded stratigraphically between these two feature groups, possibly representing a period of disuse of salt production at the site.

**Basal Silts**

4.3.2 The saltern mound deposit sequence commenced with a series of silts (239, 293, 302 & 305) which directly overlay the marine clays of Group 240 from a height of approximately 2.4m OD. Pollen remains from the basal context 239 (Section 45; Fig. 8a) indicate this may represent a pre-existing embankment of silt. The saltern would have been located on the landward side of the intertidal saltmarsh to exploit the salt rich silts. Ease of access to the site for the transportation of fuel and other material and the export of the salt produced would also have been a factor for the location of the saltern. The presence of the tidal creek mapped immediately to the north of the saltern mound (Fig. 2) and still extant today as a drain (Fig. 1) may have provided a means of waterborne transportation to the site.

**Saltern Feature Group 1**

4.3.3 Cutting this lower sequence of silts was a group of features associated with salt-making including silt filtration units 253 (Section 55; Fig. 8b; Plate 2), 254, 258 (Section 60; Fig. 8b; Plate 3), 268 (Section 67; Fig. 8b), 271 & 274 (Section 70; Fig. 8b), and an open hearth (277) located between heights of 2.1m and 2.5m OD.

**Filtration Units**

4.3.4 Elements of six silt filtration units were revealed and are detailed in Table 1 below. Three of these units (253, 254 & 258) were found to be of complete form. These comprised a shallow sub-rectangular and flat-based filtration pit with a channel, up to 0.4m wide, at one end leading to a deeper circular water tank with a concave base. Elements for a further five filtration units were also excavated and included: the filtration pit elements of units 81 & 13; and the water tank elements of units 268, 271 & 274. Each filtration unit was lined with blue-grey clay up to 0.05m thick. Filtration unit 258 was found to also contain the remains of turves (264). The filtration unit elements contained silt fills deposited after their disuse. Charcoal fragments were recovered from the backfill (266) of filtration unit 253. The charcoal was radiocarbon dated to 758-887 cal AD (67.5% SUERC-65063 GU39620) to the Middle/Late Saxon period (Appendix C6). In addition, amorphous fragments of baked clay were recovered from the fills of filtration units 253 (20g), 258 (4g) & 274 (7g).

<table>
<thead>
<tr>
<th>Unit</th>
<th>Maximum Dimensions (m)</th>
<th>Filtration Pit Dimensions (m)</th>
<th>Water Tank Dimensions (m)</th>
<th>Deposits</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Length</td>
<td>Width</td>
<td>Depth</td>
<td>Length</td>
</tr>
<tr>
<td>253</td>
<td>2.72</td>
<td>1.4</td>
<td>0.44</td>
<td>1.4</td>
</tr>
<tr>
<td>254</td>
<td>2.32</td>
<td>1.0</td>
<td>0.36</td>
<td>1.2</td>
</tr>
<tr>
<td>258</td>
<td>2.2</td>
<td>1.2</td>
<td>0.4</td>
<td>1.2</td>
</tr>
<tr>
<td>Unit</td>
<td>Maximum Dimensions (m)</td>
<td>Filtration Pit Dimensions (m)</td>
<td>Water Tank Dimensions (m)</td>
<td>Deposits</td>
</tr>
<tr>
<td>------</td>
<td>------------------------</td>
<td>-------------------------------</td>
<td>--------------------------</td>
<td>----------</td>
</tr>
<tr>
<td></td>
<td>Length</td>
<td>Width</td>
<td>Depth</td>
<td>Length</td>
</tr>
<tr>
<td>268</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>271</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>274</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 1: Group 1 filtration unit inventory

**Open Hearth**

4.3.5 Hearth 277 measured up to 1.78m in diameter by 0.1m deep and contained a burnt fill (281) containing 68g of amorphous fragments of baked clay.

4.3.6 The features in Group 1 were overlain by a layer of filtration waste silt (250) to a maximum height of approximately 2.8m OD.

**Buried Soils**

4.3.7 Waste silts 250 were in turn overlain by a thin dark layer (290/291) with mottled orange and black staining indicating much leaching (Section 61; Fig. 8b) at a height of 2.5m OD. This layer probably represents the weathered soil of a pre-existing land surface. This horizon underlay the filtration waste silts of Group 202 (see below).

4.3.8 This soil may possibly be equated to the buried soil horizon recorded in a different part of the saltern excavation as 218/219 (Section 45; Figure 8a). This buried soil sloped upwards to the east and north between heights of 1.75m-2.5m OD in the central part of the mound and overlying basal silt deposit 239. Charcoal recovered from 218 was radiocarbon dated to 943-1044 cal AD (87.2% SUERC-65057 GU39617), the Late Saxon period.

4.3.9 Both recorded buried soil horizons underlay filtration waste silts within Group 202.

**Waste Silt Group 202**

4.3.10 A sequence of filtration waste silts (157, 202, 217, 279, 289, 300 & 304) was recorded extending to a height of 3.0m OD (Section 46, 56, 61 & 66; Fig. 8b). Waste silt deposit 202 yielded a single sherd (2g) of Late Saxon Thetford-type ware pottery dating to the c. late 10th-11th centuries. A vesicular lumpy concretion (300g) was also recovered from deposit 157, probably representing spatter from brine boiling.

**Saltern Feature Group 2**

4.3.11 This comprised a group of salt-making features including: silt filtration units 164, 168, 170, 179, 187, 193, 203 (Section 43; Fig. 8b), 226 (Section 48; Fig. 8b), 231, 236 & 294; open hearths 175 (Section 35; Fig. 8a), 177 & 190; and clay lined water tank 223 (Section 48; Fig. 8b) that cut the waste silt deposits (Group 202) at a height of between 2.7m and 3.0m OD.

**Filtration Units**

4.3.12 Evidence for a total of thirteen clay-lined silt filtration units was revealed within this group and are detailed in Table 2 below. Four of these units (164, 170, 187, 203) were found to be of complete form. Elements for a further seven filtration units were also excavated and included: the filtration pit elements of units 168, 179, 193 & 231; and the water tank elements of units 226, 236, & 294. Two of these units were found to have been truncated by medieval enclosed hearths, with unit 78/81 truncated by hearth 75 and unit 131 truncated by hearth 205.
4.3.13 The filtration unit elements contained silt fills deposited after their disuse. The backfill (167) of filtration unit 164 (Section 34; Fig. 8a) yielded a single sherd (5g) of early medieval ware pottery dating to the c. 11th-13th centuries and 17g of baked clay including 14g of lining. The backfill (189) of filtration unit 187 yielded a charred cereal grain radiocarbon dated to 1021-1166 cal AD (95.4% SUERC-65064 GU39621), the transition between the Late Saxon and medieval periods. Furthermore, the fills of filtration units 170 & 231 contained 1g each of amorphous baked clay fragments.

<table>
<thead>
<tr>
<th>Unit</th>
<th>Maximum Dimensions (m)</th>
<th>Filtration Pit Dimensions (m)</th>
<th>Water Tank Dimensions (m)</th>
<th>Deposits</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Length Width Depth</td>
<td>Length Width Depth</td>
<td>Diameter Depth</td>
<td>Lining</td>
</tr>
<tr>
<td>78/81</td>
<td>- - -</td>
<td>- 1.86 0.2 1.0 0.37</td>
<td>80/106</td>
<td>82</td>
</tr>
<tr>
<td>131</td>
<td>- - -</td>
<td>- 0.2 - -</td>
<td>126</td>
<td>127, 128, 129</td>
</tr>
<tr>
<td>164</td>
<td>2.4 1.4 0.5</td>
<td>1.3 1.3 0.2 1.1 0.5</td>
<td>173</td>
<td>166</td>
</tr>
<tr>
<td>168</td>
<td>- - -</td>
<td>1.77 1.48 0.19 - -</td>
<td>-</td>
<td>- 172</td>
</tr>
<tr>
<td>170</td>
<td>2.7 1.4 0.32</td>
<td>1.5 1.4 0.2 1.2 0.32</td>
<td>171</td>
<td>-</td>
</tr>
<tr>
<td>179</td>
<td>- - -</td>
<td>1.23 1.14 0.06 - -</td>
<td>-</td>
<td>- 179</td>
</tr>
<tr>
<td>187</td>
<td>2.6 1.3 0.52</td>
<td>1.3 1.3 0.06 1.0 0.52</td>
<td>188</td>
<td>-</td>
</tr>
<tr>
<td>193</td>
<td>- - -</td>
<td>1.7 1.4 0.22 - -</td>
<td>-</td>
<td>- 194, 195, 196</td>
</tr>
<tr>
<td>203</td>
<td>2.56 1.3 0.52</td>
<td>1.3 1.2 0.1 0.8 0.52</td>
<td>222</td>
<td>220</td>
</tr>
<tr>
<td>226</td>
<td>- - -</td>
<td>- - - 0.4 0.28 - -</td>
<td>227</td>
<td>-</td>
</tr>
<tr>
<td>231</td>
<td>- - -</td>
<td>1.7 1.3 0.2 - -</td>
<td>235</td>
<td>232</td>
</tr>
<tr>
<td>236</td>
<td>- - -</td>
<td>- - - 0.75 0.29 - -</td>
<td>237</td>
<td>-</td>
</tr>
<tr>
<td>294</td>
<td>- - -</td>
<td>- - - 0.3 0.16 - -</td>
<td>295</td>
<td>-</td>
</tr>
</tbody>
</table>

Table 2: Group 2 filtration unit inventory

Water Tank

4.3.14 Pit 223 measured up to 2.1m in length by 0.85m wide by 0.3m deep. The cut was lined with clay (224) up to 0.05m thick. The backfill (225) of water tank 223 yielded purplish coloured clay lining through its contact with concentrated saline solution. The clay also contained organic material which has become incorporated naturally as it settled to the bottom of the pit. This supports the interpretation of this pit being a clay-lined tank for the storage of the concentrated brine produced in the adjacent filtration units.

Open Hearth

4.3.15 Hearth 175 measured up to 0.7m in diameter by 0.1m deep and contained a burnt fill (176) with charcoal fragments.

4.3.16 Hearth 177 measured up to 0.6m in diameter by 0.14m deep and contained burnt fill 178.

4.3.17 Hearth 190 measured up to 1.13m in diameter by 0.07m deep and contained two fills. The upper fill (192) contained a possible hand made ad hoc clay wedge or support (35g) for a brine boiling vessel.
Waste Silt Group 201

4.3.18 The uppermost series of waste silts (201, 212, 214, 278, 288, 297, 298 & 303) in the lower mound sequence overlay the features of Group 2 (Section 46, 56, 61 & 66; Fig. 8b). These silts may also be equated to: waste silts 101 in Trench 2; silt 15 encountered in Trench 5; silt 67 in Trench 9; and silt 155 observed in Test Pit 4 during the strip & map phase of the excavation. Waste silt 67 yielded nine sherds (29g) & waste silt 101 yielded four sherds (8g) of Late Saxon Thetford-type ware pottery dating to the c. late 10th-11th centuries. Waste silt 67 also contained 517g of baked clay hearth debris including elements of lining and superstructure. The pottery from deposit 101 showed signs of burning and possible salt residue on its surface indicating vessels were being used in the salt making process. Freshwater mussel (129g), common mussel (129g) and cockle shells (5g) were also recovered from deposit 67, displaying evidence for human consumption.

4.3.19 These deposits were overlain by the upper mound sequence consisting predominantly of the burnt hearth waste deposits of Group 200 (see below) or the modern truncation level at a height of approximately 3.2m OD.

Hearth waste deposits

4.3.20 Thin layers of burnt deposits (156, 215, 251 & 299) were also observed within the lower mound sequence, probably representing tips of waste from the open hearths, within the thicker layers of filtration waste silts. Deposit 156 yielded 64g of slag and deposit 251 (Fig. 4) contained 11g of unidentifiable baked clay fragments with 5g of slag.

4.4 Period 2: Medieval (c.AD1066 – 1250)

Summary (Fig. 6)

4.4.1 This comprised a group of enclosed hearths for the brine boiling associated with salt-making. These hearths, which were encountered within the upper saltern mound deposit sequence, predominantly comprised burnt hearth waste containing large amounts of baked clay and slag. The hearths were all truncated, being situated at the top of the saltern mound with surviving elements including in-situ hearth bases, superstructure and flues.

Hearth waste Group 200

4.4.2 The upper saltern mound deposit sequence comprised a series of predominantly hearth waste tips of burnt material with frequent baked clay debris from broken up hearths. These deposits were recorded up to approximately 0.8m thick. These consisted of reddish brown clays and silts forming a discrete band of burnt material when exposed in plan and section. These deposits also contained frequent slag formed from heated fuel ash within the enclosed hearths combining with the clay lining and light weight vesicular concretions probably formed by spatter from brine boiling solutions. The deposits tipped down to the east and south, capping the dome of the saltern mound, from the upper modern truncation level at a height of approximately 3.2m OD. Within this sequence, thin probable filtration waste silt deposits were also recorded.

4.4.3 During the evaluation and strip & map phase, Trench 2 exposed a series of waste deposits: 33, 34, 35, 97, 98, 99, 100, 110, 111, 124, 125, 139, 151 & 153 (Section 27; Fig. 8a). Burnt deposits 91-94 were also revealed in Test Pit 3 (Section16; Fig. 8a) and Trench 7. Sherds of early medieval ware & Grimston coarseware pottery dating to the c.12th-14th centuries were recovered from deposits 33 (36g), 35 (21g), 94 (121g), 124 (200g) & 153 (3g). These pottery sherds showed signs of overfiring/burning and salt
residues indicating these vessels were used in the salt making process. Late Saxon Thetford-type ware pottery dating to the c. late 10th-11th recovered from deposits 94 (172g) & 99 (20g) is likely to be residual. A small amount of unidentified fish and small mammal bone was also recovered from these deposits.

4.4.4 The second excavation phase also exposed deposits within Group 200 (Section 45; Fig. 8a; Plates 4 & 5) and comprised burnt tips (200, 206, 207, 209, 211, 213, 216 & 287) with lenses of waste silt (208 & 210). Three sherds (17g) of burnt Late Saxon Thetford-type pottery were recovered. The Thetford-type pottery may indicate disturbance/reworking of the earlier Late Saxon saltern mound deposits. This is further evidenced by a charred unidentified root/tuber from deposit 200 radiocarbon dated to 768-905 cal AD (81.1% SUERC- 65062 GU39619).

4.4.5 Finds recovered from these deposits also included baked clay hearth lining and superstructure as well as many unidentifiable fragments recovered from deposits 35 (95g), 94 (503g), 98 (459g), 99 (71g), 110 (2g), 111 (22g) & 200 (113g). A single soft fired brick (664g) was recovered from deposit 94, possibly representing an example of a support for vessels on the enclosed hearths.

4.4.6 Slag, in the form of pale cream to rusty brown vesicular lumps or dense plate-like fragments, was recovered from deposits 33 (62g), 34 (1057g), 35 (368g), 94 (10034g), 98 (20g), 110 (46g), 111 (268g), 124 (2137g) & 200 (547g).

4.4.7 Freshwater mussel (13g), common mussel (13g) and cockle shells (591g) were recovered from deposit 94. Freshwater mussel (5g) and common mussel (5g) were also recovered from deposit 200.

4.4.8 Furthermore, a small quantity of unidentifiable faunal bone fragments was recovered. This included: a single unidentifiable fragment from deposit 33; two fragments of an unidentified medium sized mammal from deposit 94; three fragments of an unidentified fish from deposit 94; and a single unidentifiable fragment of a small mammal from deposit 124.

Saltern Feature Group 3

Enclosed hearths

4.4.9 Within the upper saltern mound deposit sequence and immediately below the modern truncation level lay the remains of four enclosed hearths (Fig. 6). Hearth 205 lay towards the southern end of the saltern mound at a level of approximately 2.85m OD with the remains of hearth 11 a short distance to the east. Hearth 75 lay in the central part of the saltern mound and comprised of a short linear trench possibly representing a flue at a height of 3.5m OD. Similarly, a probable flue (42) of a truncated hearth was also revealed on the northeastern side of the saltern at a height of approximately 3.2m OD.

Hearth 205 (Section 21, 36; Fig. 8a)

4.4.10 Hearth 205 comprised of a sub-circular feature, up to 1.6m in diameter by 0.32m deep, with elements of the superstructure (107) and the hearth base (115) surviving in situ (Fig. 7; Plate 6). A circular pit (205) cut waste tip layers 124 & 125 and heavily truncated Period 1 silt filtration unit 131. The pit was filled by a mass of red clay (115), from repeated heating, forming the hearth base. Two sub-circular areas of vitrified green clay (116 & 162; Plate 7) were observed on the inner wall (3136g was recovered). These were formed due to a chemical reaction between the salt, clay lining and the fuel. The remains of a superstructure consisting of salt encrusted clay (107) extended up the profile of the central part of the hearth from the clay base and between
the two vitrified areas on the internal hearth wall. A further element of this superstructure also extended around one of the vitrified areas.

4.4.11 Waste backfill deposits 112, 114, 117, 118, 119, 120, 121, 122, 123, 132, 149, 150 & 160 were excavated within the hearth structure. Fragments of hearth lining (24g) were recovered from backfill 132. One lump of slag (12g) was recovered from fill 118 and three lumps of slag (28g) were recovered from fill 132. In addition, a small quantity of freshwater mussel (1g), common mussel (1g) and cockle shells (1g) were recovered from fill 132.

4.4.12 Charcoal from deposit 118 was radiocarbon dated to >50000 BP (SUERC- 65065 GU39622), a result indistinguishable from background samples, representing a failed result.

Hearth 11

4.4.13 Hearth 11 comprised a sub-circular pit up to 1.1m in diameter by 0.1m deep. This pit was filled by fired red clay (12), of which 79g were recovered, forming the hearth base. Two areas of vitrified green clay (229 & 230) were observed similar to that within hearth 205.

Hearth 42

4.4.14 Hearth flue 42 comprised a linear cut, 3.9m long, 0.8m wide by 0.2m deep, that contained three fills. Fill 39, at the eastern end, comprised firm red clay possibly representing the remains of a hearth floor with overlying backfills 38 & 41 containing two sherds (22g) of early medieval ware pottery dating to the c.11th-13th centuries. A total of 321g of amorphous baked clay hearth debris and sixty lumps of slag (1226g) was also recovered.

Hearth 75

4.4.15 Hearth flue 75 comprised a linear cut, 4.5m long, 1.2m wide by 0.16m deep, that contained a reddish brown clay fill (76). This hearth, which produced no finds, truncated Period 1 filtration unit 78/81.

4.5 Period 3: Post-medieval/modern (c.AD1500 – present)

Summary (Fig. 6)

4.5.1 Activity dated to this period comprised recent marsh deposits in the eastern part of the site, and modern truncation of the saltern from foundation trenches, pits and services associated with the pre-existing pig farm buildings on the site. Layers of recent made ground were also encountered overlying the site.

Recent marsh deposits, Groups 198 & 199 (Section 47; Fig. 8b)

4.5.2 Layers of natural clayey silt and silty clay (29, 30, 31, 32, 73, 85, 86, 88, 89, 102, 105, 198 & 199) were encountered in the eastern part of the site and were observed to overlie the eastern extent of the Period 2 upper, mostly burnt, saltern mound deposits (Group 200). These mixed silts and clays did not display the same laminated and layered characteristics of the filtration waste silt groups. The lower horizon of these deposits was also recorded to directly overlie marine deposit 280 (Group 240) in augur Section 63 (Fig. 8c) at a height of 1.5m OD. This deposit sequence observed across the eastern part of the site may be split into two parts:

- The lower deposit (Group 199), up to 1m thick, comprised of blueish grey clayey silt or brown clayey silt with blue grey mottling up to a height of approximately 2m OD. This deposit was recorded as deposit 32 in Trench 8, deposit 73 in Trench 6,
deposit 86 in Test Pit 1, deposit 89 in Test Pit 2, deposit 105 in Trench 2 and deposit 199 during the second excavation phase; and

- The upper deposit (Group 198), up to 0.7m thick, comprising mid brown clayey silt or grey silty clay up to a height of approximately 3m OD. This deposit was recorded as deposits 29, 30 & 31 in Trench 8, deposit 85 in Test Pit 1, deposit 88 in Test Pit 2, deposits 102 & 105 in Trench 2 and deposit 198 during the second excavation phase.

4.5.3 Some amorphous baked clay fragments were recovered from deposits 102 (18g), 105 (1g) & 199 (5g). Deposit 88 contained a lump of slag (87g).

**Channel 18/21** (Section 6; Fig. 8a)

4.5.4 A channel, encountered at a height of 2.5m OD, was recorded immediately to the south of the saltern mound in Trenches 6 (18) & 7 (21) and contained a sequence of silting deposits (fill 19 in channel 18 & fills 20, 22-26 in channel 21). Channel 21 was observed to cut deposit 73 (Group 199). Deposit 22 contained five lumps of slag (110g) and a small pantile fragment (33g) of a type in use from the 17th century but probably of a more recent date. This channel is not indicated on any of the historic maps of the site and the pantile fragment was recovered from the uppermost fill. Given the channel's proximity to the saltern it remains a possibility that this feature may be of greater antiquity with only its final silting phase being in the post-medieval, and its use as being an open water course in the medieval period. If so, such a channel would be of great importance in facilitating transport of goods to and from the saltern.

**Modern truncation**

4.5.5 Foundation trenches (59) for the pre-existing modern structures associated with the site's previous use as a pig farm were encountered across the saltern mound during the evaluation and first phase strip & map excavation. These trenches were filled with concrete or rubble backfill (60).

4.5.6 Further modern truncation across the site included: pre-existing service trenches, including trenches 7 & 8 (Trench 4); and pits including 9 (Trench 3) & 61 (Trench 9). The fill (64) of pit 61 contained five sherds (25g) of modern pottery types dating to the c. late 18th-19th centuries. The fill (10) of pit 9 contained five fragments (765g) of modern ceramic building material (CBM) and two clay pipe fragments (4g).

**Made Ground Group 197**

4.5.7 A build up of recent made ground deposits was also encountered across the site, representing levelling events associated with the site's development and use in the modern period. These were recorded as: layer 13 in Trench 5, layer 28 in Trench 8, layer 71 in Trench 6, layers 83 & 84 in Test Pit 1, layer 87 in Test Pit 2, layer 90 in Test Pit 3 and layers 234 & 286 during the excavation. Layer 87 contained four sherds (8g) and deposit 90 contained one sherd (1g) of modern pottery dating to the c.18th-19th centuries.
5 **FACTUAL DATA AND ASSESSMENT OF ARCHAEOLOGICAL POTENTIAL**

5.1 **Stratigraphic and Structural Data**

*The Excavation Record*

5.1.1 The written and drawn elements of the contextual record form the main components of the excavation data and are sufficient to form the basis of the site narrative. This record has good potential to further understand salt-making in the Late Saxon and medieval periods.

*Condition of the Primary Excavation Sources and Documents*

5.1.2 The records are complete and have been checked for internal accuracy. Written and drawn records have been completed on archival quality paper and are indexed. All paper archives have been digitised into the individual site Access database. Site drawings have been digitised in AutoCAD.

<table>
<thead>
<tr>
<th>Type</th>
<th>Excavation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Context Register</td>
<td>11</td>
</tr>
<tr>
<td>Context numbers</td>
<td>305</td>
</tr>
<tr>
<td>Context records</td>
<td>229 (76 void records)</td>
</tr>
<tr>
<td>Trench Record sheets</td>
<td>9</td>
</tr>
<tr>
<td>Test Pit Record sheets</td>
<td>4</td>
</tr>
<tr>
<td>Plan Registers</td>
<td>2</td>
</tr>
<tr>
<td>Plans at 1:10</td>
<td>5</td>
</tr>
<tr>
<td>Plans at 1:20</td>
<td>32</td>
</tr>
<tr>
<td>Plans at 1:50</td>
<td>3</td>
</tr>
<tr>
<td>Sections register sheets</td>
<td>2</td>
</tr>
<tr>
<td>Sections at 1:10</td>
<td>15</td>
</tr>
<tr>
<td>Sections at 1:20</td>
<td>43</td>
</tr>
<tr>
<td>Sections at 1:50</td>
<td>2</td>
</tr>
<tr>
<td>Sample Register sheets</td>
<td>23</td>
</tr>
<tr>
<td>Photo Register sheets</td>
<td>12</td>
</tr>
<tr>
<td>Black and White Films</td>
<td>4</td>
</tr>
<tr>
<td>Digital photographs</td>
<td>166 shots</td>
</tr>
<tr>
<td>Small finds register sheets</td>
<td>1</td>
</tr>
</tbody>
</table>

*Table 3: Quantity of written and drawn records*

5.1.3 All primary records are retained at the offices of OA East, Bar Hill. The site code ENF137496 is allocated and all paper and digital records, finds and environmental remains are stored under this site code.

5.1.4 The site data is of sufficient quality to address all of the project’s Research Objectives and form the basis of further analysis and targeted publication of the key features, finds and environmental assemblages.

*Finds and Environmental Quantification*

5.1.5 All finds have been washed, quantified and bagged. The catalogue of all finds has been entered onto an MS Access database. Total quantities for each material type are listed below.
Environmental bulk samples were collected from a representative cross section of feature types and deposits. Bulk samples (40 litres each) were taken to analyse the preservation of micro- and macro-botanical remains as well as for finds retrieval. Soil monoliths were also taken from natural deposits underlying the mound and through the deposit sequence of the saltern mound itself to sample for pollen and diatom remains. In addition sub-samples (1 litre each) were taken by context in conjunction with the soil monolith tins.

<table>
<thead>
<tr>
<th>Category</th>
<th>Weight (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pottery</td>
<td>0.69</td>
</tr>
<tr>
<td>Ceramic building material (CBM)</td>
<td>0.8</td>
</tr>
<tr>
<td>Clay pipes</td>
<td>0.01</td>
</tr>
<tr>
<td>Burnt Clay</td>
<td>7.73</td>
</tr>
<tr>
<td>Slag</td>
<td>14.96</td>
</tr>
<tr>
<td>Animal bone</td>
<td>0.01</td>
</tr>
<tr>
<td>Shell</td>
<td>0.76</td>
</tr>
</tbody>
</table>

Table 4: Finds quantification

<table>
<thead>
<tr>
<th>Sample type</th>
<th>Salt Making Hearth</th>
<th>Filtration Unit</th>
<th>Water Tank</th>
<th>Saltern Mound</th>
<th>Natural Features</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flotation</td>
<td>20</td>
<td>22</td>
<td>1</td>
<td>19</td>
<td>6</td>
<td>68</td>
</tr>
<tr>
<td>Soil monolith</td>
<td></td>
<td></td>
<td></td>
<td>5</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td>Bulk sub sample</td>
<td></td>
<td></td>
<td></td>
<td>17</td>
<td>17</td>
<td>34</td>
</tr>
</tbody>
</table>

Table 5: Quantification of samples by feature type

Range and Variety

Features on the site included: medieval salt-making hearths, silt filtration units, a clay lined water tank and associated hearth waste and silt filtration waste deposits forming the saltern mound.

Condition

The survival of the archaeological features within the saltern mound was on the whole good although there was some truncation of the upper mound deposits and features by the pre-existing farm building footings.

5.2 Artefact Summaries

Pottery (Appendix B.1)

Summary

Seventy-eight sherds of pottery weighing 689g were collected from fifteen contexts during the excavation. The assemblage consists mostly of pottery dating to the 11th–13th centuries from twelve contexts within the saltern mound with 18th/19th century dated pottery recovered from the remaining three contexts from a recent pit and made ground.

The earlier of the two groups comprised typical local wares of the period. The presence of burning and presumed salt deposits on a number of the sherds suggests that, in this case, they did have an industrial role. Whilst they may have been used for storage (and
possibly transportation) of the finished product, the presence of burning suggests they were sometimes exposed to very high temperatures and may have been used in the salt-making process. Forms and fabrics present in the assemblage suggest that the site had probably ceased activity by the mid 13th century.

Statement of Potential

5.2.3 The identifiable vessel forms comprise the usual locally produced jar and bowl types. Significantly, the presence of burning and presumed salt deposits on a number of the sherds suggests that, in this case, they did have an industrial role and may have been used in the salt-making process. This assemblage, although small, has the potential for further understanding the nature of the Late Saxon to medieval salt-making on site.

Ceramic Building Material (Appendix B.2)

Summary

5.2.4 Six fragments (798g) of Ceramic Building Material (CBM) were recovered from two contexts. Fill 10 of pit 9 contained five fragments of three handmade bricks in three different fabrics dating to the post-medieval period. Fill 22 of natural water channel 21 contained one pantile fragment also dating to the post-medieval period.

Statement of Potential

5.2.5 Due to the CBM not being closely datable, and its recovery from the recent pit and made ground, there is little potential in this assemblage for further understanding of the site.

Clay Pipes (Appendix B.3)

Summary

5.2.6 Two fragments of clay tobacco pipe were recovered from fill 10 of pit 9 with a further three fragments recovered from recent made ground 87. All fragments date to the 18th/19th-century.

Statement of Potential

5.2.7 There is no further potential for this assemblage other than aiding the dating of the modern truncation across the site.

Baked Clay (Appendix B.4)

Summary

5.2.8 The baked clay assemblage comprises 402 fragments weighing 7,726g recovered from 30 contexts. The assemblage comprises largely amorphous pieces, few with any obvious form. The material was found in three fabrics, all most likely formed utilising the local Upper Jurassic clays. A soft fine silty clay with no visible inclusions was used to form a brick-like object from deposit 94 in group 200, plate-like pieces which may be from hearth lining and for a possible hand-squeezed fragment which may be an ad hoc wedge or similar support found in open hearth 190. The second fabric is formed of the same fine clay but with the addition of fine organic material, perhaps chopped grass that may represent the above ground superstructure of the ovens. A third fabric from water tank 223 with irregular organic inclusions has a distinctive purplish colour derived from contact with concentrated saline solution.

Statement of Potential

5.2.9 Despite numerous medieval saltern sites having been identified few have been fully excavated or produced significant artefactual evidence. Possible pedestals were
recovered from the 12th to 13th century saltern site at former Queen Mary's nursing home, Kings Lynn (Cope-Faulkner 2014). Soft, silt bricks found in situ within the hearth at Wainfleet St Mary have led to the suggestion that they functioned as ad hoc stands for the lead brine boiling pans. Hand-made bricks were also recovered from the salt-workings excavated at Walpole St Peter, Norfolk (Clarke 2009). It is possible that similar to briquetage in prehistoric and Roman sites, the silty local clay is being used ad hoc for hearth lining and pan supports whilst the organic tempered fabrics represent items made in advance. This assemblage provides a further excavated example of baked-clay types associated with a medieval saltern. Comparison of the assemblage recovered from Marsh Lane with that recovered from other salt-making sites will further aid in the interpretation of salt-making processes being conducted on the site.

**Slag** (Appendix B.5)

**Summary**

5.2.10 A total of 374 pieces of slag weighing 14.956kg were collected from thirteen contexts, mostly those forming the saltern mound and associated hearths. The assemblage is composed of a mix of slag all formed during a high heat process.

**Statement of Potential**

5.2.11 Similar slags have been recovered from medieval saltern mounds excavated at Bicker Haven, Lincolnshire, Hamburg Way, North Lynn and Walpole St Peter, Norfolk. It would be of interest to research the chemical composition of the salt slags and glazes. This might be achieved using a microprobe on samples of different form to analysis similarities and differences and perhaps define the processes which formed them. This work could possibly be undertaken by Nottingham University or UCL.

5.3 **Environmental Summaries**

**Faunal Remains** (Appendix C.1)

**Summary**

5.3.1 An assemblage of seven fragments of moderately preserved animal bone (6g) was recovered from the excavation. The bulk environmental samples recovered abundant fragments of burnt bone from Period 1 filtration units 164 & 231 in Feature Group 2. The only fish bone recovered was a couple of fragments from the environmental sample residue of Period 2 hearth waste deposit 200.

**Statement of Potential**

5.3.2 No complete elements were present and the lack of remains identifiable to species do not allow for any detailed analysis.

**Shell Remains** (Appendix C.2)

**Summary**

5.3.3 A total of 0.760kg of shell including common mussel, freshwater mussel and cockle shell was recovered from 5 contexts within the saltern.

**Statement of Potential**

5.3.4 This assemblage suggests shellfish were occasionally being consumed by labourers during the salt-making process, but is too small to add meaningful data to the interpretation of the site.
Environmental Remains (Appendix C.3)

Summary

5.3.5 Sixty-seven bulk samples were from deposits associated with Late Saxon and medieval salt-making. Forty-two additional samples were taken for pollen, foraminifera and diatom analysis (see sections 5.3.6 & 5.3.7 below). Despite extensive sampling of the deposits, very few plant remains have been recovered. Similar results were obtained from a contemporary site at Queen Mary’s Nurses Home which had better recovery of charcoal but lacked the salt-marsh indicators. Very little charcoal has been recovered from any of the samples and it can only be assumed that it hasn’t survived or that wood was not the fuel used. The few fragments of charred heather may possibly represent its use as fuel but it is most likely that dried peat was used to fire the hearths. Burnt peat can be difficult to identify as the organic components are often reduced to ash but any seeds, stems and molluscs present can survive in significant quantities. The lack of these remains from the black layers at Marsh Lane suggest that the burnt peat deposits have decayed to leave only a carbon-rich, black-stained soil. Preservation of the seeds of both salt marsh and terrestrial plants is predominantly by waterlogging which has occurred in the marine silts found beneath the saltern mound, occasional pit fills within Period 1 saltern feature Group 1 and a hearth waste deposit (251) in the lower mound deposit sequence.

Statement of Potential

5.3.6 The plant remains recovered from bulk samples taken have limited further archaeobotanical potential due to low density and diversity. The recovered plant remains have been described to adequately illustrate the coastal saltmarsh environment in which the saltern lay. Very little charcoal has been recovered from the samples especially with regard to the medieval enclosed hearth remains of Group 3. Charcoal is required from these remains for the further suite of radiocarbon dates required to refine the chronology and date range of the salt-making activities. Further processing of selected bulk samples will be undertaken to recover further charcoal/macrofossil remains for this purpose.

Pollen Remains (Appendix C.4)

Summary

5.3.7 The study focused on the palynology of sediments obtained from archaeological section 45 through the saltern mound deposits and section 58 through the underlying marine deposits (Fig. 8). Surprisingly the pollen count from section 45 yielded an apparently Mid to Late- Bronze Age signal, showing little sign of saltmarsh or marine influence, and seem to come from a freshwater reedswamp environment. The sample from the underlying marine deposits gave the expected saltmarsh dominated pollen signal. The post-clearance signal could be Iron Age or later, and this implies that the mudflat, saltmarsh and tidal creek environment might belong to the Terrington Beds, rather than the earlier Barroway Drove Beds indicated from carbon dating of a charcoal sample recovered from this deposit.

Statement of Potential

5.3.8 The upper pollen sub-sample from section 45 (context 206) proved to be essentially barren containing only reworked and degraded grains. Pollen preservation was rather variable in the remaining sub-samples from this section and no sub-sample pollen count exceeded the statistically desirable total. As a consequence caution must be employed during the interpretation of these results. The results from section 58 confirm
the expected coastal saltmarsh environment and as such further pollen analysis would not add to the interpretation of the site.

**Diatom Remains** (Appendix C.5)

*Summary*

5.3.9 The study focused on the diatom assemblage obtained from section 58 (Fig. 7) of the underlying marine deposits and sampled with monolith tins for microfossil analysis. The diatom assemblages were found to be dominated by fully marine and brackish diatoms indicative of a coastal mudflat/saltmarsh environment. The assemblage obtained from section 45 proved to be devoid of diatoms.

*Statement of Potential*

5.3.10 The diatom data concurs with the findings of the pollen analysis concluding the deposits beneath the saltern were indicative of a saltmarsh environment therefore further analysis of diatoms would not add to the understanding of the site.

**Radiocarbon dating**

*Summary*

5.3.11 Six samples of organic remains were selected from the environmental bulk samples of deposits from: the underlying saltmarsh deposits pre-dating the saltern; and features /waste tips within the saltern mound associated with the Late Saxon and medieval salt-making activities (Table 6).

<table>
<thead>
<tr>
<th>Sample No.</th>
<th>Sample type</th>
<th>Context</th>
<th>Cut</th>
<th>Group</th>
<th>Period</th>
<th>Feature type</th>
<th>Date</th>
<th>Certificate</th>
</tr>
</thead>
<tbody>
<tr>
<td>13</td>
<td>Charcoal</td>
<td>118</td>
<td>205</td>
<td>3</td>
<td>2</td>
<td>Hearth</td>
<td>&gt;50000BP</td>
<td>SUERC-65065 GU39622</td>
</tr>
<tr>
<td></td>
<td>Charred grain</td>
<td>189</td>
<td>187</td>
<td>2</td>
<td>1</td>
<td>Filtration unit</td>
<td>1021-1166 cal AD</td>
<td>95.4% SUERC-65064 GU39621</td>
</tr>
<tr>
<td>46</td>
<td>Charred root/</td>
<td>200</td>
<td>-</td>
<td>200</td>
<td>2</td>
<td>Heath waste</td>
<td>768-905 cal AD</td>
<td>81.1% SUERC-65062 GU39619</td>
</tr>
<tr>
<td></td>
<td>tuber</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>53</td>
<td>Charcoal</td>
<td>218</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>Buried soil</td>
<td>943-1044 cal AD</td>
<td>87.2% SUERC-65057 GU39617</td>
</tr>
<tr>
<td>77</td>
<td>Charcoal</td>
<td>266</td>
<td>253</td>
<td>1</td>
<td>1</td>
<td>Filtration unit</td>
<td>758-887 cal AD</td>
<td>67.5% SUERC-65063 GU39620</td>
</tr>
<tr>
<td>91</td>
<td>Charcoal</td>
<td>246</td>
<td>245</td>
<td>240</td>
<td>-</td>
<td>Saltmarsh deposit</td>
<td>1883-1691 cal BC</td>
<td>95.4% SUERC-65061 GU39618</td>
</tr>
</tbody>
</table>

*Table 6: Radiocarbon dating results*
Statement of Potential

5.3.12 The samples taken from the site have proved fundamental, in conjunction with the pottery recovered and stratigraphical relationships, in providing the dating framework needed for the reconstruction of the chronology and date range of the salt-making activities for this site. A further suite of samples would further test and refine the chronology of events set out in this assessment report.

6 Updated Research Aims and Objectives

6.1 Introduction

6.1.1 Firstly this section provides a brief outline discussion of the salt-making remains encountered on the site (Section 6.2). The research aims and objectives defined in the Written Schemes of Investigation governing the initial evaluation and strip & map excavation and subsequent further excavations are then discussed chronologically in Sections 6.3 and 6.4. Following completion of the fieldwork and based on the results of the salt-making evidence revealed, an additional suite of research aims has been drawn up in Section 6.5 to relate the excavated salt-making remains to the salt-making industry of King's Lynn.

6.2 Discussion

Saltmarsh

6.2.1 The environmental evidence from the underlying natural deposits (Group 240) beneath the saltmarsh has demonstrated the saltmarsh environment in which salt-making activity commenced at this site. The pollen remains indicate these to be Terrington Beds lain down in the Iron Age while the radiocarbon date indicates these to be Barroway Drove Beds lain down in the Early Bronze Age. It is therefore presumed that the tidal creeks also recorded cutting these deposits have continually reworked, redeposited and mixed the silts from both these periods in this high energy coastal environment. The basal deposit of the mound (239) formed a definite rise in the topography of the site and may have been an initial dump of waste silt, or a relatively higher island of banked natural sediment, upon which the salt-workings commenced. Indeed, the pollen evidence from this deposit showed little sign of saltmarsh or marine influence but was lain down in a freshwater reedswamp environment further indicating an initial imported dump of freshwater-lain silt from nearby to raise the ground level for the salt-workings. The buried soil horizon 218/219 that overlay the basal deposit was radiocarbon dated to 943-1044 cal AD and the Late Saxon period.

Late Saxon Salt-making

6.2.2 The earliest salt-making features encountered were the remains of six silt filtration units and a single hearth (Group 1). The ratio of evidence for silt filtration activity opposed to brine boiling was also reflected in the lower salt mound deposits with its high proportion of filtration waste silts (Groups 201 & 202) as opposed to the thin tips of hearth waste. The hearth evidence (277) comprised a thin but concentrated burnt mass of ground indicative of ad hoc open hearths. Interestingly, not all the filtration units were of complete form indicating either deliberate destruction of these features and possibly the re-use of the clay linings or accidental destruction or weathering of the saltmarsh mound deposits once these features were disused. Unit 258 contained remains of turves within the filtration pit. This group of salt-making features were radiocarbon dated to 758-887 cal AD in the Late Saxon period.
6.2.3 Capping the overlying waste silt (250) of this group was a buried soil horizon that could possibly represent a period of disuse for the saltern. It is interesting to note the similar buried soil horizon described above in section 6.2.2 gave a radiocarbon date of 943-1044 cal AD. However, this layer was recorded as directly overlying the basal silts of 239 thought to be of natural freshwater origin and not marine silt filtration waste. It is still possible these soil horizons may be equated as they both underlay the filtration waste silts of Group 202. The single sherd of Thetford-type pottery recovered from the silts of Group 202 also reinforced this (earlier than expected) Late Saxon date range.

6.2.4 These waste filtration silts underlay a second group (Group 2) of thirteen silt filtration units, a water tank for brine storage and three hearths higher up within the saltern mound. The filtration units were identical in form to those of Group 1 and similarly of either complete or incomplete form. The hearth evidence also appeared to represent insubstantial short lived open hearths. This group was dated to 1021-1166 cal AD: the transition between the Late Saxon and early medieval periods. A single sherd of early medieval ware pottery with a date range of c.11th-13th centuries was recovered from filtration unit 164. The emphasis on silt filtration as opposed to brine boiling appears to have continued and is reflected in the thick deposits of overlying waste silts of Group 201 that contained only thin hearth waste horizons. Deposit 67 within this group of silts contained a quantity of mussel shells with evidence for human consumption. A quantity of Late Saxon Thetford-type ware pottery was recovered from these waste silts of Group 201. Some of the pottery sherds displayed evidence for burning with some also appearing to be coated with salt residue which indicates Thetford-type ware vessels were probably being used in the salt making process and may well have been employed for brine boiling over the open hearths. A possible example of a clay support for a vessel on this type of open hearth was recovered from hearth 190.

Medieval Salt-making

6.2.5 The upper deposits capping the saltern mound (Group 200) were found to be of a different composition. Whereas the earlier deposits were mostly composed of filtration waste silts, the later deposits were comprised of thick successive tips of burnt hearth waste containing frequent baked clay, salt slag residues and spent fuel waste from salt boiling hearths. These deposits also contained early medieval ware, Grimston coarseware and medieval coarseware. They probably represent an evolution in the scale and general process of salt production at this site during the medieval period. Deposit 94 within this group also contained a quantity of cockle shells indicative of shellfish consumption by the salt-makers.

6.2.6 This change in scale is emphasised by the appearance of substantial permanent enclosed hearth structures forming the third grouping of features (Group 3) encountered in the uppermost part of the saltern mound. Evidence for four of these enclosed hearths was found with the best preserved example (205; Fig 7) having surviving in situ elements including the base and internal hearth wall displaying evidence for a double chamber. Elements of the superstructure also survived including a central column of salt encrusted clay separating the two chambers. The single soft fired brick recovered from hearth waste Group 200 may be an example of a vessel or pan support on these type of hearths, similar to those found at Walpole St Peter, Norfolk (Clarke 2009). The mound may well have been raised to such a height at this period that permanent structures could now be constructed. However, it must be noted that baked clay including lining and superstructure fragments was recovered from the earlier saltern deposits, but in much smaller and sparser quantities. No evidence for salt-cotes sheltering these enclosed hearths was found. The date range of the pottery
recovered from these upper layers indicates that the site had probably ceased salt-making activity by the mid 13th century. This is a date consistent with the disuse in the late 13th century of the saltern excavated at the former Queen Mary's Nursing Home, King's Lynn (Cope-Faulkner 2014).

*Post-medieval/modern remains*

6.2.7 Natural deposits were still recorded being laid down after the cessation of salt-making at the site. A succession of deposits of Groups 198 & 199 were found to overlie the eastern part of the saltern mound and the underlying saltmarsh deposits. These took the form of masses of silt and clay presumably laid down in a marsh environment. Indeed, as well as the current sites name itself, historical maps consulted as part of the desk study for the site indicate this area to be marsh through the post-medieval and modern periods. The upper construction of the saltern mound appears to have been truncated to level the ground for the modern pig-farm building.

6.3 *Site Specific Research Objectives*

6.3.1 Based on the Desk-Based Assessment produced for the site (Adams 2014) a Written Scheme of Investigation was produced for the evaluation and strip & map excavation (Brudenell 2015a) that detailed the specific excavation and research aims of the investigation:

6.3.2 *Establish the extent, form and function of the structural remains previously revealed as a spread of 17th to 18th century rubble on top of the saltern mound during monitoring in 2014 (NHES Event no. ENF135847; Oxford Archaeology East Report 1755).*

The excavations have mapped the foundation trenches for the modern pig-farm building on the site. The extent of the truncation to the saltern has also been recorded including pits dating to the 18th-19th centuries. The layers of made ground encountered across the surface of the site were also dated to the 18th-19th centuries.

6.3.3 *Establish the form, extent, date and use history of the saltern mound. The growth and development of the medieval salt industry played a crucial role in early land reclamation in the Wash, transforming the landscape. The example at Marsh Lane is one of nearly 300 mapped saltern mounds of likely medieval origin around The Wash in Norfolk (Albone et al 2007). However, there have been few opportunities to fully expose and investigate these mounds. This project will aim to characterise the form, date and make-up of the mound, and investigate any features and structures associated with the salt making process (tanks, boiling hearths, gullies, and other auxiliary fixtures associated with the salt-making industry). At a broader level it will help to shape a better understanding of how the medieval coastline in this part of Norfolk was managed and exploited.*

The full sequence of deposits within the mound was excavated including the underlying natural saltmarsh deposits. Thetford-type ware pottery recovered from earlier saltern mound deposits and associated features, with radiocarbon dating results, indicate a Saxon origin to salt-making at this site. The features encountered indicated marine silt washing was being carried out in filtration units and resulting in the dumps of waste silt surrounding these features. The remains further indicated brine to have been boiled in pottery vessels over insubstantial open hearths. A possible period of disuse for the saltern was identified around the end of the Late Saxon period with the presence of a thin former land-surface/buried soil layer. The uppermost sequence of saltern deposits were composed mostly of hearth waste including slag and baked clay fragments. Surviving elements of more substantial clay-built enclosed hearths for brine boiling were also encountered. These deposits and features yielded medieval pottery to a date
no later than the middle of the 13th century. The ending of salt-making at this site is probably associated with the construction of the Old East Seabank and other coastal defences in the area during the medieval period.

6.3.4 Establish the presence or absence of features surrounding the saltern, and their relationship to the use of the mound.

There was an absence of features in the rest of the site surrounding the saltern mound. Immediately to the south of the saltern a possible man-made channel was encountered which contained a pantile fragment indicating a more recent post-medieval/modern to this feature than the saltern.

6.4 Revised Site Specific Research Objectives

6.4.1 A Revised Written Scheme of Investigation was produced for the further excavation of the saltern mound (Brudenell 2015b) following the first phase of work that revised the research aims to also include:

6.4.2 Establish the form and date of the palaeochannel or pond revealed beneath the later mound silts, and establish whether it was modified to control water movement.

The possible palaeochannel/pond was revealed to be a modern pit truncating the saltern.

6.4.3 Establish the character and extent of metalworking activity on the mound.

The slag encountered during the strip and map was found to be a particular type of salt-making slag associated with the brine boiling hearths. No evidence for metalworking activity was encountered on the site.

6.5 Regional Research Objectives

6.5.1 Following completion of the fieldwork the site specific research aims were revised and redefined to follow the aims identified in the Regional Research Agendas (Glazebrook 1997, Brown & Glazebrook 2000 & revised Medlycott 2011). In general terms the site will contribute to the over-arching research of the salt production industry associated with the adjacent medieval town of King's Lynn.

6.5.2 Gaps in Knowledge (Brown & Glazebrook 2000, 25; 27)

- 'From the Middle Anglo-Saxon period onwards there is evidence of both urban and rural craft production and industry. Is there a relationship between the two? To what extent was urban production city-serving and rural production largely conducted by itinerant craftsmen?'

Evidence for salt-making dating to the Late Saxon period has been encountered on the site. The groups of salt-making features and the extent of the resulting waste products indicate definite campaigns of salt production. This site's location can be compared to known Saxon settlement remains in the area and the dating of the sequence of salt-making activity encountered on the site can be compared to the medieval development of King's Lynn and the salt-making industry of the surrounding area (Fig. 2).

6.5.3 Industry (Medlycott 2011, 67)

- 'The Norfolk Coast and Broads NMP projects recorded large numbers of saltern mounds within The Wash and, to a lesser extent, around Breydon Water and the former Great Estuary (Albone et al. 2007). This has made a significant contribution to the study of this important medieval industry, and represents the first comprehensive identification and analysis of such sites within the county.
The recognition of evidence for the possible late Saxon origins of some of the saltern mounds provides further evidence for the early development of this form of salt-making (i.e sand washing).

The site is one of numerous salterns along this part of the Wash coastline plotted on the NMP map. The deposits yielded evidence for Saxon origins through the retrieval of burnt Thetford-type pottery in conjunction with a sequence of Saxon and medieval radiocarbon dates. This dating evidence has confirmed sand/silt washing for salt-making does appear to be a Saxon development in this area.

6.5.4 Economy (Brown & Glazebrook 2000, 31)

- 'The rich material culture of towns, often present in dense quantities, must continue to be assessed and the results analysed and synthesised in order to increase understanding of the economic foundations of towns. Research work must target: evidence for commercial and industrial activity; definition, specialisation, marketing and distribution of products; linkages between social and political development and economic activity; and communications between towns and with the hinterland.'

Salt-making is a recognised as an important industry associated with King's Lynn. The remains encountered display an evolution of specialised activities being undertaken here with regard to the salt-making process. A possible hiatus of activity was also identified within the life of the saltern. A possible evolution in the form of brine boiling hearths may be explored between the insubstantial hearth remains recovered associated with the Saxon period and the more permanent clay built structures found from the medieval period. The latter may be a consequence of the continual raising of the ground level through the dumping of waste silts which has meant the site became dry enough for the construction of more permanent hearths less at risk from flooding. This may represent a refinement in the salt-making process with respect to the grade or quality of the salt being produced which may further indicate the end use of the product for domestic or commercial use.

6.5.5 Economy (Brown & Glazebrook 2000, p31)

- 'Industrial output, either from craft industries or early modern large-scale processes, will affect the urban environment. The impact of the economy can therefore be explored by: examination of evidence for industrial zoning; study of the relationship of industrial and commercial sites to distribution routes; and correlation of evidence for status with product specialisation and output.'

- 'Within urban culture, as in the rural hinterland, the church with its organisation, its role in society and its economic power deserves special attention. The following areas of research need to be amplified:... the economic influence of the church.'

Many examples of salterns in the vicinity of King's Lynn have been mapped extending up the coastal margins of The Wash. The relative importance/longevity/status etc of this saltern compared to the known chronology of this wider salt-producing landscape can be explored. Ecclesiastical houses were involved in salt production. The Bishop of Norwich is known to have owned salterns in Gaywood, King's Lynn in the early medieval period. It may be possible to identify the ownership of the excavated saltern from records in the Norfolk Records Office or with records held in other archives.
6.5.6 Further considerations (Medlycott 2011, p69)

- 'The Coastal Surveys have provided information on medieval saltern sites, as at Stow Maries, Essex.'

This site provides an example of the impact on the coastal environment by the salt-making industry in this part of The Wash. The excavated saltern remains from Marsh Lane, King's Lynn may ultimately be compared to salterns from other medieval salt-producing coastal regions such as those of the Lincolnshire or Essex coasts.

7 METHODS STATEMENTS FOR ANALYSIS

7.1 Stratigraphic Analysis

7.1.1 Contexts, finds and environmental data will be analysed using an MS Access database. The specialist information, especially pottery and radiocarbon dating results, will be integrated to aid dating and complete more detailed phasing of the site. A full stratigraphic narrative will be produced and integrated with the results of the specialist analysis to form the basis of the archive report (see below). The archive report will include a site matrix and figure illustrating the deposit build up of saltern deposits through the Late Saxon and medieval periods and its later truncation.

7.2 Illustration

7.2.1 The existing CAD plans and sections will be updated with any amended phasing and additional sections digitised if appropriate. Report/publication figures will be generated using Adobe Illustrator.

Archive report figures

7.2.2 Additional drawings will be compiled for the archive report to include: inclusion of selected historical maps and aerial photographs relating to the saltern from the Desk-Based Assessment for the site (Adams 2014) or gained through the further research; contour maps of each of the three phases of excavation; the inclusion of any relevant examples similar salt-making remains from other archaeological excavations as appropriate; and the inclusion of illustrations of the finds-types associated with salt-making at the site (see below).

Finds illustration

7.2.3 The finds-types requiring illustration include the Late Saxon Thetford-type ware and early medieval ware pottery recovered displayed evidence for burning and coating with salt-making residues. Selected examples of these are therefore recommended for illustration. Finds recommended for photography will include selected examples of the burnt Late Saxon and medieval pottery, baked clay and salt-making slag. This will include the brick-like object from medieval hearth waste deposit 94 in Group 200; and the possible hand-squeezed wedge or support fragment found in open hearth 190.

7.3 Documentary Research

7.3.1 Primary and published sources will be consulted where appropriate using the Norfolk Historic Environment Record, libraries and other archives and resources. A search will also be made of published and grey literature reports on comparable sites locally and nationally in order to place the site within its landscape and archaeological context. This evidence will be collated and where relevant reproduced in the archive report of this site and any subsequent publication.
Outline Bibliography

7.3.2 The following publications and grey literature reports are recommended for consultation and inclusion within the archive report bibliography.


Brown, P. (ed) 1984 Domesday Book: Norfolk, Phillimore, Chichester


Healey, R.H. 1977 Medieval Saltmaking. South Lincolnshire Archaeol, 1, 4-5.


Miller, E. 1951 The Abbey and Bishopric of Ely. Cambridge.


Owen, A.E.B 1975 Medieval salting and the coastline in Cambridgeshire and North West Norfolk. In Salt. The study of an ancient industry. Colchester Archaeological Group

Percival, S. 2001 ‘Briquetage from Middleton Saltern’, 'Briquetage from Nordelph and Downham West' and 'Fenland Survey Reassessment: The Briquetage’ in Lane, T. and Morris, E., A thousand Years of Salt-making in the Fenland, Lincolnshire Archaeology and Heritage Reports Series No. 4.

Rudkin, E.H. 1975 Medieval Salt Making in Lincolnshire


Aerial photography

7.3.3 A search of the NHER aerial photography record has been made as part of this phase of work with the findings detailed in section 1.3.8. No further aerial photography evidence is required.

Cartographic evidence

7.3.4 A historical map search was undertaken as part of the Desk-Based Assessment for the site by Mott MacDonald for Lovell Partnerships Ltd (Adams 2014) and summarised in sections 1.3.6 & 1.3.7. A search of further records that will be consulted will include Andrew Bryant’s map of 1876 and the Gaywood Tithe map of 1838.

7.4 Artefactual Analysis

7.4.1 All the artefacts and environmental remains have been assessed/analysed with recommendations for any additional work given in the individual specialist reports (Appendices B1-5). Further work is recommended as follows:

Pottery:
- Illustration of selected examples with salt-making residues and displaying evidence for burning.
- Photography of selected examples with salt-making residues and displaying evidence for burning.
- Incorporation into archive report and any proposed publication.

**Ceramic Building Material:**
- No further work other than incorporation into archive report.

**Clay Pipes:**
- No further work other than incorporation into archive report.

**Burnt Clay:**
- Photography of selected examples to include the brick-like object from medieval hearth waste deposit 94 in group 200 and the possible hand-squeezed wedge or support fragment found in open hearth 190.
- Incorporation into archive report and any proposed publication.

**Salt Making Slag:**
- Research the chemical composition of the salt slags and glazes is proposed. This might be achieved using a microprobe on samples of different form to analyse similarities and differences and perhaps define the processes which formed them. This work could possibly be undertaken by Nottingham University or UCL.
- Photography of selected examples.
- Incorporation into archive report and any proposed publication.

### 7.5 Ecofactual Analysis

#### 7.5.1
All environmental remains have been assessed/analysed with recommendations for any additional work given in the individual specialist reports (Appendices C1-6). Further work is recommended as follows:

**Faunal Remains:**
- No further work other than incorporation into archive report.

**Shell Remains:**
- No further work other than incorporation into archive report.

**Environmental Remains:**
- Sample 72, fill 251 of the saltern mound and sample 78, fill 265 of filtration pit 253 both contain waterlogged seeds and it is recommended that analysis of a 1L wet-sieved sample of each is undertaken. Both samples could also be considered for pollen assessment as the waterlogged environment may have been conducive to pollen survival.
- 0.5L samples (79-84) were taken from the same contexts that were covered by monolith 53 (202, 219, 218, 217, 212 and 206). As these deposits have been assessed for both pollen and diatoms, it would be interesting to process them and determine if any plant macrofossils are present.
- Processing of the remaining bulk samples on hold from: hearth 11 (samples 39, 42), hearth 42 (sample 2), hearth 75 (sample 7, 25), and hearth 205 (sample 11, 40, 52). Charcoal is required from these features for the further suite carbon
dating proposed. As charcoal is not forthcoming a sub-sample of each deposit will be retained and considered for carbon dating with Beta Analytic Inc.

- Incorporation into archive report and any proposed publication.

**Pollen:**
- Samples 72, fill 251 and sample 78, fill 265 could also be considered for pollen assessment as the waterlogged environment may have been conducive to pollen survival.
- Incorporation into archive report and any proposed publication.

**Diatoms:**
- No further work other than incorporation into archive report and any proposed publication.

**Radiocarbon Dating:**
- A further suite of radiocarbon dates are required from selected features and deposits to further aid the reconstruction of the chronology of salt-making at this site. Bayesian analysis of the radiocarbon dating data may also be required. The further samples to be sent for dating are proposed to comprise:
  1 x further sample taken from a filtration unit of Late Saxon Group 1;
  1 x further sample from a filtration unit of Late Saxon Group 2;
  2 x samples from the medieval enclosed hearths of Group 3; and
  1 x sample from buried soil 290/291.

8 **REPORT WRITING, ARCHIVING AND PUBLICATION**

8.1 **Report Writing**
8.1.1 Tasks associated with report writing are identified in Table 8. An archive report will be prepared that will include results of all analyses. It is proposed that a publication article will be produced which summarises the results and focuses on the key aspects of the site (see below).

8.2 **Storage and Curation**
8.2.1 Excavated material and records will be deposited with, and curated by, Norfolk Museum under the county HER code ENF137496. A digital archive will be deposited with OA Library/ADS. NCC requires transfer of ownership prior to deposition (see Section 11). During analysis and report preparation, OA East will hold all material and reserves the right to send material for specialist analysis.

8.2.2 The archive will be prepared in accordance with current OA East guidelines, which are based on current national guidelines.

8.3 **Publication**
8.3.1 It is proposed that the results of the project should be published in Medieval Archaeology under the working title 'A Saltern spanning the Late Saxon & Medieval periods excavated at Marsh Lane, King’s Lynn, Norfolk’ by Graeme Clarke.
# Resources and Programming

## Project Team Structure

<table>
<thead>
<tr>
<th>Name</th>
<th>Initials</th>
<th>Project Role</th>
<th>Establishment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Matthew Brudenell</td>
<td>MB</td>
<td>Project Manager</td>
<td>OAE</td>
</tr>
<tr>
<td>Liz Popescu</td>
<td>EP</td>
<td>Post-Evacuation and Publication Manager</td>
<td>OAE</td>
</tr>
<tr>
<td>Rachel Clarke</td>
<td>RC</td>
<td>Editor</td>
<td>OAE</td>
</tr>
<tr>
<td>Graeme Clarke</td>
<td>GC</td>
<td>Project Officer &amp; Author</td>
<td>OAE</td>
</tr>
<tr>
<td>Sue Anderson</td>
<td>SA</td>
<td>Pottery, CBM &amp; clay pipe specialist</td>
<td>Sue Anderson of Spoilheap Archaeology</td>
</tr>
<tr>
<td>Sarah Percival</td>
<td>SP</td>
<td>Salt making slag &amp; burnt clay specialist</td>
<td>OAE</td>
</tr>
<tr>
<td>Rachel Fosberry</td>
<td>RF</td>
<td>Archaeobotanist</td>
<td>OAE</td>
</tr>
<tr>
<td>Steve Boreham</td>
<td>SB</td>
<td>Pollen specialist</td>
<td>University of Cambridge</td>
</tr>
<tr>
<td>Caroline Hillier</td>
<td>CH</td>
<td>Diatoms specialist</td>
<td>University of Cambridge</td>
</tr>
<tr>
<td>Severine Bezie</td>
<td>SB</td>
<td>Illustrator</td>
<td>OAE</td>
</tr>
<tr>
<td>Gillian Greer</td>
<td>GG</td>
<td>Finds illustration</td>
<td>OAE</td>
</tr>
<tr>
<td>Katherine Hamilton</td>
<td>KH</td>
<td>Archive supervisor</td>
<td>OAE</td>
</tr>
<tr>
<td></td>
<td>NU</td>
<td>Slag composition analyses</td>
<td>Nottingham University or UCL</td>
</tr>
</tbody>
</table>

Table 7: Project team

## Stages, Products and Tasks

<table>
<thead>
<tr>
<th>Task No.</th>
<th>Task</th>
<th>Staff</th>
<th>No. Days</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Project Management</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Project management</td>
<td>MB EP</td>
<td>3</td>
</tr>
<tr>
<td>2</td>
<td>Team meetings</td>
<td>MB EP</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>Liaison with relevant staff and specialists, distribution of relevant information and materials</td>
<td>GC SP RF SB</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td><strong>Stage 1: Stratigraphic analysis</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Integrate ceramic/ artefact/ radiocarbon dating with site matrix</td>
<td>GC</td>
<td>1</td>
</tr>
<tr>
<td>5</td>
<td>Update database and digital plans/ sections to reflect any changes</td>
<td>GC</td>
<td>1</td>
</tr>
<tr>
<td>6</td>
<td>Finalise site phasing</td>
<td>GC</td>
<td>1</td>
</tr>
<tr>
<td>7</td>
<td>Add final phasing to database</td>
<td>GC</td>
<td>1</td>
</tr>
<tr>
<td>8</td>
<td>Compile group and phase text</td>
<td>GC</td>
<td>1</td>
</tr>
<tr>
<td>9</td>
<td>Compile overall stratigraphic text and site narrative to form the basis of the full/archive report</td>
<td>GC</td>
<td>4</td>
</tr>
<tr>
<td>10</td>
<td>Review, collate and standardise results of all final specialist reports and integrate with stratigraphic text and project results</td>
<td>GC</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td><strong>Illustration</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Prepare draft phase plans, sections and other report figures</td>
<td>SB</td>
<td>1</td>
</tr>
<tr>
<td>Task No.</td>
<td>Task</td>
<td>Staff</td>
<td>No. Days</td>
</tr>
<tr>
<td>---------</td>
<td>----------------------------------------------------------------------</td>
<td>-------</td>
<td>----------</td>
</tr>
<tr>
<td>12</td>
<td>Select photographs for inclusion in the report</td>
<td>GC</td>
<td>0.5</td>
</tr>
<tr>
<td>13</td>
<td>Photography of selected baked clay &amp; slag examples for archive report &amp; publication</td>
<td>GG</td>
<td>1</td>
</tr>
</tbody>
</table>

**Documentary research**

<table>
<thead>
<tr>
<th>Task No.</th>
<th>Task</th>
<th>Staff</th>
<th>No. Days</th>
</tr>
</thead>
<tbody>
<tr>
<td>14</td>
<td>Research into relevant medieval saltern sites</td>
<td>GC</td>
<td>2</td>
</tr>
<tr>
<td>15</td>
<td>Additional research into history of King's Lynn</td>
<td>GC</td>
<td>1</td>
</tr>
<tr>
<td>16</td>
<td>Visit Norfolk Heritage Environment Record (NHER)</td>
<td>GC</td>
<td>1</td>
</tr>
</tbody>
</table>

**Artefact studies**

<table>
<thead>
<tr>
<th>Task No.</th>
<th>Task</th>
<th>Staff</th>
<th>No. Days</th>
</tr>
</thead>
<tbody>
<tr>
<td>17</td>
<td>Research into chemical composition of salt making slag and report</td>
<td>NU</td>
<td>2</td>
</tr>
<tr>
<td>18</td>
<td>Salt making slag &amp; baked clay: short publication reports</td>
<td>SP</td>
<td>2</td>
</tr>
<tr>
<td>19</td>
<td>Archaeobotanical/pollen/diatom assemblages: short publication report</td>
<td>RF/SB/CH</td>
<td>3</td>
</tr>
</tbody>
</table>

**Stage 2: Report Writing**

<table>
<thead>
<tr>
<th>Task No.</th>
<th>Task</th>
<th>Staff</th>
<th>No. Days</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>Integrate documentary research</td>
<td>GC</td>
<td>1</td>
</tr>
<tr>
<td>21</td>
<td>Write historical and archaeological background text</td>
<td>GC</td>
<td>1</td>
</tr>
<tr>
<td>22</td>
<td>Compile list of illustrations/liaise with illustrators</td>
<td>GC/GG/SB</td>
<td>0.5</td>
</tr>
<tr>
<td>23</td>
<td>Write discussion and conclusions</td>
<td>GC</td>
<td>1</td>
</tr>
<tr>
<td>24</td>
<td>Prepare report figures</td>
<td>SB</td>
<td>0.5</td>
</tr>
<tr>
<td>25</td>
<td>Collate/edit captions, bibliography, appendices etc</td>
<td>GC</td>
<td>1</td>
</tr>
<tr>
<td>26</td>
<td>Internal edit</td>
<td>RC/EP</td>
<td>1</td>
</tr>
<tr>
<td>27</td>
<td>Incorporate internal edits</td>
<td>GC</td>
<td>0.5</td>
</tr>
<tr>
<td>28</td>
<td>Final edit</td>
<td>RC/MB</td>
<td>1</td>
</tr>
<tr>
<td>29</td>
<td>Send to NCC for approval</td>
<td>MB/GC</td>
<td>0.5</td>
</tr>
<tr>
<td>30</td>
<td>Approval revisions</td>
<td>GC</td>
<td>0.5</td>
</tr>
</tbody>
</table>

**Stage 3: Publication**

<table>
<thead>
<tr>
<th>Task No.</th>
<th>Task</th>
<th>Staff</th>
<th>No. Days</th>
</tr>
</thead>
<tbody>
<tr>
<td>31</td>
<td>Produce draft publication</td>
<td>GC</td>
<td>5</td>
</tr>
<tr>
<td>32</td>
<td>Compile list of illustrations/liaise with illustrators</td>
<td>GC/GG/SB/EP</td>
<td>1</td>
</tr>
<tr>
<td>33</td>
<td>Produce publication figures</td>
<td>GG/SB</td>
<td>2</td>
</tr>
<tr>
<td>34</td>
<td>Internal edit</td>
<td>RC/EP</td>
<td>2</td>
</tr>
<tr>
<td>35</td>
<td>Incorporate internal edits</td>
<td>GC</td>
<td>0.5</td>
</tr>
<tr>
<td>36</td>
<td>Final edit</td>
<td>EP/MB</td>
<td>1</td>
</tr>
<tr>
<td>37</td>
<td>Send to publisher for refereeing</td>
<td>EP</td>
<td>0.5</td>
</tr>
<tr>
<td>38</td>
<td>Post-refereeing revisions</td>
<td>GC/EP</td>
<td>2</td>
</tr>
<tr>
<td>39</td>
<td>Copy edit queries</td>
<td>EP</td>
<td>1</td>
</tr>
<tr>
<td>40</td>
<td>Proof-reading</td>
<td>GC/MB/EP</td>
<td>1</td>
</tr>
</tbody>
</table>

**Stage 3: Archiving**

<table>
<thead>
<tr>
<th>Task No.</th>
<th>Task</th>
<th>Staff</th>
<th>No. Days</th>
</tr>
</thead>
<tbody>
<tr>
<td>41</td>
<td>Compile paper archive</td>
<td>GC</td>
<td>1</td>
</tr>
<tr>
<td>42</td>
<td>Archive/delete digital photographs</td>
<td>GC</td>
<td>1</td>
</tr>
<tr>
<td>43</td>
<td>Compile/check material archive</td>
<td>GC/KH</td>
<td>2</td>
</tr>
</tbody>
</table>

*See Appendix D for product details and Appendix E for the project risk log.*

### 9.3 Project Timetable

**9.3.1** Compilation of a final archive report is normally completed within 1 year of the approval of the Post-extraction Assessment and Updated Project Design.

**9.3.2** It is proposed that the archive report and publication synopsis will be submitted in July 2016. At this time a publication proposal will be submitted to Medieval Archaeology with
the aim of publishing a short article on the saltern remains. The article to be published will be submitted by the end of 2016.

9.3.3 The archive for the project will be deposited with Norfolk Museum in January 2017.

10 OWNERSHIP

10.1.1 All artefactual material recovered will be held in storage by OA East and ownership of all such archaeological finds will be given over to the relevant authority to facilitate future study and ensure proper preservation of all artefacts. In the unlikely event that artefacts of significant monetary value are discovered, and if they are not subject to Treasure Act legislation separate ownership arrangements may be negotiated. It is Oxford Archaeology Ltd's policy, in line with accepted practice, to keep site archives (paper and artefactual) together wherever possible.
## Appendix A. Context Summary with Provisional Phasing

<table>
<thead>
<tr>
<th>Context</th>
<th>Cut</th>
<th>Group</th>
<th>Period</th>
<th>Trench/Test Pit/Excavation phase</th>
<th>Category</th>
<th>Feature Type</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>0</td>
<td>3</td>
<td>Tr4</td>
<td>modern ditch</td>
<td>service</td>
<td>service trench</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>0</td>
<td>3</td>
<td>Tr4</td>
<td>modern ditch</td>
<td>service</td>
<td>service trench</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>9</td>
<td>3</td>
<td>Tr3</td>
<td>cut pit</td>
<td>modern</td>
<td>truncation</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>9</td>
<td>3</td>
<td>Tr3</td>
<td>fill pit</td>
<td>disuse</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>11</td>
<td>2</td>
<td>I</td>
<td>cut closed hearth</td>
<td>brine boiling</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>11</td>
<td>2</td>
<td>I</td>
<td>fill closed hearth</td>
<td>hearth</td>
<td>base</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>197</td>
<td>3</td>
<td>Tr5</td>
<td>layer made ground</td>
<td>modern</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>201</td>
<td>1</td>
<td>Tr5</td>
<td>layer saltern mound</td>
<td>filtration</td>
<td>waste</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>18</td>
<td>3</td>
<td>Tr6</td>
<td>cut channel</td>
<td>watercourse</td>
<td></td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>18</td>
<td>3</td>
<td>Tr6</td>
<td>fill channel</td>
<td>watercourse</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>21</td>
<td>3</td>
<td>Tr7</td>
<td>fill channel</td>
<td>watercourse</td>
<td></td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>21</td>
<td>3</td>
<td>Tr7</td>
<td>cut channel</td>
<td>watercourse</td>
<td></td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>21</td>
<td>3</td>
<td>Tr7</td>
<td>fill channel</td>
<td>watercourse</td>
<td></td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>21</td>
<td>3</td>
<td>Tr7</td>
<td>fill channel</td>
<td>watercourse</td>
<td></td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>18</td>
<td>3</td>
<td>Tr6</td>
<td>fill channel</td>
<td>watercourse</td>
<td></td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>18</td>
<td>3</td>
<td>Tr6</td>
<td>fill channel</td>
<td>watercourse</td>
<td></td>
<td></td>
</tr>
<tr>
<td>26</td>
<td>18</td>
<td>3</td>
<td>Tr6</td>
<td>fill channel</td>
<td>watercourse</td>
<td></td>
<td></td>
</tr>
<tr>
<td>28</td>
<td>197</td>
<td>3</td>
<td>Tr8</td>
<td>layer made ground</td>
<td>modern</td>
<td></td>
<td></td>
</tr>
<tr>
<td>29</td>
<td>198</td>
<td>3</td>
<td>Tr8</td>
<td>layer natural</td>
<td>marsh deposit</td>
<td></td>
<td></td>
</tr>
<tr>
<td>30</td>
<td>198</td>
<td>3</td>
<td>Tr8</td>
<td>layer natural</td>
<td>marsh deposit</td>
<td></td>
<td></td>
</tr>
<tr>
<td>31</td>
<td>198</td>
<td>3</td>
<td>Tr8</td>
<td>layer natural</td>
<td>marsh deposit</td>
<td></td>
<td></td>
</tr>
<tr>
<td>32</td>
<td>199</td>
<td>3</td>
<td>Tr8</td>
<td>layer natural</td>
<td>marsh deposit</td>
<td></td>
<td></td>
</tr>
<tr>
<td>33</td>
<td>200</td>
<td>2</td>
<td>Tr2</td>
<td>layer saltern mound</td>
<td>hearth</td>
<td>waste</td>
<td></td>
</tr>
<tr>
<td>34</td>
<td>200</td>
<td>2</td>
<td>Tr2</td>
<td>layer saltern mound</td>
<td>filtration</td>
<td>waste</td>
<td></td>
</tr>
<tr>
<td>35</td>
<td>200</td>
<td>2</td>
<td>Tr2</td>
<td>layer saltern mound</td>
<td>hearth</td>
<td>waste</td>
<td></td>
</tr>
<tr>
<td>38</td>
<td>42</td>
<td>2</td>
<td>I</td>
<td>fill closed hearth</td>
<td>disuse</td>
<td></td>
<td></td>
</tr>
<tr>
<td>39</td>
<td>42</td>
<td>2</td>
<td>I</td>
<td>fill closed hearth</td>
<td>hearth floor</td>
<td></td>
<td></td>
</tr>
<tr>
<td>41</td>
<td>42</td>
<td>2</td>
<td>I</td>
<td>fill closed hearth</td>
<td>disuse</td>
<td></td>
<td></td>
</tr>
<tr>
<td>42</td>
<td>42</td>
<td>2</td>
<td>I</td>
<td>cut closed hearth</td>
<td>hearth flue</td>
<td></td>
<td></td>
</tr>
<tr>
<td>59</td>
<td>59</td>
<td>3</td>
<td>Tr7</td>
<td>cut foundation trench</td>
<td>modern</td>
<td>structure</td>
<td></td>
</tr>
<tr>
<td>60</td>
<td>59</td>
<td>3</td>
<td>Tr7</td>
<td>fill foundation trench</td>
<td>disuse</td>
<td></td>
<td></td>
</tr>
<tr>
<td>61</td>
<td>61</td>
<td>3</td>
<td>Tr9</td>
<td>Cut pit</td>
<td>modern</td>
<td>truncation</td>
<td></td>
</tr>
<tr>
<td>64</td>
<td>61</td>
<td>3</td>
<td>Tr9</td>
<td>Fill pit</td>
<td>disuse</td>
<td></td>
<td></td>
</tr>
<tr>
<td>67</td>
<td>201</td>
<td>1</td>
<td>Tr9</td>
<td>layer saltern mound</td>
<td>filtration</td>
<td>waste</td>
<td></td>
</tr>
<tr>
<td>71</td>
<td>197</td>
<td>3</td>
<td>Tr6</td>
<td>layer made ground</td>
<td>modern</td>
<td></td>
<td></td>
</tr>
<tr>
<td>73</td>
<td>199</td>
<td>3</td>
<td>Tr6</td>
<td>layer natural</td>
<td>marsh deposit</td>
<td></td>
<td></td>
</tr>
<tr>
<td>75</td>
<td>75</td>
<td>2</td>
<td>Tr7</td>
<td>cut closed hearth</td>
<td>hearth flue</td>
<td></td>
<td></td>
</tr>
<tr>
<td>76</td>
<td>75</td>
<td>2</td>
<td>Tr7</td>
<td>fill closed hearth</td>
<td>disuse</td>
<td></td>
<td></td>
</tr>
<tr>
<td>78</td>
<td>78</td>
<td>1</td>
<td>Tr7</td>
<td>cut filtration unit</td>
<td>silt filtration</td>
<td></td>
<td></td>
</tr>
<tr>
<td>79</td>
<td>78</td>
<td>1</td>
<td>Tr7</td>
<td>fill filtration unit</td>
<td>disuse</td>
<td></td>
<td></td>
</tr>
<tr>
<td>80</td>
<td>81</td>
<td>1</td>
<td>Tr7</td>
<td>fill filtration unit</td>
<td>clay lining</td>
<td></td>
<td></td>
</tr>
<tr>
<td>81</td>
<td>81</td>
<td>1</td>
<td>Tr7</td>
<td>cut filtration unit</td>
<td>silt filtration</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Context</td>
<td>Cut</td>
<td>Group</td>
<td>Period</td>
<td>Trench/Test Pit/Excavation phase</td>
<td>Category</td>
<td>Feature Type</td>
<td>Function</td>
</tr>
<tr>
<td>---------</td>
<td>-----</td>
<td>-------</td>
<td>--------</td>
<td>---------------------------------</td>
<td>----------</td>
<td>--------------</td>
<td>----------</td>
</tr>
<tr>
<td>82</td>
<td>81</td>
<td>1</td>
<td></td>
<td>Tr7</td>
<td>fill</td>
<td>filtration unit</td>
<td>disuse</td>
</tr>
<tr>
<td>83</td>
<td>197</td>
<td>3</td>
<td></td>
<td>TP1</td>
<td>layer</td>
<td>made ground</td>
<td>modern</td>
</tr>
<tr>
<td>84</td>
<td>197</td>
<td>3</td>
<td></td>
<td>TP1</td>
<td>layer</td>
<td>made ground</td>
<td>modern</td>
</tr>
<tr>
<td>85</td>
<td>198</td>
<td>3</td>
<td></td>
<td>TP1</td>
<td>layer</td>
<td>natural</td>
<td>marsh deposit</td>
</tr>
<tr>
<td>86</td>
<td>199</td>
<td>3</td>
<td></td>
<td>TP1</td>
<td>layer</td>
<td>natural</td>
<td>marsh deposit</td>
</tr>
<tr>
<td>87</td>
<td>197</td>
<td>3</td>
<td></td>
<td>TP2</td>
<td>layer</td>
<td>made ground</td>
<td>modern</td>
</tr>
<tr>
<td>88</td>
<td>198</td>
<td>3</td>
<td></td>
<td>TP2</td>
<td>layer</td>
<td>natural</td>
<td>marsh deposit</td>
</tr>
<tr>
<td>89</td>
<td>199</td>
<td>3</td>
<td></td>
<td>TP2</td>
<td>layer</td>
<td>natural</td>
<td>marsh deposit</td>
</tr>
<tr>
<td>90</td>
<td>197</td>
<td>3</td>
<td></td>
<td>TP3</td>
<td>layer</td>
<td>made ground</td>
<td>modern</td>
</tr>
<tr>
<td>91</td>
<td>200</td>
<td>2</td>
<td></td>
<td>TP3</td>
<td>layer</td>
<td>saltern mound</td>
<td>filtration waste</td>
</tr>
<tr>
<td>92</td>
<td>200</td>
<td>2</td>
<td></td>
<td>TP3</td>
<td>layer</td>
<td>saltern mound</td>
<td>hearth waste</td>
</tr>
<tr>
<td>93</td>
<td>200</td>
<td>2</td>
<td></td>
<td>TP3</td>
<td>layer</td>
<td>saltern mound</td>
<td>filtration waste</td>
</tr>
<tr>
<td>94</td>
<td>200</td>
<td>2</td>
<td></td>
<td>Tr7</td>
<td>layer</td>
<td>saltern mound</td>
<td>hearth waste</td>
</tr>
<tr>
<td>97</td>
<td>200</td>
<td>2</td>
<td></td>
<td>Tr2</td>
<td>layer</td>
<td>saltern mound</td>
<td>hearth waste</td>
</tr>
<tr>
<td>98</td>
<td>200</td>
<td>2</td>
<td></td>
<td>Tr2</td>
<td>layer</td>
<td>saltern mound</td>
<td>hearth waste</td>
</tr>
<tr>
<td>99</td>
<td>200</td>
<td>2</td>
<td></td>
<td>Tr2</td>
<td>layer</td>
<td>saltern mound</td>
<td>hearth waste</td>
</tr>
<tr>
<td>100</td>
<td>200</td>
<td>2</td>
<td></td>
<td>Tr2</td>
<td>layer</td>
<td>saltern mound</td>
<td>hearth waste</td>
</tr>
<tr>
<td>101</td>
<td>201</td>
<td>2</td>
<td></td>
<td>Tr2</td>
<td>layer</td>
<td>saltern mound</td>
<td>filtration waste</td>
</tr>
<tr>
<td>102</td>
<td>198</td>
<td>3</td>
<td></td>
<td>Tr2</td>
<td>layer</td>
<td>natural</td>
<td>marsh deposit</td>
</tr>
<tr>
<td>105</td>
<td>198</td>
<td>3</td>
<td></td>
<td>Tr2</td>
<td>layer</td>
<td>natural</td>
<td>marsh deposit</td>
</tr>
<tr>
<td>106</td>
<td>78</td>
<td>1</td>
<td></td>
<td>Tr7</td>
<td>fill</td>
<td>filtration unit</td>
<td>clay lining</td>
</tr>
<tr>
<td>107</td>
<td>205</td>
<td>3</td>
<td>2</td>
<td>I</td>
<td>fill</td>
<td>closed hearth</td>
<td>superstructure</td>
</tr>
<tr>
<td>110</td>
<td>200</td>
<td>2</td>
<td></td>
<td>Tr2</td>
<td>layer</td>
<td>saltern mound</td>
<td>hearth waste</td>
</tr>
<tr>
<td>111</td>
<td>200</td>
<td>2</td>
<td></td>
<td>Tr2</td>
<td>layer</td>
<td>saltern mound</td>
<td>hearth waste</td>
</tr>
<tr>
<td>112</td>
<td>205</td>
<td>3</td>
<td>2</td>
<td>I</td>
<td>fill</td>
<td>closed hearth</td>
<td>disuse</td>
</tr>
<tr>
<td>114</td>
<td>205</td>
<td>3</td>
<td>2</td>
<td>I</td>
<td>fill</td>
<td>closed hearth</td>
<td>disuse</td>
</tr>
<tr>
<td>115</td>
<td>205</td>
<td>3</td>
<td>2</td>
<td>I</td>
<td>fill</td>
<td>closed hearth</td>
<td>hearth base</td>
</tr>
<tr>
<td>116</td>
<td>205</td>
<td>3</td>
<td>2</td>
<td>I</td>
<td>fill</td>
<td>closed hearth</td>
<td>vitrified hearth base</td>
</tr>
<tr>
<td>117</td>
<td>205</td>
<td>3</td>
<td>2</td>
<td>I</td>
<td>fill</td>
<td>closed hearth</td>
<td>disuse</td>
</tr>
<tr>
<td>118</td>
<td>205</td>
<td>3</td>
<td>2</td>
<td>I</td>
<td>fill</td>
<td>closed hearth</td>
<td>disuse</td>
</tr>
<tr>
<td>119</td>
<td>205</td>
<td>3</td>
<td>2</td>
<td>I</td>
<td>fill</td>
<td>closed hearth</td>
<td>disuse</td>
</tr>
<tr>
<td>120</td>
<td>205</td>
<td>3</td>
<td>2</td>
<td>I</td>
<td>fill</td>
<td>closed hearth</td>
<td>disuse</td>
</tr>
<tr>
<td>121</td>
<td>205</td>
<td>3</td>
<td>2</td>
<td>I</td>
<td>fill</td>
<td>closed hearth</td>
<td>disuse</td>
</tr>
<tr>
<td>122</td>
<td>205</td>
<td>3</td>
<td>2</td>
<td>I</td>
<td>fill</td>
<td>closed hearth</td>
<td>disuse</td>
</tr>
<tr>
<td>123</td>
<td>205</td>
<td>3</td>
<td>2</td>
<td>I</td>
<td>fill</td>
<td>closed hearth</td>
<td>disuse</td>
</tr>
<tr>
<td>124</td>
<td>200</td>
<td>2</td>
<td></td>
<td>Tr2</td>
<td>layer</td>
<td>saltern mound</td>
<td>hearth waste</td>
</tr>
<tr>
<td>125</td>
<td>200</td>
<td>2</td>
<td></td>
<td>Tr2</td>
<td>layer</td>
<td>saltern mound</td>
<td>hearth waste</td>
</tr>
<tr>
<td>126</td>
<td>131</td>
<td>1</td>
<td></td>
<td>I</td>
<td>fill</td>
<td>filtration unit</td>
<td>clay lining</td>
</tr>
<tr>
<td>127</td>
<td>131</td>
<td>1</td>
<td></td>
<td>I</td>
<td>fill</td>
<td>filtration unit</td>
<td>disuse</td>
</tr>
<tr>
<td>128</td>
<td>131</td>
<td>1</td>
<td></td>
<td>I</td>
<td>fill</td>
<td>filtration unit</td>
<td>disuse</td>
</tr>
<tr>
<td>129</td>
<td>131</td>
<td>1</td>
<td></td>
<td>I</td>
<td>fill</td>
<td>filtration unit</td>
<td>disuse</td>
</tr>
<tr>
<td>131</td>
<td>131</td>
<td>1</td>
<td></td>
<td>I</td>
<td>cut</td>
<td>filtration unit</td>
<td>silt filtration</td>
</tr>
<tr>
<td>132</td>
<td>205</td>
<td>3</td>
<td>2</td>
<td>I</td>
<td>fill</td>
<td>closed hearth</td>
<td>disuse</td>
</tr>
<tr>
<td>135</td>
<td>198</td>
<td>3</td>
<td></td>
<td>Tr2</td>
<td>layer</td>
<td>natural</td>
<td>marsh deposit</td>
</tr>
<tr>
<td>Context</td>
<td>Cut</td>
<td>Group</td>
<td>Period</td>
<td>Trench/Test Pit/Excavation phase</td>
<td>Category</td>
<td>Feature Type</td>
<td>Function</td>
</tr>
<tr>
<td>---------</td>
<td>-----</td>
<td>-------</td>
<td>--------</td>
<td>-------------------------------</td>
<td>----------</td>
<td>--------------</td>
<td>--------------------</td>
</tr>
<tr>
<td>136</td>
<td>200</td>
<td>2</td>
<td>Tr2</td>
<td>layer</td>
<td>saltern mound</td>
<td>filtration waste</td>
<td></td>
</tr>
<tr>
<td>137</td>
<td>200</td>
<td>2</td>
<td>Tr2</td>
<td>layer</td>
<td>saltern mound</td>
<td>filtration waste</td>
<td></td>
</tr>
<tr>
<td>138</td>
<td>200</td>
<td>2</td>
<td>Tr2</td>
<td>layer</td>
<td>saltern mound</td>
<td>filtration waste</td>
<td></td>
</tr>
<tr>
<td>139</td>
<td>200</td>
<td>2</td>
<td>Tr2</td>
<td>layer</td>
<td>saltern mound</td>
<td>hearth waste</td>
<td></td>
</tr>
<tr>
<td>140</td>
<td>200</td>
<td>2</td>
<td>Tr2</td>
<td>layer</td>
<td>saltern mound</td>
<td>filtration waste</td>
<td></td>
</tr>
<tr>
<td>149</td>
<td>205</td>
<td>3</td>
<td>2</td>
<td>fill</td>
<td>closed hearth</td>
<td>disuse</td>
<td></td>
</tr>
<tr>
<td>150</td>
<td>205</td>
<td>3</td>
<td>2</td>
<td>fill</td>
<td>closed hearth</td>
<td>disuse</td>
<td></td>
</tr>
<tr>
<td>151</td>
<td>200</td>
<td>2</td>
<td>Tr2</td>
<td>layer</td>
<td>saltern mound</td>
<td>hearth waste</td>
<td></td>
</tr>
<tr>
<td>152</td>
<td>200</td>
<td>2</td>
<td>Tr2</td>
<td>layer</td>
<td>saltern mound</td>
<td>filtration waste</td>
<td></td>
</tr>
<tr>
<td>153</td>
<td>200</td>
<td>2</td>
<td>Tr2</td>
<td>layer</td>
<td>saltern mound</td>
<td>filtration waste</td>
<td></td>
</tr>
<tr>
<td>154</td>
<td>200</td>
<td>2</td>
<td>Tr2</td>
<td>layer</td>
<td>saltern mound</td>
<td>filtration waste</td>
<td></td>
</tr>
<tr>
<td>155</td>
<td>201</td>
<td>1</td>
<td>TP4</td>
<td>layer</td>
<td>saltern mound</td>
<td>filtration waste</td>
<td></td>
</tr>
<tr>
<td>156</td>
<td>1</td>
<td>TP4</td>
<td>layer</td>
<td>saltern mound</td>
<td>hearth waste</td>
<td>filtration waste</td>
<td></td>
</tr>
<tr>
<td>160</td>
<td>205</td>
<td>3</td>
<td>2</td>
<td>fill</td>
<td>closed hearth</td>
<td>disuse</td>
<td></td>
</tr>
<tr>
<td>162</td>
<td>205</td>
<td>3</td>
<td>2</td>
<td>fill</td>
<td>closed hearth</td>
<td>vitrified hearth base</td>
<td></td>
</tr>
<tr>
<td>164</td>
<td>164</td>
<td>2</td>
<td>1</td>
<td>cut</td>
<td>filtration unit</td>
<td>silt filtration</td>
<td></td>
</tr>
<tr>
<td>166</td>
<td>164</td>
<td>2</td>
<td>1</td>
<td>fill</td>
<td>filtration unit</td>
<td>disuse</td>
<td></td>
</tr>
<tr>
<td>167</td>
<td>164</td>
<td>2</td>
<td>1</td>
<td>fill</td>
<td>filtration unit</td>
<td>disuse</td>
<td></td>
</tr>
<tr>
<td>168</td>
<td>168</td>
<td>2</td>
<td>1</td>
<td>cut</td>
<td>filtration unit</td>
<td>silt filtration</td>
<td></td>
</tr>
<tr>
<td>169</td>
<td>168</td>
<td>2</td>
<td>1</td>
<td>fill</td>
<td>filtration unit</td>
<td>disuse</td>
<td></td>
</tr>
<tr>
<td>170</td>
<td>170</td>
<td>2</td>
<td>1</td>
<td>cut</td>
<td>filtration unit</td>
<td>silt filtration</td>
<td></td>
</tr>
<tr>
<td>171</td>
<td>170</td>
<td>2</td>
<td>1</td>
<td>fill</td>
<td>filtration unit</td>
<td>lining</td>
<td></td>
</tr>
<tr>
<td>172</td>
<td>168</td>
<td>2</td>
<td>1</td>
<td>fill</td>
<td>filtration unit</td>
<td>lining</td>
<td></td>
</tr>
<tr>
<td>173</td>
<td>164</td>
<td>2</td>
<td>1</td>
<td>fill</td>
<td>filtration unit</td>
<td>lining</td>
<td></td>
</tr>
<tr>
<td>175</td>
<td>175</td>
<td>2</td>
<td>1</td>
<td>cut</td>
<td>open hearth</td>
<td>brine boiling</td>
<td></td>
</tr>
<tr>
<td>176</td>
<td>175</td>
<td>2</td>
<td>1</td>
<td>fill</td>
<td>open hearth</td>
<td>disuse</td>
<td></td>
</tr>
<tr>
<td>177</td>
<td>177</td>
<td>2</td>
<td>1</td>
<td>cut</td>
<td>open hearth</td>
<td>brine boiling</td>
<td></td>
</tr>
<tr>
<td>178</td>
<td>177</td>
<td>2</td>
<td>1</td>
<td>fill</td>
<td>open hearth</td>
<td>disuse</td>
<td></td>
</tr>
<tr>
<td>179</td>
<td>179</td>
<td>2</td>
<td>1</td>
<td>cut</td>
<td>filtration unit</td>
<td>silt filtration</td>
<td></td>
</tr>
<tr>
<td>180</td>
<td>179</td>
<td>2</td>
<td>1</td>
<td>fill</td>
<td>filtration unit</td>
<td>lining</td>
<td></td>
</tr>
<tr>
<td>182</td>
<td>170</td>
<td>2</td>
<td>1</td>
<td>fill</td>
<td>filtration unit</td>
<td>disuse</td>
<td></td>
</tr>
<tr>
<td>187</td>
<td>187</td>
<td>2</td>
<td>1</td>
<td>cut</td>
<td>filtration unit</td>
<td>silt filtration</td>
<td></td>
</tr>
<tr>
<td>188</td>
<td>187</td>
<td>2</td>
<td>1</td>
<td>fill</td>
<td>filtration unit</td>
<td>lining</td>
<td></td>
</tr>
<tr>
<td>189</td>
<td>187</td>
<td>2</td>
<td>1</td>
<td>fill</td>
<td>filtration unit</td>
<td>disuse</td>
<td></td>
</tr>
<tr>
<td>190</td>
<td>190</td>
<td>2</td>
<td>1</td>
<td>cut</td>
<td>open hearth</td>
<td>brine boiling</td>
<td></td>
</tr>
<tr>
<td>191</td>
<td>190</td>
<td>2</td>
<td>1</td>
<td>fill</td>
<td>open hearth</td>
<td>disuse</td>
<td></td>
</tr>
<tr>
<td>192</td>
<td>190</td>
<td>2</td>
<td>1</td>
<td>fill</td>
<td>open hearth</td>
<td>disuse</td>
<td></td>
</tr>
<tr>
<td>193</td>
<td>193</td>
<td>2</td>
<td>1</td>
<td>cut</td>
<td>filtration unit</td>
<td>silt filtration</td>
<td></td>
</tr>
<tr>
<td>194</td>
<td>193</td>
<td>2</td>
<td>1</td>
<td>fill</td>
<td>filtration unit</td>
<td>disuse</td>
<td></td>
</tr>
<tr>
<td>195</td>
<td>193</td>
<td>2</td>
<td>1</td>
<td>fill</td>
<td>filtration unit</td>
<td>disuse</td>
<td></td>
</tr>
<tr>
<td>196</td>
<td>193</td>
<td>2</td>
<td>1</td>
<td>fill</td>
<td>filtration unit</td>
<td>disuse</td>
<td></td>
</tr>
<tr>
<td>197</td>
<td>197</td>
<td>3</td>
<td>II</td>
<td>layer</td>
<td>made ground</td>
<td>modern</td>
<td></td>
</tr>
<tr>
<td>198</td>
<td>198</td>
<td>3</td>
<td>II</td>
<td>layer</td>
<td>natural</td>
<td>marsh deposit</td>
<td></td>
</tr>
<tr>
<td>Context</td>
<td>Cut</td>
<td>Group</td>
<td>Period</td>
<td>Trench/Test Pit/Excavation phase</td>
<td>Category</td>
<td>Feature Type</td>
<td>Function</td>
</tr>
<tr>
<td>---------</td>
<td>-----</td>
<td>-------</td>
<td>--------</td>
<td>----------------------------------</td>
<td>----------</td>
<td>-------------</td>
<td>----------------</td>
</tr>
<tr>
<td>199</td>
<td>199</td>
<td>3</td>
<td>II</td>
<td>layer natural</td>
<td>natural</td>
<td>marsh deposit</td>
<td></td>
</tr>
<tr>
<td>200</td>
<td>200</td>
<td>2</td>
<td>II</td>
<td>layer saltern mound</td>
<td>saltern mound</td>
<td>hearth waste</td>
<td></td>
</tr>
<tr>
<td>201</td>
<td>201</td>
<td>1</td>
<td>II</td>
<td>layer saltern mound</td>
<td>saltern mound</td>
<td>filtration waste</td>
<td></td>
</tr>
<tr>
<td>202</td>
<td>202</td>
<td>1</td>
<td>II</td>
<td>layer saltern mound</td>
<td>saltern mound</td>
<td>filtration waste</td>
<td></td>
</tr>
<tr>
<td>203</td>
<td>203</td>
<td>2</td>
<td>1</td>
<td>cut filtration unit</td>
<td>cut</td>
<td>silt filtration</td>
<td></td>
</tr>
<tr>
<td>204</td>
<td>204</td>
<td>2</td>
<td>1</td>
<td>fill filtration unit</td>
<td>fill</td>
<td>disuse</td>
<td></td>
</tr>
<tr>
<td>205</td>
<td>205</td>
<td>3</td>
<td>2</td>
<td>cut closed hearth</td>
<td>closed hearth</td>
<td>brine boiling</td>
<td></td>
</tr>
<tr>
<td>206</td>
<td>206</td>
<td>2</td>
<td>II</td>
<td>layer saltern mound</td>
<td>saltern mound</td>
<td>hearth waste</td>
<td></td>
</tr>
<tr>
<td>207</td>
<td>207</td>
<td>2</td>
<td>II</td>
<td>layer saltern mound</td>
<td>saltern mound</td>
<td>filtration waste</td>
<td></td>
</tr>
<tr>
<td>208</td>
<td>208</td>
<td>2</td>
<td>II</td>
<td>layer saltern mound</td>
<td>saltern mound</td>
<td>filtration waste</td>
<td></td>
</tr>
<tr>
<td>209</td>
<td>209</td>
<td>2</td>
<td>II</td>
<td>layer saltern mound</td>
<td>saltern mound</td>
<td>filtration waste</td>
<td></td>
</tr>
<tr>
<td>210</td>
<td>210</td>
<td>2</td>
<td>II</td>
<td>layer saltern mound</td>
<td>saltern mound</td>
<td>filtration waste</td>
<td></td>
</tr>
<tr>
<td>211</td>
<td>211</td>
<td>2</td>
<td>II</td>
<td>layer saltern mound</td>
<td>saltern mound</td>
<td>filtration waste</td>
<td></td>
</tr>
<tr>
<td>212</td>
<td>212</td>
<td>2</td>
<td>II</td>
<td>layer saltern mound</td>
<td>saltern mound</td>
<td>filtration waste</td>
<td></td>
</tr>
<tr>
<td>213</td>
<td>213</td>
<td>2</td>
<td>II</td>
<td>layer saltern mound</td>
<td>saltern mound</td>
<td>filtration waste</td>
<td></td>
</tr>
<tr>
<td>214</td>
<td>214</td>
<td>2</td>
<td>II</td>
<td>layer saltern mound</td>
<td>saltern mound</td>
<td>filtration waste</td>
<td></td>
</tr>
<tr>
<td>215</td>
<td>215</td>
<td>2</td>
<td>II</td>
<td>layer saltern mound</td>
<td>saltern mound</td>
<td>hearth waste</td>
<td></td>
</tr>
<tr>
<td>216</td>
<td>216</td>
<td>2</td>
<td>II</td>
<td>layer saltern mound</td>
<td>saltern mound</td>
<td>hearth waste</td>
<td></td>
</tr>
<tr>
<td>217</td>
<td>217</td>
<td>2</td>
<td>II</td>
<td>layer saltern mound</td>
<td>saltern mound</td>
<td>filtration waste</td>
<td></td>
</tr>
<tr>
<td>218</td>
<td>218</td>
<td>2</td>
<td>II</td>
<td>layer surface (external)</td>
<td>surface (external)</td>
<td>buried soil</td>
<td></td>
</tr>
<tr>
<td>219</td>
<td>219</td>
<td>2</td>
<td>II</td>
<td>layer surface (external)</td>
<td>surface (external)</td>
<td>buried soil</td>
<td></td>
</tr>
<tr>
<td>220</td>
<td>220</td>
<td>2</td>
<td>1</td>
<td>fill filtration unit</td>
<td>fill</td>
<td>disuse</td>
<td></td>
</tr>
<tr>
<td>221</td>
<td>221</td>
<td>2</td>
<td>1</td>
<td>fill filtration unit</td>
<td>fill</td>
<td>disuse</td>
<td></td>
</tr>
<tr>
<td>222</td>
<td>222</td>
<td>2</td>
<td>1</td>
<td>fill filtration unit</td>
<td>fill</td>
<td>disuse</td>
<td></td>
</tr>
<tr>
<td>223</td>
<td>223</td>
<td>2</td>
<td>1</td>
<td>cut water tank</td>
<td>cut</td>
<td>water storage</td>
<td></td>
</tr>
<tr>
<td>224</td>
<td>224</td>
<td>2</td>
<td>1</td>
<td>fill water tank</td>
<td>fill</td>
<td>lining</td>
<td></td>
</tr>
<tr>
<td>225</td>
<td>225</td>
<td>2</td>
<td>1</td>
<td>fill water tank</td>
<td>fill</td>
<td>disuse</td>
<td></td>
</tr>
<tr>
<td>226</td>
<td>226</td>
<td>2</td>
<td>1</td>
<td>cut filtration unit</td>
<td>cut</td>
<td>silt filtration</td>
<td></td>
</tr>
<tr>
<td>227</td>
<td>227</td>
<td>2</td>
<td>1</td>
<td>fill filtration unit</td>
<td>fill</td>
<td>lining</td>
<td></td>
</tr>
<tr>
<td>228</td>
<td>228</td>
<td>2</td>
<td>1</td>
<td>fill filtration unit</td>
<td>fill</td>
<td>disuse</td>
<td></td>
</tr>
<tr>
<td>229</td>
<td>229</td>
<td>3</td>
<td>2</td>
<td>fill closed hearth</td>
<td>closed hearth</td>
<td>vitrified hearth base</td>
<td></td>
</tr>
<tr>
<td>230</td>
<td>230</td>
<td>3</td>
<td>2</td>
<td>fill closed hearth</td>
<td>closed hearth</td>
<td>vitrified hearth base</td>
<td></td>
</tr>
<tr>
<td>231</td>
<td>231</td>
<td>2</td>
<td>1</td>
<td>cut filtration unit</td>
<td>cut</td>
<td>silt filtration</td>
<td></td>
</tr>
<tr>
<td>232</td>
<td>232</td>
<td>2</td>
<td>1</td>
<td>fill filtration unit</td>
<td>fill</td>
<td>disuse</td>
<td></td>
</tr>
<tr>
<td>233</td>
<td>233</td>
<td>197</td>
<td>3</td>
<td>layer made ground</td>
<td>layer</td>
<td>post-med./modern</td>
<td></td>
</tr>
<tr>
<td>234</td>
<td>234</td>
<td>2</td>
<td>1</td>
<td>fill filtration unit</td>
<td>fill</td>
<td>lining</td>
<td></td>
</tr>
<tr>
<td>235</td>
<td>235</td>
<td>2</td>
<td>1</td>
<td>cut filtration unit</td>
<td>cut</td>
<td>silt filtration</td>
<td></td>
</tr>
<tr>
<td>236</td>
<td>236</td>
<td>2</td>
<td>1</td>
<td>fill filtration unit</td>
<td>fill</td>
<td>lining</td>
<td></td>
</tr>
<tr>
<td>237</td>
<td>237</td>
<td>2</td>
<td>1</td>
<td>fill filtration unit</td>
<td>fill</td>
<td>disuse</td>
<td></td>
</tr>
<tr>
<td>238</td>
<td>238</td>
<td>2</td>
<td>1</td>
<td>fill filtration unit</td>
<td>fill</td>
<td>disuse</td>
<td></td>
</tr>
<tr>
<td>239</td>
<td>239</td>
<td>1</td>
<td>II</td>
<td>layer saltern mound</td>
<td>saltern mound</td>
<td>filtration waste</td>
<td></td>
</tr>
<tr>
<td>240</td>
<td>240</td>
<td>2</td>
<td>III</td>
<td>layer natural</td>
<td>layer</td>
<td>saltmarsh deposits</td>
<td></td>
</tr>
<tr>
<td>241</td>
<td>241</td>
<td>2</td>
<td>III</td>
<td>cut natural</td>
<td>cut</td>
<td>intertidal creek</td>
<td></td>
</tr>
<tr>
<td>242</td>
<td>242</td>
<td>2</td>
<td>III</td>
<td>fill natural</td>
<td>fill</td>
<td>saltmarsh deposits</td>
<td></td>
</tr>
<tr>
<td>243</td>
<td>243</td>
<td>2</td>
<td>III</td>
<td>fill natural</td>
<td>fill</td>
<td>saltmarsh deposits</td>
<td></td>
</tr>
<tr>
<td>Context</td>
<td>Cut</td>
<td>Group</td>
<td>Period</td>
<td>Trench/Test Pit/Excavation phase</td>
<td>Category</td>
<td>Feature Type</td>
<td>Function</td>
</tr>
<tr>
<td>---------</td>
<td>-----</td>
<td>-------</td>
<td>--------</td>
<td>---------------------------------</td>
<td>----------</td>
<td>--------------</td>
<td>----------</td>
</tr>
<tr>
<td>244</td>
<td>241</td>
<td>240</td>
<td>III</td>
<td>fill natural</td>
<td>saltmarsh deposits</td>
<td></td>
<td></td>
</tr>
<tr>
<td>245</td>
<td>245</td>
<td>240</td>
<td>III</td>
<td>cut natural</td>
<td>intertidal creek</td>
<td></td>
<td></td>
</tr>
<tr>
<td>246</td>
<td>245</td>
<td>240</td>
<td>III</td>
<td>fill natural</td>
<td>saltmarsh deposits</td>
<td></td>
<td></td>
</tr>
<tr>
<td>247</td>
<td>245</td>
<td>240</td>
<td>III</td>
<td>fill natural</td>
<td>saltmarsh deposits</td>
<td></td>
<td></td>
</tr>
<tr>
<td>248</td>
<td>248</td>
<td>240</td>
<td>III</td>
<td>cut natural</td>
<td>intertidal creek</td>
<td></td>
<td></td>
</tr>
<tr>
<td>249</td>
<td>248</td>
<td>240</td>
<td>III</td>
<td>fill natural</td>
<td>saltmarsh deposits</td>
<td></td>
<td></td>
</tr>
<tr>
<td>250</td>
<td>1</td>
<td></td>
<td>III</td>
<td>layer saltern mound</td>
<td>filtration waste</td>
<td></td>
<td></td>
</tr>
<tr>
<td>251</td>
<td>1</td>
<td></td>
<td>III</td>
<td>layer saltern mound</td>
<td>hearth waste</td>
<td></td>
<td></td>
</tr>
<tr>
<td>252</td>
<td>240</td>
<td></td>
<td></td>
<td>layer natural</td>
<td>saltmarsh deposits</td>
<td></td>
<td></td>
</tr>
<tr>
<td>253</td>
<td>253</td>
<td>1</td>
<td>1</td>
<td>cut filtration unit</td>
<td>silt filtration</td>
<td></td>
<td></td>
</tr>
<tr>
<td>254</td>
<td>254</td>
<td>1</td>
<td>1</td>
<td>cut filtration unit</td>
<td>silt filtration</td>
<td></td>
<td></td>
</tr>
<tr>
<td>255</td>
<td>254</td>
<td>1</td>
<td>1</td>
<td>fill filtration unit</td>
<td>lining</td>
<td></td>
<td></td>
</tr>
<tr>
<td>256</td>
<td>254</td>
<td>1</td>
<td>1</td>
<td>fill filtration unit</td>
<td>disuse</td>
<td></td>
<td></td>
</tr>
<tr>
<td>257</td>
<td>254</td>
<td>1</td>
<td>1</td>
<td>fill filtration unit</td>
<td>disuse</td>
<td></td>
<td></td>
</tr>
<tr>
<td>258</td>
<td>258</td>
<td>1</td>
<td>1</td>
<td>cut filtration unit</td>
<td>silt filtration</td>
<td></td>
<td></td>
</tr>
<tr>
<td>259</td>
<td>258</td>
<td>1</td>
<td>1</td>
<td>fill filtration unit</td>
<td>lining</td>
<td></td>
<td></td>
</tr>
<tr>
<td>260</td>
<td>258</td>
<td>1</td>
<td>1</td>
<td>fill filtration unit</td>
<td>disuse</td>
<td></td>
<td></td>
</tr>
<tr>
<td>261</td>
<td>258</td>
<td>1</td>
<td>1</td>
<td>fill filtration unit</td>
<td>disuse</td>
<td></td>
<td></td>
</tr>
<tr>
<td>262</td>
<td>258</td>
<td>1</td>
<td>1</td>
<td>fill filtration unit</td>
<td>turvs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>265</td>
<td>253</td>
<td>1</td>
<td>1</td>
<td>fill filtration unit</td>
<td>lining</td>
<td></td>
<td></td>
</tr>
<tr>
<td>266</td>
<td>253</td>
<td>1</td>
<td>1</td>
<td>fill filtration unit</td>
<td>disuse</td>
<td></td>
<td></td>
</tr>
<tr>
<td>267</td>
<td>253</td>
<td>1</td>
<td>1</td>
<td>fill filtration unit</td>
<td>disuse</td>
<td></td>
<td></td>
</tr>
<tr>
<td>268</td>
<td>268</td>
<td>1</td>
<td>1</td>
<td>cut filtration unit</td>
<td>silt filtration</td>
<td></td>
<td></td>
</tr>
<tr>
<td>269</td>
<td>268</td>
<td>1</td>
<td>1</td>
<td>fill filtration unit</td>
<td>lining</td>
<td></td>
<td></td>
</tr>
<tr>
<td>270</td>
<td>268</td>
<td>1</td>
<td>1</td>
<td>fill filtration unit</td>
<td>disuse</td>
<td></td>
<td></td>
</tr>
<tr>
<td>271</td>
<td>271</td>
<td>1</td>
<td>1</td>
<td>cut filtration unit</td>
<td>silt filtration</td>
<td></td>
<td></td>
</tr>
<tr>
<td>272</td>
<td>271</td>
<td>1</td>
<td>1</td>
<td>fill filtration unit</td>
<td>lining</td>
<td></td>
<td></td>
</tr>
<tr>
<td>273</td>
<td>271</td>
<td>1</td>
<td>1</td>
<td>fill filtration unit</td>
<td>disuse</td>
<td></td>
<td></td>
</tr>
<tr>
<td>274</td>
<td>274</td>
<td>1</td>
<td>1</td>
<td>cut filtration unit</td>
<td>silt filtration</td>
<td></td>
<td></td>
</tr>
<tr>
<td>275</td>
<td>274</td>
<td>1</td>
<td>1</td>
<td>fill filtration unit</td>
<td>lining</td>
<td></td>
<td></td>
</tr>
<tr>
<td>276</td>
<td>274</td>
<td>1</td>
<td>1</td>
<td>fill filtration unit</td>
<td>disuse</td>
<td></td>
<td></td>
</tr>
<tr>
<td>277</td>
<td>277</td>
<td>1</td>
<td>1</td>
<td>cut open hearth</td>
<td>brine boiling</td>
<td></td>
<td></td>
</tr>
<tr>
<td>278</td>
<td>201</td>
<td>1</td>
<td>III</td>
<td>layer saltern mound</td>
<td>filtration waste</td>
<td></td>
<td></td>
</tr>
<tr>
<td>279</td>
<td>202</td>
<td>1</td>
<td>III</td>
<td>layer saltern mound</td>
<td>filtration waste</td>
<td></td>
<td></td>
</tr>
<tr>
<td>280</td>
<td>240</td>
<td></td>
<td></td>
<td>layer natural</td>
<td>marsh deposit</td>
<td></td>
<td></td>
</tr>
<tr>
<td>281</td>
<td>277</td>
<td>1</td>
<td>1</td>
<td>fill open hearth</td>
<td>disuse</td>
<td></td>
<td></td>
</tr>
<tr>
<td>286</td>
<td>197</td>
<td>3</td>
<td>III</td>
<td>layer made ground</td>
<td>modern</td>
<td></td>
<td></td>
</tr>
<tr>
<td>287</td>
<td>200</td>
<td>2</td>
<td>III</td>
<td>layer saltern mound</td>
<td>hearth waste</td>
<td></td>
<td></td>
</tr>
<tr>
<td>288</td>
<td>201</td>
<td>1</td>
<td>III</td>
<td>layer saltern mound</td>
<td>filtration waste</td>
<td></td>
<td></td>
</tr>
<tr>
<td>289</td>
<td>202</td>
<td>1</td>
<td>III</td>
<td>layer saltern mound</td>
<td>filtration waste</td>
<td></td>
<td></td>
</tr>
<tr>
<td>290</td>
<td>1</td>
<td></td>
<td>III</td>
<td>layer surface (external)</td>
<td>land surface</td>
<td></td>
<td></td>
</tr>
<tr>
<td>291</td>
<td>1</td>
<td></td>
<td>III</td>
<td>layer surface (external)</td>
<td>land surface</td>
<td></td>
<td></td>
</tr>
<tr>
<td>293</td>
<td>293</td>
<td></td>
<td>III</td>
<td>layer natural</td>
<td>creek deposit</td>
<td></td>
<td></td>
</tr>
<tr>
<td>294</td>
<td>294</td>
<td>2</td>
<td>1</td>
<td>Cut filtration unit</td>
<td>silt filtration</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Context</td>
<td>Cut</td>
<td>Group</td>
<td>Period</td>
<td>Trench/Test Pit/Excavation phase</td>
<td>Category</td>
<td>Feature Type</td>
<td>Function</td>
</tr>
<tr>
<td>---------</td>
<td>------</td>
<td>-------</td>
<td>--------</td>
<td>---------------------------------</td>
<td>--------------</td>
<td>-----------------------</td>
<td>------------------</td>
</tr>
<tr>
<td>295</td>
<td>294</td>
<td>2</td>
<td>1</td>
<td>III</td>
<td>fill</td>
<td>filtration unit</td>
<td>lining</td>
</tr>
<tr>
<td>296</td>
<td>294</td>
<td>2</td>
<td>1</td>
<td>III</td>
<td>fill</td>
<td>filtration unit</td>
<td>disuse</td>
</tr>
<tr>
<td>297</td>
<td>201</td>
<td>1</td>
<td>1</td>
<td>III</td>
<td>layer</td>
<td>saltern mound</td>
<td>filtration waste</td>
</tr>
<tr>
<td>298</td>
<td>201</td>
<td>1</td>
<td>1</td>
<td>III</td>
<td>layer</td>
<td>saltern mound</td>
<td>filtration waste</td>
</tr>
<tr>
<td>299</td>
<td>1</td>
<td>1</td>
<td>III</td>
<td>layer</td>
<td>saltern mound</td>
<td>hearth waste</td>
<td></td>
</tr>
<tr>
<td>300</td>
<td>202</td>
<td>1</td>
<td>III</td>
<td>layer</td>
<td>saltern mound</td>
<td>filtration waste</td>
<td></td>
</tr>
<tr>
<td>301</td>
<td>1</td>
<td>1</td>
<td>III</td>
<td>layer</td>
<td>surface (external)</td>
<td>land surface</td>
<td></td>
</tr>
<tr>
<td>302</td>
<td>1</td>
<td>1</td>
<td>III</td>
<td>layer</td>
<td>saltern mound</td>
<td>filtration waste</td>
<td></td>
</tr>
<tr>
<td>303</td>
<td>201</td>
<td>1</td>
<td>III</td>
<td>layer</td>
<td>saltern mound</td>
<td>filtration waste</td>
<td>filtration waste</td>
</tr>
<tr>
<td>304</td>
<td>202</td>
<td>1</td>
<td>III</td>
<td>layer</td>
<td>saltern mound</td>
<td>filtration waste</td>
<td></td>
</tr>
<tr>
<td>305</td>
<td>1</td>
<td>1</td>
<td>III</td>
<td>layer</td>
<td>saltern mound</td>
<td>filtration waste</td>
<td></td>
</tr>
</tbody>
</table>

*Table 9: Context inventory*
APPENDIX B. FINDS REPORTS

B.1 Pottery

By Sue Anderson

Introduction

B.1.1 Seventy-eight sherds of pottery weighing 689g were collected from fifteen contexts during the excavation. Table 10 shows the quantification by fabric; a summary catalogue by context is included as Table 11.

<table>
<thead>
<tr>
<th>Description</th>
<th>Date range</th>
<th>Fabric</th>
<th>No</th>
<th>Wt/g</th>
<th>eve</th>
<th>MNV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thetford Ware (Grimston)</td>
<td>L.10th–11th c.</td>
<td>THETG</td>
<td>37</td>
<td>248</td>
<td>0.63</td>
<td>11</td>
</tr>
<tr>
<td>Early medieval ware</td>
<td>11th–13th c.</td>
<td>EMW</td>
<td>14</td>
<td>84</td>
<td>0.06</td>
<td>10</td>
</tr>
<tr>
<td>Medieval coarseware</td>
<td>12th–14th c.</td>
<td>MCW</td>
<td>8</td>
<td>189</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Grimston coarseware</td>
<td>12th–M.13th c.</td>
<td>GRCW</td>
<td>10</td>
<td>135</td>
<td>0.11</td>
<td>4</td>
</tr>
<tr>
<td><strong>Total Late Saxon to medieval</strong></td>
<td></td>
<td></td>
<td>70</td>
<td>656</td>
<td>0.80</td>
<td>26</td>
</tr>
<tr>
<td>Tin-glazed earthenwares</td>
<td>16th–18th c.</td>
<td>TGE</td>
<td>1</td>
<td>2</td>
<td>0.03</td>
<td>1</td>
</tr>
<tr>
<td>Refined white earthenwares</td>
<td>L.18th–20th c.</td>
<td>REFW</td>
<td>2</td>
<td>5</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Creamwares</td>
<td>18th c.</td>
<td>CRW</td>
<td>1</td>
<td>4</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Pearlware</td>
<td>L.18th–19th c.</td>
<td>PEW</td>
<td>1</td>
<td>1</td>
<td>0.05</td>
<td>1</td>
</tr>
<tr>
<td>English Stoneware Nottingham-type</td>
<td>19th c.</td>
<td>ESWN</td>
<td>1</td>
<td>5</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Late slipped redware</td>
<td>L.18th–19th c.</td>
<td>LSRW</td>
<td>3</td>
<td>16</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td><strong>Total post-medieval to modern</strong></td>
<td></td>
<td></td>
<td>8</td>
<td>33</td>
<td>0.08</td>
<td>9</td>
</tr>
</tbody>
</table>

Table 10: Pottery quantification by fabric
<table>
<thead>
<tr>
<th>Context</th>
<th>Fabric</th>
<th>Type</th>
<th>No</th>
<th>Wt/g</th>
<th>MNV</th>
<th>Form</th>
<th>Rim</th>
<th>Handle</th>
<th>Base</th>
<th>Parallels</th>
<th>Decoration</th>
<th>Glaze int</th>
<th>Glaze ext</th>
<th>Rim diam</th>
<th>Rim percent</th>
<th>Abrasion</th>
<th>Soot</th>
<th>Wear</th>
<th>Draw?</th>
<th>Notes</th>
<th>Spot date</th>
</tr>
</thead>
<tbody>
<tr>
<td>33</td>
<td>EMW</td>
<td>U</td>
<td>2</td>
<td>7</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>oxid ext, occ soft red incl</td>
</tr>
<tr>
<td>33</td>
<td>EMW</td>
<td>U</td>
<td>1</td>
<td>16</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>oxid int, white deposit ext</td>
</tr>
<tr>
<td>33</td>
<td>GRC</td>
<td>W</td>
<td>B</td>
<td>13</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>pinkish deposit all over</td>
</tr>
<tr>
<td>35</td>
<td>GRC</td>
<td>W</td>
<td>U</td>
<td>15</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>or THETG? Slight shoulder</td>
</tr>
<tr>
<td>35</td>
<td>GRC</td>
<td>W</td>
<td>U</td>
<td>6</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>burnt or heavily overfired</td>
</tr>
<tr>
<td>41</td>
<td>EMW</td>
<td>B</td>
<td>1</td>
<td>12</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>oxid both surfaces</td>
</tr>
<tr>
<td>41</td>
<td>EMW</td>
<td>R</td>
<td>1</td>
<td>10</td>
<td>1</td>
<td>JR</td>
<td>SEV</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>ext</td>
<td>slightly squared rim edge, but damaged</td>
</tr>
<tr>
<td>64</td>
<td>ESW</td>
<td>N</td>
<td>D</td>
<td>1</td>
<td>5</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>B</td>
<td></td>
</tr>
<tr>
<td>64</td>
<td>LSR</td>
<td>W</td>
<td>D</td>
<td>1</td>
<td>14</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>int</td>
<td>SLW int Y/B DB</td>
</tr>
<tr>
<td>64</td>
<td>REF</td>
<td>W</td>
<td>U</td>
<td>2</td>
<td>5</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>64</td>
<td>PEW</td>
<td>R</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>BL</td>
<td>PL</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>flaring sided?</td>
</tr>
<tr>
<td>67</td>
<td>THET</td>
<td>G</td>
<td>U</td>
<td>6</td>
<td>11</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>+</td>
<td>fully reduced</td>
</tr>
<tr>
<td>67</td>
<td>THET</td>
<td>G</td>
<td>U</td>
<td>1</td>
<td>7</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>fully reduced</td>
</tr>
</tbody>
</table>

© Oxford Archaeology
Page 48 of 100
Report Number 1866
<table>
<thead>
<tr>
<th>Context</th>
<th>Fabric</th>
<th>Type</th>
<th>No</th>
<th>Wt/g</th>
<th>MNV</th>
<th>Form</th>
<th>Rim</th>
<th>Handle</th>
<th>Base</th>
<th>Parallel</th>
<th>Decor</th>
<th>Glaze int</th>
<th>Glaze ext</th>
<th>Rim diam</th>
<th>Rim percent</th>
<th>Abrasion</th>
<th>Soot</th>
<th>Wear</th>
<th>Draw?</th>
<th>Notes</th>
<th>Spot date</th>
</tr>
</thead>
<tbody>
<tr>
<td>67</td>
<td>THET G</td>
<td>U</td>
<td>1</td>
<td>5</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>F?</td>
<td></td>
<td>W</td>
<td>W</td>
<td>240</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>ext, oxid ext</td>
<td></td>
</tr>
<tr>
<td>67</td>
<td>THET G</td>
<td>B?</td>
<td>1</td>
<td>6</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>F?</td>
<td></td>
<td>W</td>
<td>W</td>
<td>240</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>fully reduced</td>
<td></td>
</tr>
<tr>
<td>87</td>
<td>TGE</td>
<td>R</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>PL?</td>
<td>EV</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>W</td>
<td>W</td>
<td>240</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>18?</td>
<td></td>
</tr>
<tr>
<td>87</td>
<td>CRW</td>
<td>B?</td>
<td>1</td>
<td>4</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>F?</td>
<td></td>
<td>C</td>
<td>C</td>
<td></td>
<td></td>
<td>blue tinge to</td>
<td></td>
<td></td>
<td></td>
<td>glaze</td>
<td></td>
</tr>
<tr>
<td>87</td>
<td>LSR W</td>
<td>D</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>SLW</td>
<td>int</td>
<td>Y</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>90</td>
<td>LSR W</td>
<td>D</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>SLW</td>
<td>int</td>
<td>C</td>
<td>B</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>94</td>
<td>THET G</td>
<td>RU</td>
<td>12</td>
<td>154</td>
<td>1</td>
<td>AB</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>140</td>
<td>47</td>
<td></td>
<td></td>
<td>rounded end to</td>
<td></td>
<td></td>
<td></td>
<td>rim</td>
<td></td>
</tr>
<tr>
<td>94</td>
<td>THET G</td>
<td>U</td>
<td>4</td>
<td>17</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>poss same as</td>
<td></td>
<td></td>
<td></td>
<td>jar, don't join,</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>fully reduced</td>
<td></td>
<td></td>
<td></td>
<td>fully reduced</td>
<td></td>
</tr>
<tr>
<td>94</td>
<td>GRC W</td>
<td>RU</td>
<td>7</td>
<td>101</td>
<td>1</td>
<td>BL</td>
<td>INT</td>
<td>Little</td>
<td></td>
<td>type Bl</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>pinkish deposit</td>
<td></td>
<td></td>
<td></td>
<td>int &amp; on breaks</td>
<td></td>
</tr>
<tr>
<td>94</td>
<td>EMW</td>
<td>U</td>
<td>4</td>
<td>11</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>+</td>
<td></td>
<td></td>
<td></td>
<td>pinkish deposit int &amp; on breaks</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>94</td>
<td>EMW</td>
<td>U</td>
<td>2</td>
<td>9</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>99</td>
<td>THET G</td>
<td>RU</td>
<td>4</td>
<td>20</td>
<td>1</td>
<td>AB</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>130</td>
<td>16</td>
<td>+</td>
<td>ext</td>
<td>ext surface</td>
<td></td>
<td></td>
<td></td>
<td>pink, flaky, burnt</td>
<td></td>
</tr>
<tr>
<td>101</td>
<td>THET G</td>
<td>U</td>
<td>4</td>
<td>8</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>+</td>
<td></td>
<td>overfired,</td>
<td></td>
<td></td>
<td></td>
<td>whitish int</td>
<td></td>
</tr>
<tr>
<td>124</td>
<td>EMW</td>
<td>U</td>
<td>1</td>
<td>11</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>+</td>
<td></td>
<td>+</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Context</td>
<td>Fabric</td>
<td>Type</td>
<td>No</td>
<td>Wt/g</td>
<td>MNV</td>
<td>Form</td>
<td>Rim</td>
<td>Handle</td>
<td>Base</td>
<td>Parallel</td>
<td>Decor</td>
<td>Glaze int</td>
<td>Glaze ext</td>
<td>Rim diam</td>
<td>Rim percent</td>
<td>Abrasion</td>
<td>Soot</td>
<td>Wear</td>
<td>Draw?</td>
<td>Notes</td>
<td>Spot date</td>
</tr>
<tr>
<td>---------</td>
<td>--------</td>
<td>------</td>
<td>----</td>
<td>------</td>
<td>-----</td>
<td>------</td>
<td>-----</td>
<td>--------</td>
<td>------</td>
<td>----------</td>
<td>-------</td>
<td>-----------</td>
<td>-----------</td>
<td>----------</td>
<td>-------------</td>
<td>----------</td>
<td>------</td>
<td>------</td>
<td>-------</td>
<td>-------</td>
<td>-----------</td>
</tr>
<tr>
<td>124</td>
<td>MCW</td>
<td>RU</td>
<td>8</td>
<td>189</td>
<td>1</td>
<td>JR</td>
<td>COLL</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>abundant ms, appearing mostly black on surface, pale buff surfaces, grey core, rare cq &amp; Fe</td>
<td>13-14</td>
</tr>
<tr>
<td>153</td>
<td>EMW</td>
<td>U</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>oxid surfaces, bright orange-red</td>
<td></td>
</tr>
<tr>
<td>167</td>
<td>EMW</td>
<td>U</td>
<td>1</td>
<td>5</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>overfired</td>
<td></td>
</tr>
<tr>
<td>200</td>
<td>THET</td>
<td>G</td>
<td>2</td>
<td>13</td>
<td>1</td>
<td>S</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>overfired</td>
<td></td>
</tr>
<tr>
<td>200</td>
<td>THET</td>
<td>U</td>
<td>1</td>
<td>4</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>202</td>
<td>THET</td>
<td>U</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>pale buff int</td>
<td></td>
</tr>
</tbody>
</table>

*Table 11: Summary pottery catalogue by context*
**Methodology**

B.1.2 Quantification was carried out using sherd count, weight and estimated vessel equivalent (eve). A full quantification by fabric, context and feature is available in the archive. All fabric codes were assigned from the author’s post-Roman fabric series, which includes East Anglian and Midlands fabrics, as well as imported wares. Post-medieval wares were identified based on Jennings’ (1981) descriptions. Form terminology follows MPRG (1998). The catalogue was input directly into an MS Access database.

**Pottery by period**

*Late Saxon to medieval*

B.1.3 The seventy sherds of this broad period represented only 26 vessels. A medieval coarseware jar from waste deposit (124) was probably the latest vessel in the group. Other vessels were in three main fabrics, which are probably broadly contemporary with each other. The date ranges given for Grimston Thetford-type ware and Grimston coarseware in Table 10 are those suggested by Little (1994, 90) and they do not overlap, but it is noted in the same volume (Lentowicz 1994, 83) that there was a transitional period in which forms of both groups were produced in both fabrics. Nevertheless, some contexts in this assemblage contained only Thetford-type wares and these suggest that activity began on the site in the 11th century (see below).

B.1.4 Only ten or eleven vessels of Thetford-type ware were represented by 37 sherds. Most sherds were body fragments, but there were two bases (one flat and the other sagging), and two jar rims (both everted with parallel sides and rounded ends). One of these comprised 12 (or possibly 16) sherds in waste deposit (94).

B.1.5 Ten sherds of Grimston coarseware represented only four vessels. There was one sagging base, two body sherds, and seven sherds from a shallow bowl (Little 1994, type Bl). The latter was found in waste deposit (94), along with one of the Thetford-type jars and a few sherds of EMW.

B.1.6 The early medieval wares in this group were all in fine sandy (greensand) fabrics with occasional ferrous inclusions, similar to early medieval wares made at Blackborough End (Rogerson and Ashley 1985). They varied in colour from fully reduced black, through brownish red to bright orange-red, although most had reduced cores. One sagging base was present, and there was one simple everted jar rim, but all other fragments were body sherds.

B.1.7 Eight sherds of a jar with a collared rim were recorded as medieval coarseware. The vessel is unprovenanced, although it has similarities in fabric to pottery made in the Cambridgeshire/Suffolk fens. The fabric comprised abundant medium-coarse sand, which appeared black on the yellowish surfaces, and occasional coarse inclusions such as ferrous material and coarse quartz. The core was mid grey. The form appeared to be a developed type and the vessel has been dated to the 13th/14th century. However the lack of any glazed Grimston ware at the site, given its normal ubiquity on sites in King’s Lynn, may indicate that the site had ceased activity before this.

B.1.8 A number of sherds in all fabrics showed signs of overfiring or burning. These were recovered from waste deposits (35), (99), (101) and (200). Sherds with whitish or pinkish deposits were noted in waste deposits (33) and (94). This probably indicates that the vessels were being used in the salt-making process.
Post-medieval to modern

B.1.9 Three contexts contained pottery of 18th–19th-century date. Potentially the earliest sherd in the group was a small everted rim fragment from a tin-glazed earthenware plate or dish, probably of 18th century date, recovered from made ground (87). With this were a fragment of a creamware footring base and a tiny sherd of slipped redware, the latter suggesting a late 18th or 19th-century date for the context. Another small body sherd of this ware, part of a hollow ware vessel, was recovered from made ground (90).

B.1.10 Sherds of probably 19th-century date were recovered from layer (64) and comprised two undecorated refined whiteware body sherds, a small fragment of rim from a pearlware transfer-printed bowl, a body sherd of late slipped redware with streaky brown glaze over the white slip internally, and a body sherd of Nottingham-type stoneware.

Pottery by Context

B.1.11 Table 12 shows the distribution of fabrics by context.

<table>
<thead>
<tr>
<th>Context</th>
<th>Cut</th>
<th>Group</th>
<th>Period</th>
<th>Type</th>
<th>Fabrics</th>
<th>Spot date</th>
</tr>
</thead>
<tbody>
<tr>
<td>33</td>
<td>200</td>
<td>2</td>
<td></td>
<td>waste deposit</td>
<td>EMW GRCW</td>
<td>12th–M.13th c.</td>
</tr>
<tr>
<td>35</td>
<td>200</td>
<td>2</td>
<td></td>
<td>waste deposit</td>
<td>GRCW</td>
<td>12th–M.13th c.</td>
</tr>
<tr>
<td>41</td>
<td>42</td>
<td>3</td>
<td>2</td>
<td>hearth flue?</td>
<td>EMW</td>
<td>11th–13th c.</td>
</tr>
<tr>
<td>67</td>
<td>201</td>
<td>1</td>
<td></td>
<td>waste deposit</td>
<td>THETG</td>
<td>L.10th–11th c.</td>
</tr>
<tr>
<td>94</td>
<td>200</td>
<td>2</td>
<td></td>
<td>waste deposit</td>
<td>THETG EMW GRCW</td>
<td>12th–M.13th c.</td>
</tr>
<tr>
<td>99</td>
<td>200</td>
<td>2</td>
<td></td>
<td>waste deposit</td>
<td>THETG</td>
<td>L.10th–11th c.</td>
</tr>
<tr>
<td>101</td>
<td>201</td>
<td>1</td>
<td></td>
<td>waste deposit</td>
<td>THETG</td>
<td>L.10th–11th c.</td>
</tr>
<tr>
<td>124</td>
<td>200</td>
<td>2</td>
<td></td>
<td>waste deposit</td>
<td>EMW MCW</td>
<td>13th c.?</td>
</tr>
<tr>
<td>153</td>
<td>200</td>
<td>2</td>
<td></td>
<td>waste deposit</td>
<td>EMW</td>
<td>11th–13th c.</td>
</tr>
<tr>
<td>167</td>
<td>164</td>
<td>2</td>
<td>1</td>
<td>silt filtration unit</td>
<td>EMW</td>
<td>11th–13th c.</td>
</tr>
<tr>
<td>200</td>
<td>200</td>
<td>2</td>
<td></td>
<td>waste deposit</td>
<td>THETG</td>
<td>L.10th–11th c.</td>
</tr>
<tr>
<td>202</td>
<td>202</td>
<td>1</td>
<td></td>
<td>waste deposit</td>
<td>THETG</td>
<td>L.10th–11th c.</td>
</tr>
<tr>
<td>064</td>
<td>61</td>
<td>3</td>
<td></td>
<td>modern pit fill</td>
<td>ESWN PEW LSRW REFW</td>
<td>L.18th–19th c.</td>
</tr>
<tr>
<td>87</td>
<td>197</td>
<td>3</td>
<td></td>
<td>made ground</td>
<td>TGE CRW LSRW</td>
<td>L.18th c.</td>
</tr>
<tr>
<td>90</td>
<td>197</td>
<td>3</td>
<td></td>
<td>made ground</td>
<td>LSRW</td>
<td>L.18th–19th c.</td>
</tr>
</tbody>
</table>

Table 12: Pottery by context.
B.1.12 Most of the Late Saxon to medieval sherds were recovered from waste deposits in the saltern, with later material from truncation layers and made ground.

**Discussion**

B.1.13 The assemblage contains two separate but intrinsically broadly contemporary groups, one dating to the 11th–13th centuries and the other to the 18th/19th centuries.

B.1.14 The earlier of the two groups comprised typical local wares of the period, with identifiable vessel forms being the usual jar and bowl types. Although these vessels can be found on many sites of the period, they are more typically associated with domestic contexts and they are not specific to any particular function. The presence of burning and presumed salt deposits on a number of the sherds suggests that, in this case, they did have an industrial role. Whilst they may have been used for storage (and possibly transportation) of the finished product, the presence of burning suggests they were sometimes exposed to very high temperatures and may have been used in the salt-making process. Forms and fabrics present in the assemblage suggest that the site had probably ceased activity by the mid 13th century.

B.1.15 There is no ceramic evidence for any activity between the end of the saltern and the 18th century. The finds from the made ground and layers may have been deposited following truncation of earlier layers, however (G Clarke, pers comm). There was no redeposition of earlier material. The post-medieval pottery is all of English origin and typical of the 18th and 19th centuries.

B.2 Ceramic Building Material

*By Sue Anderson*

B.2.1 Six fragments (798g) of Ceramic Building Material (CBM) were recovered from two contexts (Table 13).

B.2.2 Fill 10 of Period 3 pit 9 contained fragments of three handmade bricks in three different fabrics. The largest piece, in a fine sand and grog-tempered purplish fabric measured 100mm wide and 60mm thick, had cream-coloured medium sandy lime mortar on the upper surface, and was probably of 19th-century date. A fragment of brick in a dark red estuarine clay was likely to be of later medieval or early post-medieval date. A small piece in poorly mixed yellow/red/dark grey clays, probably of estuarine origin, may be a medieval brick, but similar bricks were produced into the post-medieval period in this area. Two fragments in fine sandy micaceous fabrics were of uncertain form. One was flat and the other was slightly curved with a straight-cut edge. The fabrics and manufacture of both were similar to machine-made pantiles, but these pieces were smoothed on both surfaces, whilst pantiles have sanded bases. They may be fragments of drainpipes or field drain tiles.

B.2.3 A small fragment of pantile in a fine sandy fabric, with a sanded base, was found in natural channel (22). Pantiles were in use from the 17th century onwards in East Anglia, but this example was well made and probably of fairly recent date.

<table>
<thead>
<tr>
<th>Context</th>
<th>Cut</th>
<th>Fabric</th>
<th>Form</th>
<th>No</th>
<th>Wt</th>
<th>Width</th>
<th>Height</th>
<th>Mortar</th>
<th>Notes</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>9</td>
<td>est</td>
<td>B</td>
<td>1</td>
<td>133</td>
<td>thin</td>
<td></td>
<td>red-purple</td>
<td>late-med?</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>9</td>
<td>fsg</td>
<td>B</td>
<td>1</td>
<td>502</td>
<td>100</td>
<td>60</td>
<td>cream ms on upper</td>
<td>pinkish purple</td>
<td>post-med.</td>
</tr>
<tr>
<td>10</td>
<td>9</td>
<td>est</td>
<td>B?</td>
<td>1</td>
<td>68</td>
<td></td>
<td></td>
<td>yellow/red/dark grey poorly</td>
<td>post-med?</td>
<td></td>
</tr>
<tr>
<td>Context</td>
<td>Cut</td>
<td>Fabric</td>
<td>Form</td>
<td>No</td>
<td>Wt</td>
<td>Width</td>
<td>Height</td>
<td>Mortar</td>
<td>Notes</td>
<td>Date</td>
</tr>
<tr>
<td>---------</td>
<td>-----</td>
<td>--------</td>
<td>------</td>
<td>----</td>
<td>----</td>
<td>-------</td>
<td>--------</td>
<td>--------</td>
<td>-------</td>
<td>-------</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>9</td>
<td>fsm</td>
<td>T</td>
<td>1</td>
<td>28</td>
<td></td>
<td></td>
<td></td>
<td>looks like PAN but smoothed on both sides, flat</td>
<td>post-med.</td>
</tr>
<tr>
<td>10</td>
<td>9</td>
<td>fsm</td>
<td>DP?</td>
<td>1</td>
<td>34</td>
<td></td>
<td></td>
<td></td>
<td>looks like PAN but smoothed on both sides, curved with one cut edge</td>
<td>post-med.</td>
</tr>
<tr>
<td>22</td>
<td>21</td>
<td>fs</td>
<td>PAN</td>
<td>1</td>
<td>33</td>
<td></td>
<td></td>
<td></td>
<td>sparse fine Fe</td>
<td>post-med.</td>
</tr>
</tbody>
</table>

Table 13: CBM by context

B.3 Clay pipes

By Sue Anderson

B.3.1 Five fragments of clay tobacco pipes were recovered from two contexts (Table 14). Layer (10) contained two stem fragments with bore diameters of 2.2mm and 2.6mm, suggesting an 18th–19th-century date range. Made ground (87) contained two fragments of bowls, one with a milled rim, both of which appeared to be from bowls of 18th-century date, and a fragment of stem with a bore diameter of 2.0mm, which may indicate and 18th/19th-century date.

<table>
<thead>
<tr>
<th>Context</th>
<th>Cut</th>
<th>Group</th>
<th>Frag</th>
<th>No</th>
<th>Wt (g)</th>
<th>Bore diam (mm)</th>
<th>Notes</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>9</td>
<td>stem</td>
<td>1</td>
<td>1</td>
<td>2.2</td>
<td>2.2</td>
<td></td>
<td>18th–19th century?</td>
</tr>
<tr>
<td>10</td>
<td>9</td>
<td>stem</td>
<td>1</td>
<td>1</td>
<td>2.6</td>
<td>2.6</td>
<td></td>
<td>18th century?</td>
</tr>
<tr>
<td>87</td>
<td></td>
<td></td>
<td>197</td>
<td>1</td>
<td>4</td>
<td>half bowl, milled rim</td>
<td>early 18th century</td>
<td></td>
</tr>
<tr>
<td>87</td>
<td>197</td>
<td></td>
<td></td>
<td>1</td>
<td>2</td>
<td>small frag.</td>
<td>18th century?</td>
<td></td>
</tr>
<tr>
<td>87</td>
<td>197</td>
<td>stem</td>
<td></td>
<td>1</td>
<td>2.0</td>
<td>2.0</td>
<td></td>
<td>18th–19th century?</td>
</tr>
</tbody>
</table>

Table 14: Clay pipes by context
B.4 Baked Clay

By Sarah Percival

Introduction

The baked clay assemblage from the excavation comprises 402 fragments weighing 7,726g from 30 contexts.

Nature of the Assemblage

The assemblage comprises largely amorphous pieces, few with any obvious form. The material was found in three fabrics, all most likely formed utilising the local Upper Jurassic clays (Table 15). A soft fine silty clay with no visible inclusions was used to form a poorly fired irregular brick-like object 83mm thick with red orange surfaces and occasionally dark grey core. The same fabric was also used for plate-like pieces 28mm thick which may be from hearth lining smoothed onto the walls of the hearth below ground and for a possible hand-squeezed fragment which may be an ad hoc wedge or similar support found in open hearth 190. This fabric is similar to clays used to make cone-shaped pedestals and hearth lining found at the 12th to 13th century saltern excavated at the former Queen Mary’s Nurses Home Kings Lynn (Cope-Faulkner 2014, Fig 9.).

The second fabric is formed of the same fine clay but with the addition of fine organic material, perhaps chopped grass. The fragments made of this organic tempered fabric often have one smoothed surface and may represent the above ground superstructure of the oven.

<table>
<thead>
<tr>
<th>Fabric</th>
<th>Description</th>
<th>Type</th>
<th>Quantity</th>
<th>Weight (g)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q1</td>
<td>Fine clay with common short regular elongated voids</td>
<td>Lining</td>
<td>7</td>
<td>461</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Miscellaneous</td>
<td>82</td>
<td>791</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Superstructure</td>
<td>5</td>
<td>288</td>
</tr>
<tr>
<td>Q1</td>
<td>Fine clay with few visible inclusions</td>
<td>Brick</td>
<td>1</td>
<td>664</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Lining</td>
<td>89</td>
<td>5072</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Miscellaneous</td>
<td>209</td>
<td>210</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Superstructure</td>
<td>3</td>
<td>28</td>
</tr>
<tr>
<td>QO</td>
<td>Fine clay with occasional mixed irregular elongated voids</td>
<td>Lining</td>
<td>6</td>
<td>212</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td>402</td>
<td>7726</td>
</tr>
</tbody>
</table>

Table 15: Quantity and weight of baked clay by fabric

A third fabric, a fine silty clay with irregular elongated organic inclusions has distinctive lilac orange colouring comparable in both colour and composition with poorly fired clay recovered from the base of settling tanks at the Roman saltern sites at Middleton (Percival 2001, 184). It is therefore possible that this material is derived from the lining of a brine pit, an interpretation compatible with the context of recovery within the fill of water tank 223.

Distribution

The assemblage is almost all redeposited with the possible exception of the clay lining found in pit 223. The largest collection of baked clay comes from dumped layers and perhaps represent material used to consolidate unstable ground or perhaps from clearing and levelling of the site.
B.4.6 The soft fired brick comes from the burnt mound perhaps composed of hearth debris whilst the possible support was found in the fill of pit 190.

<table>
<thead>
<tr>
<th>Period</th>
<th>Feature</th>
<th>Context</th>
<th>Feature type</th>
<th>Type</th>
<th>Quantity</th>
<th>Weight (g)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Group 200</td>
<td>35</td>
<td>Upper saltern mound</td>
<td>Lining</td>
<td>2</td>
<td>95</td>
</tr>
<tr>
<td>1</td>
<td>Group 201</td>
<td>67</td>
<td>Lower saltern mound</td>
<td>Lining</td>
<td>2</td>
<td>85</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Miscellaneous</td>
<td>21</td>
<td>221</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Superstructure</td>
<td>7</td>
<td>211</td>
</tr>
<tr>
<td>2</td>
<td>Group 200</td>
<td>94</td>
<td>Upper saltern mound</td>
<td>Brick</td>
<td>1</td>
<td>664</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Lining</td>
<td>10</td>
<td>298</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Miscellaneous</td>
<td>15</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Superstructure</td>
<td>1</td>
<td>105</td>
</tr>
<tr>
<td>2</td>
<td>Group 200</td>
<td>98</td>
<td>Upper saltern mound</td>
<td>Lining</td>
<td>30</td>
<td>459</td>
</tr>
<tr>
<td>2</td>
<td>Group 200</td>
<td>99</td>
<td>Upper saltern mound</td>
<td>Miscellaneous</td>
<td>9</td>
<td>71</td>
</tr>
<tr>
<td>3</td>
<td>Group 198</td>
<td>102</td>
<td>Recent deposits</td>
<td>Miscellaneous</td>
<td>45</td>
<td>18</td>
</tr>
<tr>
<td></td>
<td></td>
<td>105</td>
<td>Recent deposits</td>
<td>Miscellaneous</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>Group 200</td>
<td>110</td>
<td>Upper saltern mound</td>
<td>Miscellaneous</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td>Group 200</td>
<td>111</td>
<td>Upper saltern mound</td>
<td>Miscellaneous</td>
<td>5</td>
<td>22</td>
</tr>
<tr>
<td>3</td>
<td>Group 199</td>
<td>199</td>
<td>Recent deposits</td>
<td>Miscellaneous</td>
<td>10</td>
<td>5</td>
</tr>
<tr>
<td>2</td>
<td>Group 200</td>
<td>200</td>
<td>Upper saltern mound</td>
<td>Lining</td>
<td>16</td>
<td>1133</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Miscellaneous</td>
<td>1</td>
<td>11</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td>251</td>
<td>Hearth waste</td>
<td>Miscellaneous</td>
<td>18</td>
<td>11</td>
</tr>
<tr>
<td>2</td>
<td>42</td>
<td>38</td>
<td>Enclosed hearth</td>
<td>Miscellaneous</td>
<td>3</td>
<td>223</td>
</tr>
<tr>
<td></td>
<td></td>
<td>41</td>
<td>Enclosed hearth</td>
<td>Miscellaneous</td>
<td>6</td>
<td>98</td>
</tr>
<tr>
<td>1</td>
<td>164</td>
<td>166</td>
<td>Filtration unit</td>
<td>Miscellaneous</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>167</td>
<td>Filtration unit</td>
<td>Lining</td>
<td>1</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Miscellaneous</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>1</td>
<td>223</td>
<td>225</td>
<td>Water tank</td>
<td>Lining</td>
<td>3</td>
<td>193</td>
</tr>
<tr>
<td>2</td>
<td>205</td>
<td>162</td>
<td>Enclosed hearth</td>
<td>Lining</td>
<td>27</td>
<td>3136</td>
</tr>
<tr>
<td>2</td>
<td>11</td>
<td>12</td>
<td>Enclosed hearth</td>
<td>Miscellaneous</td>
<td>5</td>
<td>79</td>
</tr>
<tr>
<td>2</td>
<td>205</td>
<td>115</td>
<td>Enclosed hearth</td>
<td>Lining</td>
<td>8</td>
<td>308</td>
</tr>
<tr>
<td></td>
<td></td>
<td>132</td>
<td>Lining</td>
<td>3</td>
<td>24</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>190</td>
<td>192</td>
<td>Open hearth</td>
<td>Support?</td>
<td>1</td>
<td>35</td>
</tr>
<tr>
<td>1</td>
<td>231</td>
<td>232</td>
<td>Filtration unit</td>
<td>Miscellaneous</td>
<td>20</td>
<td>1</td>
</tr>
<tr>
<td>1</td>
<td>258</td>
<td>264</td>
<td>Filtration unit</td>
<td>Miscellaneous</td>
<td>16</td>
<td>4</td>
</tr>
<tr>
<td>1</td>
<td>253</td>
<td>265</td>
<td>Filtration unit</td>
<td>Miscellaneous</td>
<td>10</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td></td>
<td>266</td>
<td>Filtration unit</td>
<td>Miscellaneous</td>
<td>17</td>
<td>8</td>
</tr>
<tr>
<td>1</td>
<td>274</td>
<td>275</td>
<td>Filtration unit</td>
<td>Miscellaneous</td>
<td>7</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>276</td>
<td>Filtration unit</td>
<td>Miscellaneous</td>
<td>35</td>
<td>5</td>
</tr>
<tr>
<td>1</td>
<td>277</td>
<td>281</td>
<td>Open hearth</td>
<td>Miscellaneous</td>
<td>27</td>
<td>68</td>
</tr>
<tr>
<td>1</td>
<td>170</td>
<td>171</td>
<td>Filtration unit</td>
<td>Miscellaneous</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>402</td>
<td>7726</td>
</tr>
</tbody>
</table>

*Table 16: Quantity and weight of baked clay by feature*
Discussion

B.4.7 Salt was an important trading commodity for medieval King's Lynn (Owen 1984, 41) and was produced on a number of sites along the Nar in West Lynn and elsewhere on the outskirts the town (Silvester 1988, fig. 14). Salt production sites at Lynn were mentioned at LENA in Domesday Book (Brown 1984, 215b) and also in a charter by Bishop Herbert de Losinga of 1100 (Hankinson 2005, 80). Several of the Domesday saltern sites appear to have survived into the later medieval period (Clarke and Carter 1977, 412) and have been dated by pottery evidence to the 12th and 13th centuries (Silvester 1988, 27).

B.4.8 Despite numerous medieval saltern sites having been identified few have been fully excavated or produced significant artefactual evidence. Amorphous structural fired clay and bricks and brick fragments similar to those found have been found at Wainfleet St Mary, Lincolnshire (McAvoy 1994, 160) and Parsons Drove, Cambridgeshire (Pollard et al. 2001, 444) and hearth lining and other debris including possible pedestals were recovered from the 12th to 13th century saltern site at former Queen Marys Nurses Home, Kings Lynn (Cope-Faulkner 2014). Soft, silt bricks found in situ within the hearth at Wainfleet St Mary have led to the suggestion that they functioned as ad hoc stands for the lead brine boiling pans similar to the pedestals used to support pans at Iron Age and Roman salterns (McAvoy 1994, 142).

B.4.9 Chopped organic material was commonly added to briquetage in prehistoric and Roman times to aid forming light-weight durable objects such as pans and superstructure and were often made in advance. It is possible that a similar procedure is evidenced here with the silty local clay being used ad hoc for hearth lining and pan supports whilst the organic tempered fabrics represent items made in advance.

B.4.10 The purplish water tank lining is formed of silty local clay into which organic material has become incorporated naturally as it settled to the bottom of the pit. The lilac colour of the lining indicates exposure to concentrated saline solution.

Further Work

B.4.11 No further work is required.

B.5 Slag

By Sarah Percival

Introduction

B.5.1 A total of 374 pieces of slag weighing 14.956kg was collected from thirteen contexts mostly those forming the saltern mound and associated hearths (Table 17).

Nature of the Assemblage

B.5.2 The assemblage is composed of a mix of slag all formed during a high heat process. Some of the slag takes the form of pale cream to rusty brown light weight vesicular lumps composed of many fused pieces and incorporating occasional debris such as pebbles and sand. The second form is dense and plate-like appearing to have formed in the bottom of the hearth. This dark grey to pale cream slag is found in large angular sections with visible bubbles within the body of the slag and occasional bands of green vitrified material running through. One fragment has green glassy vitrified surfaces
similar to that seen on material found in at a hearth excavated at the site of the 12th to 13th century saltern at former Queen Mary’s Nurses home on the south side of the Millfleet, Kings Lynn (Cope-Faulkner 2014).

**Distribution**

B.5.3 All of the slag appears to be redeposited, almost all in heaps of debris formed as the saltern hearths and tanks were cleared after use but some perhaps put down to help consolidate wet ground during working.

<table>
<thead>
<tr>
<th>Period</th>
<th>Feature type</th>
<th>Feature</th>
<th>Context</th>
<th>Description</th>
<th>Quantity</th>
<th>Weight (g)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Upper saltern mound</td>
<td>Group 200</td>
<td>94</td>
<td>Dense plate vesicular lumpy concretion</td>
<td>58</td>
<td>6265</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Vesicular lumpy concretion</td>
<td>233</td>
<td>3769</td>
</tr>
<tr>
<td>2</td>
<td>Enclosed hearth</td>
<td>42</td>
<td>41</td>
<td>Vesicular lumpy concretion</td>
<td>60</td>
<td>1226</td>
</tr>
<tr>
<td></td>
<td>Group 205</td>
<td>116</td>
<td>132</td>
<td>Vesicular lumpy concretion</td>
<td>14</td>
<td>23</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Vesicular lumpy concretion</td>
<td>3</td>
<td>28</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Vesicular lumpy concretion</td>
<td>1</td>
<td>12</td>
</tr>
<tr>
<td>2</td>
<td>Upper saltern mound</td>
<td>Group 200</td>
<td>33</td>
<td>Vesicular lumpy concretion</td>
<td>4</td>
<td>62</td>
</tr>
<tr>
<td>2</td>
<td>Upper saltern mound</td>
<td>Group 200</td>
<td>156</td>
<td>Vesicular lumpy concretion</td>
<td>3</td>
<td>64</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>200</td>
<td>Vesicular lumpy concretion</td>
<td>17</td>
<td>489</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Vesicular lumpy concretion one with glassy vitrified surface</td>
<td>7</td>
<td>58</td>
</tr>
<tr>
<td>2</td>
<td>Upper saltern mound</td>
<td>Group 200</td>
<td>94</td>
<td>Dense plate vesicular lumpy concretion</td>
<td>5</td>
<td>1057</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>35</td>
<td>Vesicular lumpy concretion</td>
<td>14</td>
<td>368</td>
</tr>
<tr>
<td>3</td>
<td>Recent deposits</td>
<td>Group 198</td>
<td>88</td>
<td>Vesicular lumpy concretion</td>
<td>1</td>
<td>87</td>
</tr>
<tr>
<td>2</td>
<td>Upper saltern mound</td>
<td>Group 200</td>
<td>110</td>
<td>Vesicular lumpy concretion</td>
<td>5</td>
<td>46</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>111</td>
<td>Vesicular lumpy concretion</td>
<td>26</td>
<td>268</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>124</td>
<td>Dense plate vesicular lumpy concretion</td>
<td>14</td>
<td>2137</td>
</tr>
<tr>
<td>1</td>
<td>Lower saltern mound</td>
<td>Group 202</td>
<td>157</td>
<td>Vesicular lumpy concretion</td>
<td>1</td>
<td>300</td>
</tr>
<tr>
<td>2</td>
<td>Upper saltern mound</td>
<td>Group 200</td>
<td>98</td>
<td>Vesicular lumpy concretion</td>
<td>9</td>
<td>20</td>
</tr>
<tr>
<td>3</td>
<td>Channel</td>
<td>21</td>
<td>22</td>
<td>Vesicular lumpy concretion one with glassy vitrified surface</td>
<td>5</td>
<td>110</td>
</tr>
<tr>
<td>1</td>
<td>Hearth waste</td>
<td>251</td>
<td></td>
<td>Vesicular lumpy concretion</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>509</td>
<td>16809</td>
</tr>
</tbody>
</table>

*Table 17: Quantity and weight of slag by feature*
Discussion

B.5.4 Similar slags have been recovered from medieval saltern mounds excavated at Bicker Haven, Lincolnshire and Hamburg Way, North Lynn (Healy 1975, 36 and 1999, 90; Timberlake 2008, 8). Healy notes that tests carried out on the slag recovered from Bicker Haven by the then Ancient Monuments Laboratory showed that the slag was an 'ash glaze formed by fusion of fuel ash and clay' and representing material raked out of the hearth base (1975, 36). It is likely that a similar process formed the dense hearth bottom deposits with vitrified areas found here, the often angular lumps showing where the material had been broken up for removal and clearing. The green glassy surfaces occasionally found on briquetage are formed by 'a chemical reaction between sodium ions and moisture in the fuel' which produce sodium hydroxide, a glass modifier which converts the surface of the hearth into a glaze (Miles 1975, 27).

B.5.5 The light weight vesicular concretion is more similar to that described at Hamburg Way suggested to represent an accretion of spatter from the boiling brine solutions (Timberlake 2008, 30). These were also noted to exhibit a rusty brown colouring perhaps due to post-depositional staining.

Further Work

B.5.6 It would be of interest to research the chemical composition of the salt slags and glazes. This might be achieved using a microprobe on samples of different form to analyse similarities and differences and perhaps define the processes which formed them. This work could possibly be undertaken by Nottingham University or UCL.
APPENDIX C. ENVIRONMENTAL REPORTS

C.1 Faunal remains

By Anthony Haskins

Introduction

C.1.1 An assemblage of seven fragments of moderately preserved animal bone (6g) was recovered from the burnt hearth waste deposits of group 200 within the upper medieval deposits of the saltern mound.

Quantification

<table>
<thead>
<tr>
<th>Species</th>
<th>Context</th>
<th>Group</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unidentified</td>
<td>33</td>
<td>200</td>
<td>1</td>
</tr>
<tr>
<td>Medium Mammal</td>
<td>94</td>
<td>200</td>
<td>2</td>
</tr>
<tr>
<td>Unidentified Fish</td>
<td>94</td>
<td>200</td>
<td>3</td>
</tr>
<tr>
<td>Small Mammal</td>
<td>124</td>
<td>200</td>
<td>1</td>
</tr>
</tbody>
</table>

Table 18: Animal bone by context

C.1.2 No complete elements were present and the lack of remains identifiable to species do not allow for any detailed analysis.

C.2 Shell

By Alexandra Scard

Introduction and methodology

C.2.1 A total of 0.760kg of marine shell was recovered from five contexts during the excavation. This shell was quantified by apices and examined in order to assess the diversity and quantity of the ecofacts, as well as their potential to provide useful data as part of archaeological investigation. The assemblage is the result of shell collected by hand on site as well as recovery during the processing of environmental samples. Generally, preservation of the assemblage is good and there is no consistent evidence of taphonomic or man-made damage, aside from potential ‘shuck’ marks in some of the mussel (Mytilus edulis) valves retrieved from layer 67. This represents the mussels being prised open for consumption.

<table>
<thead>
<tr>
<th>Species</th>
<th>Common name</th>
<th>Habitat</th>
<th>Total weight (Kg)</th>
<th>Total number of contexts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mytilus edulis</td>
<td>Common mussel</td>
<td>Intertidal, salt water</td>
<td>0.148</td>
<td>4</td>
</tr>
<tr>
<td>Unionidae</td>
<td>Freshwater mussel</td>
<td>Streams, rivers, lakes and ponds</td>
<td>0.015</td>
<td>2</td>
</tr>
<tr>
<td>Cerastoderma edule</td>
<td>Cockle</td>
<td>Intertidal, salt water,</td>
<td>0.597</td>
<td>3</td>
</tr>
</tbody>
</table>

Table 19: Overview of identified, quantified shell

Results

C.2.2 Tables of quantification for the three species recovered can be seen below. Almost all of the assemblage was recovered from medieval layers.
<table>
<thead>
<tr>
<th>Context</th>
<th>Cut</th>
<th>Group</th>
<th>Feature type</th>
<th>Weight (kg)</th>
<th>Total apices</th>
<th>MNI</th>
<th>Average Size (cm)</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>67</td>
<td>201</td>
<td></td>
<td>Layer-dumping</td>
<td>0.129</td>
<td>54</td>
<td>27</td>
<td>5</td>
<td>Some potential shuck marks. Incl. shell from &lt;4&gt;.</td>
</tr>
<tr>
<td>94</td>
<td>200</td>
<td></td>
<td>Layer-burnt mound</td>
<td>0.013</td>
<td>7</td>
<td>4</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>132</td>
<td>205</td>
<td></td>
<td>Pit</td>
<td>0.001</td>
<td>1</td>
<td>1</td>
<td>3.5</td>
<td>Shell from &lt;17&gt;.</td>
</tr>
<tr>
<td>200</td>
<td>200</td>
<td></td>
<td>Layer – mound</td>
<td>0.005</td>
<td>2</td>
<td>1</td>
<td>4.5</td>
<td>Shell from &lt;49&gt;.</td>
</tr>
</tbody>
</table>

*Table 20: Quantified common mussel shell*

<table>
<thead>
<tr>
<th>Context</th>
<th>Cut</th>
<th>Group</th>
<th>Feature type</th>
<th>Weight (kg)</th>
<th>Total apices</th>
<th>MNI</th>
<th>Average Size (cm)</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>67</td>
<td>201</td>
<td></td>
<td>Layer-dumping</td>
<td>0.129</td>
<td>54</td>
<td>27</td>
<td>5</td>
<td>Some potential shuck marks. Incl. shell from &lt;4&gt;.</td>
</tr>
<tr>
<td>94</td>
<td>200</td>
<td></td>
<td>Layer-burnt mound</td>
<td>0.013</td>
<td>7</td>
<td>4</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>132</td>
<td>205</td>
<td></td>
<td>Pit</td>
<td>0.001</td>
<td>1</td>
<td>1</td>
<td>3.5</td>
<td>Shell from &lt;17&gt;.</td>
</tr>
<tr>
<td>200</td>
<td>200</td>
<td></td>
<td>Layer – mound</td>
<td>0.005</td>
<td>2</td>
<td>1</td>
<td>4.5</td>
<td>Shell from &lt;49&gt;.</td>
</tr>
</tbody>
</table>

*Table 21: Quantified freshwater mussel shell*

<table>
<thead>
<tr>
<th>Context</th>
<th>Group</th>
<th>Feature type</th>
<th>Weight (kg)</th>
<th>Total apices</th>
<th>MNI</th>
<th>Average Size (cm)</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>67</td>
<td>201</td>
<td>Layer-dumping</td>
<td>0.005</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>Incl. shell from &lt;4&gt;.</td>
</tr>
<tr>
<td>94</td>
<td>200</td>
<td>Layer-burnt mound</td>
<td>0.591</td>
<td>331</td>
<td>166</td>
<td>2.5</td>
<td>Incl. shell from &lt;21&gt;. Hole in one valve: rooting?</td>
</tr>
<tr>
<td>105</td>
<td>198</td>
<td>Layer – natural</td>
<td>0.001</td>
<td>0</td>
<td>1</td>
<td>U/K</td>
<td>Incl. shell from &lt;12&gt;. Tiny frag with no apex.</td>
</tr>
</tbody>
</table>

*Table 22: Quantified cockle shell*

C.2.3 Cockle (*Cerastoderma edule*) predominates the assemblage whilst, interestingly, both marine and freshwater (*Unionidae*) mussels were recovered on site. This could represent import of certain goods, or natural intrusion within deposits of alluvial processes.

**Discussion**

C.2.4 Consumption of molluscs is renowned during the medieval period and the shell assemblage recovered from Marsh Lane is indicative of this. On the whole, the presence of shell within layers of mounds and waste would suggest deliberate disposal during/after the process of consumption. However, on this occasion, given the low
quantity of shell recovered, a residual presence is more likely, with unintentional inclusions of shell appearing in the gradual infilling of such features.

**Further Work and Methodology Statement**

C.2.5 The assemblage of mollusca shell at Marsh Lane suggests consumption, given the popularity of shellfish during the medieval period. The fairly low quantity of ecofacts retrieved, as well as the 'industrial' nature of the site suggests less that mass feasting or domestic occupation was taking place on site, but more likely that occasional consumption occurred, with residual or unintentional deposition appearing in the archaeological record. The assemblage has been fully quantified and no further work is required.

**C.3 Environmental samples**

*By Rachel Fosberry*

**Introduction**

C.3.1 Sixty-seven bulk samples were taken during the excavation from deposits associated with Late Saxon and medieval salt-making. Forty-two additional samples were taken for pollen (Appendix C4) and diatom (Appendix C5) analysis.

C.3.2 The purpose of this assessment is to determine whether ecofacts and artefacts are present, their mode of preservation and whether they are of interpretable value with regard to the activities performed on site with particular reference to the salt-making industry. A further aim is to extract items suitable for radiocarbon/AMS dating whilst considering the potential impact of the 'reservoir effect' which results in marine organisms containing different levels of carbon than contemporary terrestrial organisms.

**Methodology**

C.3.3 For this initial assessment, a single bucket (approximately 10 litres) of each of the samples was processed by tank flotation using modified Siraff-type equipment. The floating component (flot) of the samples was collected in a 0.25mm nylon mesh and the residue was washed through 10mm, 5mm, 2mm and a 0.5mm sieve. A magnet was dragged through each residue fraction for the recovery of magnetic residues prior to sorting for artefacts. Any artefacts present were noted and reintegrated with the hand-excavated finds. The dried flots were subsequently sorted using a binocular microscope at magnifications up to x 60 and an abbreviated list of the recorded remains are presented in Tables 22 to 28. Identification of plant remains is with reference to the *Digital Seed Atlas of the Netherlands* and the authors' own reference collection. Nomenclature is according to Stace (1997). The identification of cereals has been based on the characteristic morphology of the grains and chaff as described by Jacomet (2006).

**Quantification**

C.3.4 For the purpose of this initial assessment, items such as seeds and cereal grains have been scanned and recorded qualitatively according to the following categories:

# = 1-5, ## = 6-10, ### = 11-50, #### = 51+ specimens, ####### = 100+ specimens.

C.3.5 Items that cannot be easily quantified such as charcoal, burnt flint and fired clay fragments have been scored for abundance:

+ = rare, ++ = moderate, +++ = abundant.
Results

Saltmarsh Deposits: Group 240

C.3.6 Two samples were taken from the underlying saltmarsh deposits located beneath the saltern in the western part of the site (Table 23). Deposit 252 (Sample 73), is comprised of fine silts and contains occasional plant macrofossils that have been preserved by waterlogging (in a permanent anoxic environment) that include seeds of annual seablite (*Saeda maritima*), thistles (*Carduus/Cirsium* sp.), sedges (*cyperaceae*), Sheep's sorrel (*Rumex acetosella*) and microscopic yellow seeds measuring 0.3 x 0.5mm that have been identified as rushes (*Juncus* sp.). Also present within this sample are black stems measuring 1mm in diameter (and up to 4mm in length) that appear to be charred.

C.3.7 Deposit 246 (Sample 91) has a larger organic component with small fragments of woody material as well as small charcoal fragments, charred stems and occasional insect fragments and foraminifera. Annual seablite seeds are frequent in this assemblage which also includes seeds of thistles, docks (*Rumex* sp.), bog bean (*Menyanthes trifoliata*), sedges including trigonous and lenticular species, field penny cress (*Thlaspi arvense*), buttercup (*Ranunculus acris/bulbosus/repens*) all preserved by waterlogging. A fragment of charred cereal grain has been tentatively identified by its characteristic 'honeycomb' appearance. Occasional shells of mudsnail (*Hydrobia ulvae*) occur in both samples.

<table>
<thead>
<tr>
<th>Sample No.</th>
<th>Cxt No.</th>
<th>Volume processed (L)</th>
<th>Flot Volume (ml)</th>
<th>Charred cereals</th>
<th>Waterlogged Seeds</th>
<th>Hydrobia ulvae</th>
<th>Foraminifera</th>
<th>Charcoal</th>
<th>Marine molluscs</th>
<th>-fired clay</th>
</tr>
</thead>
<tbody>
<tr>
<td>73</td>
<td>252</td>
<td>7</td>
<td>15</td>
<td>0</td>
<td>###</td>
<td>#</td>
<td>#</td>
<td>+</td>
<td>0</td>
<td>++</td>
</tr>
<tr>
<td>91</td>
<td>246</td>
<td>8</td>
<td>40</td>
<td>#</td>
<td>###</td>
<td>#</td>
<td>#</td>
<td>+</td>
<td>#</td>
<td>0</td>
</tr>
</tbody>
</table>

*Table 23: Bulk samples from saltmarsh deposits*

Period 1: Late Saxon (AD850 – AD1066)

Saltmarsh Mound Deposits

C.3.8 Samples were taken from a sequence of deposits from the saltern mound that overlay marine deposits group 240.

Saltmarsh Feature Group 1

C.3.9 Samples were taken from a lower group of silts from a group of features associated with salt making including silt filtration units 253, 254, 258, 268, 271 & 274 and open hearth 277 (Table 24). All of the samples contain fired clay fragments but the only samples found to contain preserved plant remains (other than sparse charcoal) are from filtration pits 253 and 258. Both fills sampled from the deeper end of pit 253, lower fill 265 (Sample 78) and upper fill 266 (Sample 77), contain waterlogged plant material that is comprised of fine rootlets with several larger stem fragments (diameter 3mm, length up to 5cm), occasional seeds of annual seablite and numerous microscopic yellow seeds. A single buttercup seed was recovered from fill 266 otherwise there is very little variation between the two assemblages both of which also contain occasional mudsnails and foraminifera. Of the two samples taken from pit 258 only fill 264 (Sample 75) contains preserved remains other than fine rootlets, small stem fragments and sparse charcoal and these are limited to occasional seeds of annual seablite and a single sedge seed.
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>77</td>
<td>266</td>
<td>253</td>
<td>Filtration unit</td>
<td>8</td>
<td>10</td>
<td>#</td>
<td>#</td>
<td>#</td>
<td>+</td>
<td>***</td>
<td>0</td>
</tr>
<tr>
<td>78</td>
<td>265</td>
<td>253</td>
<td>Filtration unit</td>
<td>7</td>
<td>30</td>
<td>###</td>
<td>###</td>
<td>###</td>
<td>0</td>
<td>***</td>
<td>0</td>
</tr>
<tr>
<td>74</td>
<td>256</td>
<td>254</td>
<td>Filtration unit</td>
<td>9</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>++</td>
<td>+</td>
</tr>
<tr>
<td>75</td>
<td>261</td>
<td>258</td>
<td>Filtration unit</td>
<td>8</td>
<td>10</td>
<td>#</td>
<td>0</td>
<td>#</td>
<td>0</td>
<td>***</td>
<td>0</td>
</tr>
<tr>
<td>76</td>
<td>264</td>
<td>258</td>
<td>Filtration unit</td>
<td>7</td>
<td>5</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>+</td>
<td>***</td>
<td>0</td>
</tr>
<tr>
<td>103</td>
<td>275</td>
<td>274</td>
<td>Filtration unit</td>
<td>8</td>
<td>20</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>+++</td>
<td>0</td>
</tr>
<tr>
<td>104</td>
<td>276</td>
<td>274</td>
<td>Filtration unit</td>
<td>8</td>
<td>20</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>***</td>
<td>0</td>
</tr>
<tr>
<td>99</td>
<td>281</td>
<td>277</td>
<td>Hearth</td>
<td>8</td>
<td>40</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>+++</td>
<td>0</td>
</tr>
</tbody>
</table>

Table 24: Bulk samples taken from saltern Feature Group 1

Saltern Feature Group 2

C.3.10 Samples were taken from salt making features including: silt filtration units 164, 168, 170, 179, 187, 193, 203, 226, 231, 236 & 294; open hearths 175, 177 & 190; and a water tank 223 (Table 25). The plant remains recovered from Group 2 do not contain any that are preserved by waterlogging (presumably due to the features being on higher ground). Charred plant remains are rare although a single charred grass seed, possibly Marram grass (Ammophila arenaria), was recovered from fill 176 of hearth 175 and a grain of rye (Secale cereale) was found in fill 189 of pit 187. Charcoal is scarce in all of the samples; there are possible charred heather stem fragments in fill 225 of tank 223 which may relate to the use of dried heather as fuel. There are also small charcoal fragments that may be suitable for radiocarbon dating from features 168, 170, 177 and 193.

<table>
<thead>
<tr>
<th>Sample No.</th>
<th>Cxt No.</th>
<th>Cut No.</th>
<th>Feature Type</th>
<th>Volume processed (L)</th>
<th>Charred cereals</th>
<th>Charred Seeds</th>
<th>Hydrobia ulvae</th>
<th>Charcoal</th>
<th>Burnt bone</th>
<th>Marine molluscs</th>
<th>fired clay</th>
<th>Slag</th>
</tr>
</thead>
<tbody>
<tr>
<td>28</td>
<td>167</td>
<td>164</td>
<td>Filtration unit</td>
<td>7</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>+</td>
<td>+++</td>
<td>++</td>
<td>28</td>
</tr>
<tr>
<td>34</td>
<td>173</td>
<td>164</td>
<td>Filtration unit</td>
<td>6</td>
<td>5</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>+</td>
<td>++</td>
<td>+</td>
<td>34</td>
</tr>
<tr>
<td>55</td>
<td>232</td>
<td>231</td>
<td>Filtration unit</td>
<td>8</td>
<td>1</td>
<td>#</td>
<td>0</td>
<td>0</td>
<td>+++</td>
<td>0</td>
<td>55</td>
<td>232</td>
</tr>
<tr>
<td>29</td>
<td>169</td>
<td>168</td>
<td>Filtration unit</td>
<td>8</td>
<td>15</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>+</td>
<td>29</td>
</tr>
<tr>
<td>30</td>
<td>172</td>
<td>166</td>
<td>Filtration unit</td>
<td>8</td>
<td>30</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>+</td>
<td>0</td>
<td>++</td>
<td>30</td>
</tr>
<tr>
<td>27</td>
<td>171</td>
<td>170</td>
<td>Hearth</td>
<td>8</td>
<td>5</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>+</td>
<td>#</td>
<td>0</td>
<td>27</td>
</tr>
<tr>
<td>31</td>
<td>176</td>
<td>175</td>
<td>Hearth</td>
<td>8</td>
<td>40</td>
<td>0</td>
<td>#</td>
<td>0</td>
<td>+</td>
<td>0</td>
<td>++</td>
<td>31</td>
</tr>
<tr>
<td>32</td>
<td>178</td>
<td>177</td>
<td>Hearth</td>
<td>7</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>+</td>
<td>0</td>
<td>#</td>
<td>++</td>
</tr>
<tr>
<td>33</td>
<td>180</td>
<td>179</td>
<td>Filtration unit</td>
<td>8</td>
<td>1</td>
<td>0</td>
<td>#</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>++</td>
<td>33</td>
</tr>
<tr>
<td>37</td>
<td>189</td>
<td>187</td>
<td>Filtration unit</td>
<td>8</td>
<td>1</td>
<td>#</td>
<td>0</td>
<td>0</td>
<td>+</td>
<td>0</td>
<td>0</td>
<td>++</td>
</tr>
<tr>
<td>38</td>
<td>188</td>
<td>187</td>
<td>Filtration unit</td>
<td>10</td>
<td>5</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>+</td>
<td>0</td>
<td>0</td>
<td>++</td>
</tr>
<tr>
<td>35</td>
<td>192</td>
<td>190</td>
<td>Filtration unit</td>
<td>7</td>
<td>15</td>
<td>0</td>
<td>#</td>
<td>0</td>
<td>+</td>
<td>0</td>
<td>+++</td>
<td>+</td>
</tr>
</tbody>
</table>
Table 25: Bulk samples taken from saltmire Feature Group 2

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>36</td>
<td>194</td>
<td>193</td>
<td>Filtration unit</td>
<td>7</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>++</td>
<td>0</td>
<td>0</td>
<td>++</td>
<td>0</td>
</tr>
<tr>
<td>41</td>
<td>204</td>
<td>203</td>
<td>Filtration unit</td>
<td>8</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>++</td>
<td>0</td>
<td>0</td>
<td>++</td>
<td>0</td>
</tr>
<tr>
<td>40</td>
<td>115</td>
<td>205</td>
<td>Hearth</td>
<td>7</td>
<td>5</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>++</td>
<td>0</td>
</tr>
<tr>
<td>51</td>
<td>225</td>
<td>223</td>
<td>Water tank</td>
<td>7</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>+</td>
<td>0</td>
<td>0</td>
<td>+</td>
<td>++</td>
</tr>
<tr>
<td>56</td>
<td>237</td>
<td>236</td>
<td>Filtration unit</td>
<td>8</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>++</td>
<td>0</td>
</tr>
<tr>
<td>57</td>
<td>238</td>
<td>236</td>
<td>Filtration unit</td>
<td>10</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>+</td>
<td>0</td>
</tr>
</tbody>
</table>

C.3.11 Samples taken from filtration units 78 and 168 did not contain preserved remains other than fired clay (Table 26).

Table 26: Filtration units 78 and 168

<table>
<thead>
<tr>
<th>Sample No.</th>
<th>Context No.</th>
<th>Cut No.</th>
<th>Volume processed (L)</th>
<th>Flot Volume (ml)</th>
<th>Charcoal</th>
<th>fired clay</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>79</td>
<td>78</td>
<td>7</td>
<td>1</td>
<td>0</td>
<td>++</td>
</tr>
<tr>
<td>29</td>
<td>169</td>
<td>168</td>
<td>8</td>
<td>15</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>30</td>
<td>172</td>
<td>168</td>
<td>8</td>
<td>30</td>
<td>+</td>
<td>++</td>
</tr>
</tbody>
</table>

Hearth waste deposits

C.3.12 Deposit 251 (Sample 72) within the layers of waste silts from the lower mound sequence is very similar in content to the samples from pits 253 and 258 in saltmire feature group 1 (Table 27). Plant remains are preserved by waterlogging and include several annual seablite seeds with occasional seeds of bogbean, thistle, sedges, docks, knotgrass (Polygonum aviculare), nettle (Urtica dioica) and the microscopic yellow seeds. Foraminifera and mudsnails are also present.

<table>
<thead>
<tr>
<th>Sample No.</th>
<th>Cxt No.</th>
<th>Feature Type</th>
<th>Volume processed (L)</th>
<th>Flot Volume (ml)</th>
<th>Water -logged Seeds</th>
<th>Water -logged stems</th>
<th>Hydrobia ulvae</th>
<th>Foraminifera</th>
<th>Charcoal</th>
<th>Marine molluscs</th>
<th>fired clay</th>
<th>Slag</th>
</tr>
</thead>
<tbody>
<tr>
<td>72</td>
<td>251</td>
<td>Mound</td>
<td>8</td>
<td>30</td>
<td>#</td>
<td>+++</td>
<td>#</td>
<td>#</td>
<td>0</td>
<td>#</td>
<td>***</td>
<td>***</td>
</tr>
</tbody>
</table>

Table 27: Bulk samples from hearth waste deposits

Period 2: Medieval (AD1066 – c.AD1500)

C.3.13 Eight samples were taken from across hearth waste tip 200 (Table 28). All of the samples are comprised mainly of fired clay with non-metallurgical slag and burnt flint. Charcoal volumes are small and there is evidence of burnt heather (Calluna vulgaris) in Samples 46, 49 and 50. A single grain of rye in addition to an unidentifiable, abraded cereal grain is present in Sample 49. A tentative identification of sea beet (Beta vulgaris subsp. maritima) fragments were noted in Sample 46 and a grass (Poaceae) seed in sample 48.
Table 28: Bulk samples from hearth waste tip 200

Saltern feature Group 3

C.3.14 Preservation of plant remains was particularly poor in the samples taken from Saltern feature group 3 (Table 29). Small fragments of charcoal were recovered from fill 76 of oven 75 which may be suitable for radiocarbon dating.

C.3.15 None of the other ovens/hearts that were sampled contain any surviving charcoal other than occasional specks.

Table 29: Bulk samples taken from Saltern Group 3

Discussion

C.3.16 Despite extensive sampling of the deposits at Marsh Lane, very few plant remains have been recovered. Similar results were obtained from a contemporary site at Queen Mary’s Nurses Home (Fryer 2014, 810) which had better recovery of charcoal but lacked the salt-marsh indicators, possibly because this site was further inland. The site at Marsh Lane would have been the coastline in the medieval period in an area of tidal marsh (Owen 1975, 42). The medieval salt industry at coastal sites in North Norfolk involved a process of ‘sand washing’ through which brine-impregnated sand and silt was filtered and the resulting solution then boiled (Albone, Massey & Tremlett 2007, 116). It is presumed that organic material such as turf, straw or possibly even peat was used as a filter through which the salt-impregnated silts were washed through. The filtration tanks Excavated at Wainfleet St Mary, Lincolnshire were thought to have contained turves (McAvoy 1994, 140–41) but the samples from the tanks at Marsh Lane did not contain surviving organic material. The resultant waste sand and silts were piled
into mounds and the black tip lines noted in the sections (Fig 7) indicate that burnt material also contributed to the mound build-up. The acidic nature of these materials would not be conducive to preservation of plant remains unless the deposits had remained wet (allowing preservation by waterlogging in an anoxic environment) or if the plant remains had been charred.

C.3.17 The hearths used to fire the boiling of the salt solutions were evident by the presence of burnt clay and briquetage and the layers of burnt material recovered from the mound are presumably deliberate depositions of spent fuel raked from the flues of these hearths. Very little charcoal has been recovered from any of the samples and it can only be assumed that it hasn’t survived or that wood was not the fuel used. The few fragments of charred heather may possibly represent its use as fuel; heather would have been growing locally and would have been a convenient resource, but it is most likely that dried peat was used to fire the hearths. Burnt peat can be difficult to identify as the organic components are often reduced to ash but any seeds, stems and molluscs present can survive in significant quantities. The lack of these remains from the black layers at Marsh Lane suggest that the burnt peat deposits have decayed to leave only a carbon-rich, black-stained soil. Samples from deposits that were described as being ‘charcoal-rich’ on excavation (eg fill 118 of pit 130, burnt spread 94) did not subsequently produce significant amounts of charcoal fragments in the flot or residue suggesting that the charcoal was unconsolidated. Degraded charcoal forms a suspension in water and passes through the flot mesh if smaller than 0.3mm.

C.3.18 There are occasional charred plant remains present; predominantly as single specimens of seeds and cereal grains. Whilst it would be expected that the salt workers would have brought food with them on site, it is unlikely that whole grains would have been consumed and subsequently burnt. Rye is a cereal that was extremely popular in the medieval period and was grown in vast quantities in Norfolk as it is a variety that tolerates sandy soils. The grain may represent the use of straw in the filtration process and it is possible that the grain is contemporary with the deposits as it was recovered from a well-sealed layer.

C.3.19 Preservation of the seeds of both salt marsh and terrestrial plants (mainly disturbed ground) is predominantly by waterlogging which has occurred in the marine silts found beneath the saltern mound, occasional pit fills within saltern feature Group 1 and a hearth waste deposit (251) in the lower mound deposit sequence. The most frequent seeds are of annual seablite, a native plant that grows in a spreading habitat in middle and lower coastal salt-mashes (Stace, 150). Pollen samples taken from the mound sequence include one contemporary deposit (246) and also indicate a saltmarsh environment with evidence of nearby cereal cultivation and disturbed ground (Boreham op cit).

Statement of potential and further work

C.3.20 The plant remains recovered from bulk samples taken at Marsh Lane have limited archaeobotanical potential due to low density and diversity. It is possible that salt making was a seasonal occupation that exploited the salt deposited by the spring tides (Rudkin 1975, 37) which may explain the lack of seeds but the scarcity of the remains is disappointing.

C.3.21 For this initial assessment, only sub-samples were processed. Additional processing of selected samples could be considered although it is unlikely that this will produce statistically quantifiable material. 0.5L samples (79-84) were taken from the same contexts that were covered by monolith 53 (202, 219, 218, 217, 212 and 206). As these
deposits have been assessed for both pollen and diatoms, it would be interesting to process them and determine if any plant macrofossils are present.

C.3.22 Waterlogged samples were allowed to dry prior to scanning under the microscope. This method enables are larger sample volume to be assessed quickly but drying the fragile material can result in some items such as cereal bran and less-robust seeds not being identified. Sample 72, fill 251 of the saltern mound and Sample 78, fill 265 of filtration pit 253 both contain waterlogged seeds and it is recommended that analysis of a 1L wet-sieved sample of each is undertaken. Both samples could also be considered for pollen assessment as the waterlogged environment may have been conducive to pollen survival.

C.4 Pollen analysis

By Steve Boreham

Introduction

C.4.1 This study focuses on the palynology of sediments obtained from two archaeological sections (45 & 58; Fig 8) excavated at the saltern site.

C.4.2 Section 45 was sampled with three overlapping 30cm monolith tins (Samples 53 A, B & C) through the basal part of the salt mound complex, capturing a series of contexts (239, 219, 218, 217, 212 & 206). The basal buff-brown silty clay (0-16cm) (context 239) formed a definite rise in topography at the site. This unit was thought to be either an initial dump of waste silt, or a relatively higher island of banked natural sediment. It was sub-sampled for pollen at 5cm. Overlying this was a black-grey silty clay with charcoal (16-20cm) (context 219a) sub-sampled for pollen at 18cm, and an orange-buff weathered silt (20-24cm) (context 219b) sub-sampled for pollen at 22cm. Above this was a black charcoal-rich silt (24-27cm) (context 218), which was thought to be a weathered soil. This unit was sub-sampled for pollen at 26cm. This was overlain by a brown-buff silt (27-34cm) (context 217) and a light brown-buff silt (34-59cm) (context 212), both presumed to be dumps of waste saltern material. Pollen sub-samples were taken at 32cm and 50cm from these units. These were in turn overlain by a unit of dark brown silty clay (59-70cm) (context 206), thought to be burnt hearth waste deposits, and sub-sampled for pollen at 62cm.

C.4.3 Section 58 was located in a different part of the site. It was also sampled with three overlapping 30cm monolith tins (samples 85 A, B & C) to provide a sequence through the sediments. The basal buff-brown silty clay (0-25cm) (context 243) was thought to represent mudflat deposits. This unit was sub-sampled for pollen at 5cm and 20cm. The overlying sediments comprised a buff and brown silty clay with thin lenses of black-grey macrofossil inclusions (25-50cm) (context 246) and a brown-buff slightly oxidised silty clay (50-60cm) (context 247). These sediments appear to fill a saltmarsh creek channel or ‘cut’ and were sub-sampled for pollen at 30cm, 44cm and 55cm.

C.4.4 The twelve pollen samples were prepared using the standard hydrofluoric acid technique, in the Geography Science Laboratories, University of Cambridge and counted for pollen using a high-power stereo microscope at x400 magnification. The percentage pollen data from these 12 samples is presented in Table 30 and in Appendix Figures 1a, 1b, 2a & 2b.
Results
Section 45 – Samples 53A, B & C

C.4.5 Sediment sub-samples for pollen analysis were taken from the following points along
the Sample 53 monoliths; 5, 18, 22, 26, 32, 50 & 62cm. The results of the pollen
analyses appear in Table 30 and are presented graphically as percentage pollen
diagrams in Figure 1a (Trees, shrubs & summary) and Figure 1b (Herbs, spores &
aquatics).

C.4.6 Unfortunately, the upper pollen sub-sample from 62cm (context 206) proved to be
essentially barren containing only reworked and degraded grains, with a calculated
concentration far below 1052 grains per ml. The remaining six pollen sub-samples had
pollen concentrations that ranged between 17,528 and 80,478 grains per ml. Pollen
preservation was rather variable in these sub-samples and finely divided organic
material hampered pollen counting to some degree. Micro-charcoal was particularly
abundant in the sub-samples from 22cm and 26cm. Assessment pollen counts were
made from single slides for these six sub-samples. The pollen sums achieved for these
slides were all above 50 grains, and two were greater than 100 grains. However, none
exceeded the statistically desirable total of 300 pollen grains main sum. As a
consequence caution must be employed during the interpretation of these results.

C.4.7 It is immediately clear that the majority of these sub-samples are dominated by grass
(Poaceae) pollen (c.10-40%), alder (Alnus) pollen (c.6-23%), hazel (Corylus) pollen
(c.6-13%) and undifferentiated monolete Pteropsid fern spores (c.7-17%). Arboreal
(tree and shrub) pollen from this sequence reached 55% in the sub-sample from 18cm,
indicating the proximity of woodland to the site. Figure 1a shows a remarkably
consistent assemblage of arboreal pollen including dry-land trees and shrubs such as
oak (Quercus), lime (Tilia), ash (Fraxinus), birch (Betula), pine (Pinus) and hazel
(Corylus). This mixed-oak woodland signal is strongly reminiscent of a pre- or peri-
clearance landscape. Pollen of the damp-loving tree alder (Alnus) rises to a peak of
23.3% in sub-sample 22cm (ctx 219b) indicating the proximity of wet carr woodland.
Figure 1b shows a variable proportion of grass pollen, which may in part represent
common reed (Phragmites), whilst further evidence for emergent aquatic and
reedswamp vegetation comes from sedges (Cyperaceae) and reedmace (Typha
latifolia) at the base of the sequence, and bur-reed (Sparganium) towards the top.
Cereal pollen is present (c.1-3%) in the middle of the sequence, and the herb
assemblage has representatives of tall-herb, meadow and riparian (bank-side)
communities. There is a small heathland component to the signal from the Ericaceae,
and a little evidence for trampled ground (Plantago undif.) and eutrophication (Urtica) is
some sub-samples.

C.4.8 Taken together, the pollen sequence appears to represent deposition in a shallow
reedbed relatively cut off from the surrounding landscape. There is no indication of
deeper water, and possible saltmarsh indicators (for example Chenopodiaceae) are
present at very low levels. It appears that whilst reedswamp and alder carr became
established locally, the surrounding landscape had a mosaic of arable fields and
meadows, mixed oak woodland with lime and hazel, and heathland with birch and pine
woodland on drier more acid soils (probably the Sandringham Sands). Elsewhere in
southern England, this kind of patchwork of oak woodland, pasture and arable fields
persists until the Mid- to Late- Bronze Age. This pollen assemblage therefore appears
mismatched to its presumed saltmarsh-proximal, salt mound-derived medieval origins.
Section 58 – Samples 85A, B & C

C.4.9 Sediment sub-samples for pollen analysis were taken from the following points along the Sample 85 monoliths; 5, 20, 30, 44 & 55cm. The results of the pollen analyses appear in Appendix Figures 1a, 1b & Table 30 and are presented graphically as percentage pollen diagrams in Appendix Figure 2a (Trees, shrubs & summary) and Appendix Figure 2b (Herbs, spores & aquatics).

C.4.10 The five pollen sub-samples had pollen concentrations that ranged between 15,164 and 90,204 grains per ml. Pollen preservation was in general quite good in these sub-samples, although finely divided organic material hampered pollen counting to some extent. Micro-charcoal was particularly abundant in the sub-samples from 5cm, 44cm and 55cm, and pre-Quaternary microspores presumably re-worked from the bedrock were seen throughout. The chitinous linings of foraminifera were also encountered in the sub-samples from 5cm and 44cm, and confirm a marine influence. Assessment pollen counts were made from single slides for these five sub-samples. The pollen sums achieved for these slides were all above 50 grains, two were above 100 grains, and two were greater than 200 grains. However, none exceeded the statistically desirable total of 300 pollen grains main sum. As a consequence caution must be employed during the interpretation of these results.

C.4.11 These sub-samples were dominated by grass pollen (Poaceae) (c.8-29%) and by pollen of the fat-hen family (Chenopodiaceae) (11-52%). Such large proportions of Chenopodiaceae are usually taken to indicate saltmarsh conditions close by. The abundant grass pollen may in part represent the common reed (Phragmites), and representatives of reedswamp and emergent vegetation such as sedges (Cyperaceae), reedmace (Typha latifolia) and bur-reed (Sparganium) are present at low proportions throughout. It is interesting to note from Figure 2a that the arboreal (tree and shrub) pollen from this sequence reached no more than 16% in total and comprised mostly alder (Alnus) and hazel (Corylus). Figure 2b shows that cereal pollen (c.1-3%) is present throughout the sequence, and that the herb assemblage has representatives of both meadow and riparian (bank-side) communities, and has trampled ground and disturbed ground indicators. The presence of tall herbs such as sea lavender (Limonium), the daisy/thistle/lettuce family (Asteraceae) and mugwort (Artemisia) is not inconsistent with rank vegetation associated with the marine limit.

C.4.12 In general, it is perhaps not surprising that these sub-samples from a presumed tidal mudflat or saltmarsh and associated creek system should have such an overwhelming signal from saltmarsh vegetation, and from the reedswamp that must have fringed the estuary environment at the time of deposition. It is the minor components of the pollen spectrum that hint at the mixed arable and pastoral land use on drier ground. The arboreal signal appears to be post-clearance with a little alder carr wet woodland, and a little hazel scrub. Indeed the presence of beech (Fagus) in the pollen signal intimates at how relatively late in the Holocene this assemblage could be. There is just a hint of birch-pine woodland and of heathland (Ericaceae pollen and bracken (Pteridium) spores), which probably originates from the more distant Sandringham Sands outcrop.

Discussion and conclusions

C.4.13 These two sediment sequences from Sections 45 & 58 at the site of the Marsh Lane Saltmire have presented entirely different pollen assemblages, and are of potentially rather different ages. The apparently Mid to Late- Bronze Age spectra from Samples 53 A, B & C show little sign of saltmarsh or marine influence and seem to come from a reedswamp environment. It appears that the suggestion of basal context 239 representing a pre-existing embankment of silt at the site may be correct. However,
from these pollen analyses it seems that the overlying contexts 219, 218, 217 & 212 may either also represent natural in situ sedimentation in a reedswamp environment, or at least be dumped material derived directly from this source. Only the upper oxidised and barren context 206 appears to fill scours and hollows in the surface of context 212 and looks incongruous both spatially and from a palynological perspective.

C.4.14 In stark contrast the saltmarsh-dominated pollen signal from Samples 85 A, B & C fits the presumed environment of deposition very well. The post-clearance signal could be Iron Age or later, and this implies that the mudflat, saltmarsh and tidal creek environment might belong to the Terrington Beds, rather than the earlier Barroway Drove Beds. It is of course possible that taphonomy and reworking could skew the dry land pollen signal in these samples, reducing the mixed-oak woodland signal and giving a false impression in these assessment pollen counts. However, the presence of beech pollen seems somewhat unlikely in a Bronze Age setting.

C.4.15 It is clear that these pollen data should be seen in the context of multi-proxy evidence from the archaeology and the diatom investigation. Whilst palynology is usually successful in elucidating ancient environments and predicting the broad age-range of deposits, as always care must be taken not to over-interpret assessment pollen counts.
Marsh Lane Saltern - Percentage Pollen Diagram - Section 45 - Samples 53ABC - Trees, shrubs & summary
Marsh Lane Saltern - Percentage Pollen Diagram - Section 45 - Samples 53ABC - Herbs, spores & aquatics
Marsh Lane Saltern - Percentage Pollen Diagram - Section 58 - Samples 85ABC - Trees, shrubs & summary

Figure 2a
Marsh Lane Saltern - Percentage Pollen Diagram - Section 58 - Samples 85ABC - Herbs, spores & aquatics
Table 30: Results of pollen analyses. Percentage pollen data

<table>
<thead>
<tr>
<th>Section</th>
<th>58</th>
<th>58</th>
<th>58</th>
<th>58</th>
<th>45</th>
<th>45</th>
<th>45</th>
<th>45</th>
<th>45</th>
<th>45</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sample</td>
<td>85A</td>
<td>85A</td>
<td>85B</td>
<td>85C</td>
<td>53A</td>
<td>53A</td>
<td>53A</td>
<td>53A</td>
<td>53B</td>
<td>53C</td>
</tr>
<tr>
<td>Context</td>
<td>243</td>
<td>243</td>
<td>246</td>
<td>247</td>
<td>239</td>
<td>219a</td>
<td>219b</td>
<td>218</td>
<td>217</td>
<td>212</td>
</tr>
<tr>
<td>Pollen sub-sample</td>
<td>5cm</td>
<td>20cm</td>
<td>30cm</td>
<td>44cm</td>
<td>55cm</td>
<td>5cm</td>
<td>18cm</td>
<td>22cm</td>
<td>26cm</td>
<td>32cm</td>
</tr>
<tr>
<td><strong>Trees &amp; Shrubs</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Betula</em></td>
<td>0.8</td>
<td>0.4</td>
<td>2.3</td>
<td>0.0</td>
<td>0.0</td>
<td>3.9</td>
<td>9.1</td>
<td>4.9</td>
<td>2.9</td>
<td>3.8</td>
</tr>
<tr>
<td><em>Pinus</em></td>
<td>2.3</td>
<td>0.9</td>
<td>0.8</td>
<td>0.0</td>
<td>0.0</td>
<td>2.0</td>
<td>5.7</td>
<td>1.9</td>
<td>1.4</td>
<td>1.9</td>
</tr>
<tr>
<td><em>Quercus</em></td>
<td>0.8</td>
<td>0.9</td>
<td>0.8</td>
<td>0.0</td>
<td>0.0</td>
<td>3.9</td>
<td>2.8</td>
<td>3.9</td>
<td>4.3</td>
<td>5.7</td>
</tr>
<tr>
<td><em>Tilia</em></td>
<td>0.8</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>2.0</td>
<td>2.3</td>
<td>1.9</td>
<td>2.9</td>
<td>1.9</td>
</tr>
<tr>
<td><em>Alnus</em></td>
<td>3.0</td>
<td>5.4</td>
<td>6.2</td>
<td>2.5</td>
<td>4.8</td>
<td>5.9</td>
<td>22.2</td>
<td>23.3</td>
<td>15.9</td>
<td>13.2</td>
</tr>
<tr>
<td><em>Fagus</em></td>
<td>0.8</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td><em>Fraxinus</em></td>
<td>1.5</td>
<td>0.4</td>
<td>0.0</td>
<td>0.5</td>
<td>0.0</td>
<td>2.0</td>
<td>1.1</td>
<td>1.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td><em>Corylus</em></td>
<td>6.0</td>
<td>3.1</td>
<td>1.6</td>
<td>1.5</td>
<td>3.2</td>
<td>5.9</td>
<td>11.9</td>
<td>12.6</td>
<td>8.7</td>
<td>9.4</td>
</tr>
<tr>
<td><em>Salix</em></td>
<td>0.0</td>
<td>0.0</td>
<td>0.8</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td><em>Ligustrum</em></td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.6</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td><strong>Herbs</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Poaceae</em></td>
<td>18.0</td>
<td>10.3</td>
<td>28.7</td>
<td>7.5</td>
<td>17.7</td>
<td>29.4</td>
<td>11.4</td>
<td>22.3</td>
<td>39.1</td>
<td>30.2</td>
</tr>
<tr>
<td><em>Cereals</em></td>
<td>2.3</td>
<td>0.9</td>
<td>3.1</td>
<td>2.5</td>
<td>3.2</td>
<td>0.0</td>
<td>1.1</td>
<td>1.0</td>
<td>2.9</td>
<td>1.9</td>
</tr>
<tr>
<td><em>Cyperaceae</em></td>
<td>2.3</td>
<td>1.3</td>
<td>7.8</td>
<td>1.0</td>
<td>1.6</td>
<td>5.9</td>
<td>6.8</td>
<td>4.9</td>
<td>1.4</td>
<td>1.9</td>
</tr>
<tr>
<td><em>Ericaceae undiff.</em></td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.5</td>
<td>0.0</td>
<td>0.0</td>
<td>0.6</td>
<td>0.0</td>
<td>0.0</td>
<td>1.9</td>
</tr>
<tr>
<td><em>Asteraceae (Asteroidea/Cardueae) undiff.</em></td>
<td>0.8</td>
<td>0.9</td>
<td>3.1</td>
<td>1.0</td>
<td>0.0</td>
<td>2.0</td>
<td>2.3</td>
<td>1.0</td>
<td>0.0</td>
<td>1.9</td>
</tr>
<tr>
<td><em>Asteraceae (Lactuceae) undiff.</em></td>
<td>2.3</td>
<td>1.8</td>
<td>0.8</td>
<td>1.0</td>
<td>1.6</td>
<td>5.9</td>
<td>3.4</td>
<td>1.9</td>
<td>1.4</td>
<td>0.0</td>
</tr>
<tr>
<td>Section</td>
<td>58</td>
<td>58</td>
<td>58</td>
<td>58</td>
<td>58</td>
<td>45</td>
<td>45</td>
<td>45</td>
<td>45</td>
<td>45</td>
</tr>
<tr>
<td>---------</td>
<td>----</td>
<td>----</td>
<td>----</td>
<td>----</td>
<td>----</td>
<td>----</td>
<td>----</td>
<td>----</td>
<td>----</td>
<td>----</td>
</tr>
<tr>
<td>Sample</td>
<td>85A</td>
<td>85A</td>
<td>85B</td>
<td>85B</td>
<td>85C</td>
<td>53A</td>
<td>53A</td>
<td>53A</td>
<td>53A</td>
<td>53A</td>
</tr>
<tr>
<td>Context</td>
<td>243</td>
<td>243</td>
<td>246</td>
<td>246</td>
<td>247</td>
<td>239</td>
<td>219a</td>
<td>219b</td>
<td>218</td>
<td>217</td>
</tr>
<tr>
<td>Pollen sub-sample</td>
<td>5cm</td>
<td>20cm</td>
<td>30cm</td>
<td>44cm</td>
<td>55cm</td>
<td>5cm</td>
<td>18cm</td>
<td>22cm</td>
<td>26cm</td>
<td>32cm</td>
</tr>
<tr>
<td>Artemisia _type</td>
<td>0.0</td>
<td>0.0</td>
<td>5.4</td>
<td>1.0</td>
<td>1.6</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Cirsiun _type</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>1.0</td>
<td>0.0</td>
<td>1.9</td>
</tr>
<tr>
<td>Caryophyllaceae</td>
<td>0.8</td>
<td>0.0</td>
<td>0.8</td>
<td>0.0</td>
<td>0.0</td>
<td>2.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Chenopodiaceae</td>
<td>32.3</td>
<td>51.6</td>
<td>10.9</td>
<td>70.6</td>
<td>48.4</td>
<td>3.9</td>
<td>2.3</td>
<td>1.9</td>
<td>1.4</td>
<td>1.9</td>
</tr>
<tr>
<td>Brassicaceae</td>
<td>1.5</td>
<td>1.3</td>
<td>3.1</td>
<td>0.5</td>
<td>0.0</td>
<td>2.0</td>
<td>2.3</td>
<td>0.0</td>
<td>1.4</td>
<td>0.0</td>
</tr>
<tr>
<td>Filipendula</td>
<td>2.3</td>
<td>1.8</td>
<td>3.9</td>
<td>0.5</td>
<td>0.0</td>
<td>2.0</td>
<td>0.6</td>
<td>0.0</td>
<td>1.4</td>
<td>0.0</td>
</tr>
<tr>
<td>Helianthemum</td>
<td>0.0</td>
<td>0.0</td>
<td>0.8</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Lamiaceae</td>
<td>0.0</td>
<td>0.0</td>
<td>3.1</td>
<td>0.5</td>
<td>0.0</td>
<td>2.0</td>
<td>0.6</td>
<td>1.9</td>
<td>0.0</td>
<td>1.9</td>
</tr>
<tr>
<td>Plantago lanceolata</td>
<td>0.0</td>
<td>0.9</td>
<td>0.8</td>
<td>0.5</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Plantago undiff.</td>
<td>0.8</td>
<td>5.8</td>
<td>1.6</td>
<td>3.0</td>
<td>3.2</td>
<td>0.0</td>
<td>0.6</td>
<td>0.0</td>
<td>0.0</td>
<td>3.8</td>
</tr>
<tr>
<td>Ranunculus _type</td>
<td>2.3</td>
<td>2.7</td>
<td>1.6</td>
<td>0.0</td>
<td>1.6</td>
<td>2.0</td>
<td>1.1</td>
<td>1.0</td>
<td>1.4</td>
<td>0.0</td>
</tr>
<tr>
<td>Rumex</td>
<td>0.8</td>
<td>1.3</td>
<td>2.3</td>
<td>1.0</td>
<td>1.6</td>
<td>2.0</td>
<td>0.6</td>
<td>1.9</td>
<td>1.4</td>
<td>1.9</td>
</tr>
<tr>
<td>Thalictrum</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>1.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Urtica</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Apiaceae</td>
<td>0.0</td>
<td>1.3</td>
<td>0.8</td>
<td>0.0</td>
<td>0.0</td>
<td>2.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Limonium type</td>
<td>0.8</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Lower plants</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pteridium</td>
<td>2.3</td>
<td>0.9</td>
<td>0.8</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Pteropsida (monolete) undif.</td>
<td>8.3</td>
<td>4.5</td>
<td>7.8</td>
<td>3.0</td>
<td>8.1</td>
<td>9.8</td>
<td>7.4</td>
<td>7.8</td>
<td>10.1</td>
<td>11.3</td>
</tr>
<tr>
<td>Section</td>
<td>58</td>
<td>58</td>
<td>58</td>
<td>58</td>
<td>58</td>
<td>45</td>
<td>45</td>
<td>45</td>
<td>45</td>
<td>45</td>
</tr>
<tr>
<td>---------</td>
<td>-----</td>
<td>-----</td>
<td>-----</td>
<td>-----</td>
<td>-----</td>
<td>-----</td>
<td>-----</td>
<td>-----</td>
<td>-----</td>
<td>-----</td>
</tr>
<tr>
<td>Sample</td>
<td>85A</td>
<td>85A</td>
<td>85B</td>
<td>85B</td>
<td>85C</td>
<td>53A</td>
<td>53A</td>
<td>53A</td>
<td>53A</td>
<td>53B</td>
</tr>
<tr>
<td>Context</td>
<td>243</td>
<td>243</td>
<td>246</td>
<td>246</td>
<td>247</td>
<td>239</td>
<td>219a</td>
<td>219b</td>
<td>218</td>
<td>217</td>
</tr>
<tr>
<td>Pollen sub-sample</td>
<td>5cm</td>
<td>20cm</td>
<td>30cm</td>
<td>44cm</td>
<td>55cm</td>
<td>5cm</td>
<td>18cm</td>
<td>22cm</td>
<td>26cm</td>
<td>32cm</td>
</tr>
<tr>
<td>Pteropsida (trilete) undiff.</td>
<td>6.8</td>
<td>1.3</td>
<td>0.8</td>
<td>1.5</td>
<td>3.2</td>
<td>5.9</td>
<td>3.4</td>
<td>2.9</td>
<td>1.4</td>
<td>3.8</td>
</tr>
<tr>
<td>Foraminifera lining</td>
<td>3.8</td>
<td>0.0</td>
<td>0.0</td>
<td>0.5</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td><strong>Aquatics</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Sparganium</em> _type*</td>
<td>0.0</td>
<td>0.9</td>
<td>1.6</td>
<td>0.5</td>
<td>4.8</td>
<td>0.0</td>
<td>4.0</td>
<td>2.9</td>
<td>14.5</td>
<td>7.5</td>
</tr>
<tr>
<td><em>Typha latifolia</em></td>
<td>4.5</td>
<td>2.7</td>
<td>3.9</td>
<td>1.5</td>
<td>8.1</td>
<td>0.0</td>
<td>14.2</td>
<td>5.8</td>
<td>2.9</td>
<td>0.0</td>
</tr>
<tr>
<td>Sum trees</td>
<td>9.8</td>
<td>8.1</td>
<td>10.1</td>
<td>3.0</td>
<td>4.8</td>
<td>19.6</td>
<td>43.2</td>
<td>36.9</td>
<td>27.5</td>
<td>26.4</td>
</tr>
<tr>
<td>Sum shrubs</td>
<td>6.0</td>
<td>3.1</td>
<td>2.3</td>
<td>1.5</td>
<td>3.2</td>
<td>5.9</td>
<td>12.5</td>
<td>12.6</td>
<td>8.7</td>
<td>9.4</td>
</tr>
<tr>
<td>Sum herbs</td>
<td>66.9</td>
<td>82.1</td>
<td>78.3</td>
<td>91.0</td>
<td>80.6</td>
<td>58.8</td>
<td>33.5</td>
<td>39.8</td>
<td>52.2</td>
<td>49.1</td>
</tr>
<tr>
<td>Sum spores</td>
<td>17.3</td>
<td>6.7</td>
<td>9.3</td>
<td>4.5</td>
<td>11.3</td>
<td>15.7</td>
<td>10.8</td>
<td>10.7</td>
<td>11.6</td>
<td>15.1</td>
</tr>
<tr>
<td>Main Sum</td>
<td>133</td>
<td>223</td>
<td>129</td>
<td>201</td>
<td>62</td>
<td>51</td>
<td>176</td>
<td>103</td>
<td>69</td>
<td>53</td>
</tr>
<tr>
<td>Concentration (grains per ml)</td>
<td>39965</td>
<td>90204</td>
<td>64604</td>
<td>88080</td>
<td>15164</td>
<td>28230</td>
<td>80478</td>
<td>54163</td>
<td>34556</td>
<td>20644</td>
</tr>
</tbody>
</table>
C.5 Diatoms

By Dr Caroline Hillier

Introduction
C.5.1 This study focuses on the diatom assemblages obtained from one of two archaeological sections (45 & 58; Fig 8) excavated at the saltern site.
C.5.2 The study concentrated on two areas where sections were sampled with monolith tins for microfossil analysis.
C.5.3 Section 45 was sampled with three overlapping 30cm monolith tins (Samples 53 A, B & C) through the basal part of the salt mound complex, capturing a series of contexts (239, 219, 218, 217, 212 & 206). The basal buff-brown silty clay (0-16cm) (context 239) formed a definite rise in topography at the site. This unit was thought to be either an initial dump of waste silt, or a relatively higher island of banked natural sediment. It was sub-sampled for diatoms at 5cm. Overlying this was a black-grey silty clay with charcoal (16-20cm) (context 219a) sub-sampled for diatoms at 18cm, and an orange-buff weathered silt (20-24cm) (context 219b) sub-sampled for diatoms at 22cm. Above this was a black charcoal-rich silt (24-27cm) (context 218), which was thought to be a weathered soil. This unit was sub-sampled for diatoms at 26cm. This was overlain by a brown-buff silt (27-34cm) (context 217) and a light brown-buff silt (34-59cm) (context 212), both presumed to be dumps of waste saltern material. Diatom sub-samples were taken at 32cm and 50cm from these units. These were in turn overlain by a unit of dark brown silty clay (59-70cm) (context 206), thought to be burnt hearth waste deposits, and sub-sampled for diatoms at 62cm. Unfortunately diatoms were not preserved in these sediments and diatom analysis could not be undertaken.
C.5.4 Section 58 was located in a different part of the site. It was also sampled with three overlapping 30cm monolith tins (samples 85 A, B & C) to provide a sequence through the sediments. The basal buff-brown silty clay (0-25cm) (context 243) was thought to represent mudflat deposits. This unit was sub-sampled for diatom at 5cm and 20cm. The overlying sediments comprised a buff and brown silty clay with thin lenses of black-grey macrofossil inclusions (25-50cm) (context 246) and a brown-buff slightly oxidised silty clay (50-60cm) (context 247). These sediments appear to fill a saltmarsh creek channel or ‘cut’ and were sub-sampled for diatoms at 30cm, 42cm and 58cm. Diatom preservation was very poor in these samples but enough valves were present to give an indication of the likely depositional environment.
Methodology
Diatom sample preparation
C.5.5 The preparation of diatom samples for investigation using light microscopy was undertaken at Durham University Science Laboratories following standard methodology (e.g. Plater et al. 2000). 0.5g of each sample was digested in 20ml of 20% H2O2 by heating gently in a water bath for up to 24 hours, or until all organic matter was removed from the sample. For each sample five drops and seven drops of digested sample were pipetted on to two cover slips with 10 drops of distilled water and dried on a warm hotplate. The duplicate cover slips (a) and (b) were then inverted and placed onto a glass slide, using naphrax UK, a high refractive index medium mountant with a refractive index of 1.73. After further gentle heating and cooling to set the mountant the diatom slides are ready to be counted.
Diatom counting and identification

C.5.6 Where possible a minimum of 250 diatoms is normally identified from each of the samples at a magnification of 1000 times using the keys of Hartley (1996) and Van der Werff & Huls (1958–74). As preservation was very poor the diatoms in each slide were identified for a period of 1.5 hours per slide.

C.5.7 Broken or obscured diatom valves were only counted if the over 50% of the valve was present/visible. The preservation in all of the samples was quite poor, and samples would be described as partially preserved. In these instances the assemblages are partially dissolved and the samples can vary from countable assemblages dominated by robust species, often with the valve rim missing or only the central area preserved, to uncountable samples with dissolved fragments only.

Diatom salinity classification

C.5.8 Once the diatoms counts were completed the diatom species were assigned a salinity classification. The system used to classify diatoms according to their salinity tolerance is called the halobian system of classification. This system was first devised by Kolbe (1927) and has been subsequently modified by Hudstedt (1953; 1957) and Hemphill-Haley (1993) amongst others. The halobian system of classification has four main groups, an explanation of which is shown in Table 31.

<table>
<thead>
<tr>
<th>Classification</th>
<th>Salinity range (%)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Polyhalobous</td>
<td>&gt;30</td>
<td>Marine</td>
</tr>
<tr>
<td>Mesohalobous</td>
<td>0.2 to 30</td>
<td>Brackish</td>
</tr>
<tr>
<td>Oligohalobous-halophile</td>
<td>&lt;0.2</td>
<td>Freshwater – stimulated at low salinity</td>
</tr>
<tr>
<td>Oligohalobous-indifferent</td>
<td>&lt;0.2</td>
<td>Freshwater – tolerates low salinity</td>
</tr>
<tr>
<td>Halophobous</td>
<td>0</td>
<td>Salt-intolerant</td>
</tr>
</tbody>
</table>

Table 31: The halobian classification system (Hemphill-Haley, 1993)

C.5.9 A basic interpretation of this classification system should see a change in the salinity classes of the diatom assemblages, for example, as one moves from the tidal flat through the salt marsh and into the freshwater environments above the Highest Astronomical Tide (HAT). As one would expect, polyhalobous species occur in sub-tidal areas and on the tidal flat along with mesohalobous diatom species. As marine influence decreases oligohalobous-halophilous and oligohalobous-indifferent species will increase as polyhalobous and mesohalobous species decrease. Finally halophobous species will occur above the HAT in the freshwater environments.

C.5.10 Diatom assemblages from coastal depositional environments have high species diversity, with each habitat type potentially having a distinct diatom community. As in this study, the halobian classification can be utilised in the production of a percentage abundance diagram as a simple visual aid that shows a basic summary of the marine influence (or salinity tolerance) for each diatom assemblage from the monolith samples.
C.5.11 The ecology of the diatoms followed Vos & de Wolf (1993) and Denys (1992) and is summarised in Table 32. It must be noted that if diatoms were not identified to species, or their salinity preference is unknown, they were categorised as unclassified.

Results

C.5.12 The percentage of diatom species are illustrated in Appendix Figure 1. The proportion of diatoms of each salinity classification in the total assemblage is summarised to the right of the diagram. The ecological preferences of the diatom species (after Vos & de Wolf, 1993 & Denys, 1992) are summarised in Table 32 where possible.

Section 45

C.5.13 No diatoms were recorded from the sub-samples.

Section 58

C.5.14 Sediment sub-samples for diatom analysis were taken from the following points along the sample 85 monoliths 5cm, 20cm, 30cm, 42cm and 58cm. Due to poor preservation diatoms were very sparse. The diatoms in each sub-sample were identified and recorded for a duration of 1.5 hours. The sub-samples yielded 59, 26, 36, 42 and 6 diatoms respectively. The counts are not statistically viable, this is therefore a tentative interpretation of the depositional environment.

C.5.15 The diatoms from Section 58 are dominated by fully marine (polyhalobous) and brackish (mesohalobous) taxa with very little freshwater input. The dominant diatom species include the marine plankton species Paralia sulcata and the marine/brackish epipelön Diploneis didyma. Other marine planktonic species represented in the assemblages include Actinoptychus senarius, Aulacodiscus argus and Thalassiosira eccentrica. The marine tycho planktonic species include Rhaphoneis amphiceros and Auliscus sculptus. Where the ecology of the brackish diatom taxa is known, they are all considered to be epipellic species, i.e. species found on the surface of fine sediments, such as mud flats. The only exception is Diploneis interrupta, which is recorded in all sub-samples except 58cm and is considered to be an aerophilus species. Denys (1992) describes this species as commonly found in periodic water or wet sub-aerial habitats. Vos and De Wolf (1998) determine that an assemblage with a relative abundance (%) of marine/brackish aerophilus species exceeding 10% is indicative of a supratidal area (i.e. saltmarshes around or just above Mean High Water) rather than intertidal mudflats.

C.5.16 Cocconeis discus is recorded from sub-samples at 5cm, 20cm and 30cm, and although classified as a brackish/freshwater epiphyte it is often recorded in marine, brackish and freshwater habitats.

C.5.17 Given the low numbers of diatoms and the potential for differential preservation within the assemblage it can only be concluded that the assemblages are from a mudflat/saltmarsh environment.

Discussion and conclusion

C.5.18 The diatom assemblages from Section 58, samples 85A, B and C are dominated by fully marine and brackish diatoms indicative of a mudflat/saltmarsh environment.

C.5.19 These diatom data concur with findings of the pollen analysis which concluded that the pollen signal from samples 85 A, B and C was saltmarsh dominated and implied that the mudflat, saltmarsh and tidal creek environment might belong to the Terrington Beds saltmarsh deposits.

C.5.20 No further work is required.
Marsh Lane Saltern diatom assemblages

Appendix Figure 1  Percentage diatom diagram illustrating the results from Section 58, samples 85A, B and C. The proportion of diatoms of each salinity classification within the dataset is shown on the right of the diagram.
<table>
<thead>
<tr>
<th>Species name</th>
<th>Salinity classification</th>
<th>Ecology</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Actinoptychus senarius</em></td>
<td>Polyhalobous</td>
<td>Marine plankton</td>
<td></td>
</tr>
<tr>
<td><em>Aulacodiscus argus</em></td>
<td>Polyhalobous</td>
<td>Marine plankton</td>
<td></td>
</tr>
<tr>
<td><em>Auliscus sculptus</em></td>
<td>Polyhalobous</td>
<td>Tychoplanktonic, epontic origin</td>
<td></td>
</tr>
<tr>
<td><em>Dimeregramma minor</em></td>
<td>Polyhalobous</td>
<td>Marine/brackish epipsammon</td>
<td></td>
</tr>
<tr>
<td><em>Grammatophora oceanica</em></td>
<td>Polyhalobous</td>
<td>Marine epiphyte</td>
<td></td>
</tr>
<tr>
<td><em>Navicula vara</em></td>
<td>Polyhalobous</td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Opephora marina</em></td>
<td>Polyhalobous</td>
<td>Marine, epontic</td>
<td></td>
</tr>
<tr>
<td><em>Paralia sulcata</em></td>
<td>Polyhalobous</td>
<td>Marine plankton</td>
<td></td>
</tr>
<tr>
<td><em>Plagiogramma staurophorum</em></td>
<td>Polyhalobous</td>
<td>Marine/brackish epipsammon</td>
<td></td>
</tr>
<tr>
<td><em>Rhabdonema minutum</em></td>
<td>Polyhalobous</td>
<td>Marine, epontic</td>
<td></td>
</tr>
<tr>
<td><em>Rhaponeis amphiceros</em></td>
<td>Polyhalobous</td>
<td>Marine tychoplankton</td>
<td></td>
</tr>
<tr>
<td><em>Thalassiosira eccentrica</em></td>
<td>Polyhalobous</td>
<td>Marine plankton</td>
<td></td>
</tr>
<tr>
<td><em>Diplonies didyma</em></td>
<td>Mesohalobous</td>
<td>Marine/brackish epipelon</td>
<td></td>
</tr>
<tr>
<td><em>Diploneis interrupta</em></td>
<td>Mesohalobous</td>
<td>Marine/brackish aerophilus</td>
<td></td>
</tr>
<tr>
<td><em>Diploneis sp. 2</em></td>
<td>Mesohalobous</td>
<td></td>
<td>Hartley, Plate 89, Fig No. 3.</td>
</tr>
<tr>
<td><em>Navicula digitoradiata</em></td>
<td>Mesohalobous</td>
<td>Marine/brackish benthic epipelon</td>
<td></td>
</tr>
<tr>
<td><em>Navicula sp</em></td>
<td>Mesohalobous</td>
<td>Marine/brackish benthic epipelon</td>
<td>Hartley, Plate 168, Fig No.6</td>
</tr>
<tr>
<td><em>Scoloneis tumida</em></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Tryblionella navicularis</em></td>
<td>Mesohalobous</td>
<td>Marine/brackish benthic epipelon</td>
<td></td>
</tr>
<tr>
<td><em>Tryblionella punctata</em></td>
<td>Mesohalobous</td>
<td>Marine/brackish benthic epipelon</td>
<td></td>
</tr>
<tr>
<td><em>Cocconeis disculus</em></td>
<td>Oligohalobous-indifferent</td>
<td>Brackish/freshwater epiphyte</td>
<td></td>
</tr>
<tr>
<td><em>Epithemia adnata</em></td>
<td>Oligohalobous-indifferent</td>
<td>Freshwater/brackish epontic</td>
<td></td>
</tr>
<tr>
<td><em>Gomphonema angustatum</em></td>
<td>Oligohalobous-indifferent</td>
<td>Freshwater/brackish epontic</td>
<td></td>
</tr>
<tr>
<td><em>Gomphonema angustum</em></td>
<td>Oligohalobous-indifferent</td>
<td>Freshwater/brackish epontic</td>
<td></td>
</tr>
<tr>
<td><em>Pinnularia sudetica</em></td>
<td>Oligohalobous-indifferent</td>
<td>Benthic, also commonly moist sub-aerial.</td>
<td></td>
</tr>
<tr>
<td><em>Diploneis sp.</em></td>
<td>Unclassified</td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Gomphonema sp.</em></td>
<td>Unclassified</td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Pinnularia rupestris</em></td>
<td>Unclassified</td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Pinnularia sp.</em></td>
<td>Unclassified</td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Synedra sp.</em></td>
<td>Unclassified</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Table 32: Diatom ecology*
C.6 Radiocarbon Dating Certificates

RADIOCARBON DATING CERTIFICATE
27 January 2016

Laboratory Code
SUERC-65057 (GU39617)

Submitter
Rachel Fosberry
Oxford Archaeology East
13 Trafalgar Way
Bar Hill
Cambs. CB23 8SJ

Site Reference
ENF137496
Context Reference
218
Sample Reference
53

Material
Charcoal: Unidentified

$\delta^{13}C$ relative to VPDB
-25.6 %

Radiocarbon Age BP
1633 ± 35

N.R. The above $^{14}C$ age is quoted in conventional years BP (before 1950 AD). The error, which is expressed at the one sigma level of confidence, includes components from the counting statistics on the sample, modern reference standard and blank and the random machine errors.

The calibrated age ranges are determined from the University of Oxford Radiocarbon Accelerator Unit calibration program (OxCal4).

Samples with a SUERC coding are measured at the Scottish Universities Environmental Research Centre AMS Facility and should be quoted as such in any reports within the scientific literature. Any questions directed to the Radiocarbon Laboratory should also quote the GU coding given in parentheses after the SUERC code. The contact details for the laboratory are email Gordon.Cook@glasgow.ac.uk or telephone 0131 270 3463.

Conventional age and calibration age ranges calculated by: Date: 27/01/2016

Checked and signed off by: Date: 27/01/2016

University of Glasgow

© Oxford Archaeology East Page 84 of 100 Report Number 1866
Calibration Plot

SUERC-65057 (1033,35)
68.2% probability
952 (56.2%) 1026 calAD
95.4% probability
897 (5.3%) 925 calAD
943 (87.2%) 1044 calAD
1103 (1.8%) 1116 calAD
RADIOCARBON DATING CERTIFICATE
27 January 2016

Laboratory Code
SUERC-65061 (GU39618)

Submitter
Rachel Fosberry
Oxford Archaeology East
15 Trafalgar Way
Bar Hill
Cambus CB23 8SQ

Site Reference
ENF137496
Context Reference
246
Sample Reference
91

Material
Charcoal: Unidentified

$\delta^{13}C$ relative to VPDB
-29.6 %

Radiocarbon Age BP
3462 ± 35

N.B. The above $^{14}C$ age is quoted in conventional years BP (before 1950 AD). The error, which is expressed at the one sigma level of confidence, includes components from the counting statistics on the sample, modern reference standard and blank and the random machine error.

The calibrated age ranges are determined from the University of Oxford Radiocarbon Accelerator Unit calibration program (CaRd4).

Samples with a SUERC coding are measured at the Scottish Universities Environmental Research Centre AMS Facility and should be quoted as such in any reports within the scientific literature. Any questions directed to the Radiocarbon Laboratory should also quote the GU coding given in parentheses after the SUERC code. The contact details for the laboratory are email Gordon.Cook@glasgow.ac.uk or telephone 01355 270135 director line.

Conventional age and calibration age ranges calculated by: [Signature]
Date: 27/01/2016

Checked and signed off by: [Signature]
Date: 27/01/2016

© Oxford Archaeology East Page 86 of 100 Report Number 1866
RADIOCARBON DATING CERTIFICATE
27 January 2016

Laboratory Code
SUERC-65062 (GU39619)

Submitter
Rachel Fosberry
Oxford Archaeology East
15 Trafalgar Way
Bar Hill
Cambs. CB23 8SQ

Site Reference
ENF137495
Context Reference
260
Sample Reference
46

Material
Charred root/tuber: Unidentified

δ¹³C relative to VPDB
-27.5 %

Radiocarbon Age BP
1177 ± 35

N.B. The above ¹⁴C age is quoted in conventional years BP (before 1950 AD). The error, which is expressed at the one sigma level of confidence, includes components from the counting statistics on the sample, modern reference standard and blank and the random machine error.

The calibrated age ranges are determined from the University of Oxford Radiocarbon Accelerator Unit calibration program (OxCal4).

Samples with a SUERC coding are measured at the Scottish Universities Environmental Research Centre AMS Facility and should be quoted as such in any reports within the scientific literature. Any questions directed to the Radiocarbon Laboratory should also quote the GU coding given in parentheses after the SUERC code. The contact details for the laboratory are email: Cordon.Cook@glasgow.ac.uk or telephone 01135 270136 direct line.

Conventional age and calibration age ranges calculated by: [Signature]

Date: 27/01/2016

Checked and signed off by: [Signature]

Date: 27/01/2016

University of Glasgow
RADIOCARBON DATING CERTIFICATE
27 January 2016

Laboratory Code
SUERC-65063 (GU39620)

Submitter
Rachel Fosberry
Oxford Archaeology East
15 Trafalgar Way
Bar Hill
Cams. CB23 8SQ

Site Reference
ENF137496

Context Reference
266

Sample Reference
77

Material
Charcoal: Unidentified

$\delta^{13}$C relative to VPDB
-27.0 %

Radiocarbon Age BP
1225 ± 35

N.B. The above $^{14}$C age is quoted in conventional years BP (before 1950 AD). The error, which is expressed at the one sigma level of confidence, includes components from the counting statistics on the sample, modern reference standard and blank and the random machine error.

The calibrated age ranges are determined from the University of Oxford Radiocarbon Accelerator Unit calibration program (OxCal4).

Samples with a SUERC coding are measured at the Scottish Universities Environmental Research Centre AMS Facility and should be quoted as such in any reports within the scientific literature. Any questions directed to the Radiocarbon Laboratory should also quote the GU coding gives in parentheses after the SUERC code. The contact details for the laboratory are email Ceaden.Cook@glasgow.ac.uk or telephone 01355 270136 direct line.

Conventional age and calibration age ranges calculated by: Date: 27/01/2016

Checked and signed off by: Date: 27/01/2016
Calibration Plot

SUERC-65063 (1225,35)

88.2% probability
720 (13.2%) 741 calAD
767 (5.2%) 779 calAD
789 (46.8%) 870 calAD

95.4% probability
688 (27.9%) 753 calAD
758 (67.5%) 887 calAD

Radiocarbon determination (BP)

Calibrated date (calAD)
RADIOCARBON DATING CERTIFICATE
27 January 2016

Laboratory Code: SUERC-65064 (GU39621)

Submitter: Rachel Fosberry
Oxford Archaeology East
15 Trafalgar Way
Bar Hill
Cambs. CB23 8SQ

Site Reference: ENF137496
Context Reference: 189
Sample Reference: 37

Material: Charred grain: Secale cereal

δ¹³C relative to VPDB: -21.1‰

Radiocarbon Age BP: 941 ± 35

N.B.: The above ¹³C age is quoted in conventional years BP (before 1950 AD). The error, which is expressed at the one sigma level of confidence, includes components from the counting statistics on the sample, modern reference standard and blank and the random machine error.

The calibrated age ranges are determined from the University of Oxford Radiocarbon Accelerator Unit calibration program (OxA14).

Samples with a SUERC coding are measured at the Scottish Universities Environmental Research Centre AMS Facility and should be quoted as such in any reports within the scientific literature. Any questions directed to the Radiocarbon Laboratory should also quote the GU coding given in parentheses after the SUERC code. The contact details for the laboratory are email: Gordon.Cook@glasgow.ac.uk or telephone 01355 270136 direct line.

Conventional age and calibration age ranges calculated by: [Signature] Date: 27/01/2016

Checked and signed off by: [Signature] Date: 27/01/2016

University of Glasgow
APPENDIX D. PRODUCT DESCRIPTION

Product number: 1
Product title: Full archive report
Purpose of the Product: To analyse the site and address the research aims and objectives stated in this report and to disseminate to the local community
Composition: Grey literature archive report deposited at Norfolk HER and ADS/OA online library
Derived from: Analysis of site records, specialist reports and data and background research
Format and Presentation: Grey literature client report
Allocated to: GC, MB
Quality criteria and method: Checked and edited by RC MB
Person responsible for quality assurance: MB
Person responsible for approval: MB
Planned completion date: 2016

Product number: 2
Product title: Publication report
Purpose of the Product: To disseminate the findings of the archaeological investigations to the local community
Composition: Published report, in accordance with the relevant journal and EH guidelines
Derived from: Analysis of site records, specialist reports and data and background research
Format and Presentation: Article in serial journal
Allocated to: GC, MB, EP
Quality criteria and method: Checked and edited by EP
Person responsible for quality assurance: EP
Person responsible for approval: EP
Planned completion date: (at earliest) 2017

APPENDIX E. RISK LOG

Risk Number: 1
Description: Specialists unable to deliver analysis report due to over running work programmes/ ill health/other problems
Probability: Medium
Impact: Variable
Countermeasures: OA has access to a large pool of specialist knowledge (internal and external) which can be used if necessary.
Estimated time/cost: Variable
Owner: SP
Date entry last updated: December 2015

Risk Number: 2
Description: non-delivery of full report due to field work pressures/ management pressure on Co-authors
Probability: Medium
Impact: Medium - High
Countermeasures: Liaise with OA Management team
Estimated time/cost: Variable
Owner: GC MB
Date entry last updated: December 2015
APPENDIX F. BIBLIOGRAPHY

Adams, P 2014 Marsh Lane, King’s Lynn, Historic Environment Desk-Based Assessment. Mott MacDonald (unpublished)


Brown, P. 1984 Domesday Book: Norfolk. Chichester

Brudenell, M 2015a Marsh Lane (West), King’s Lynn, Norfolk, Written Scheme of Investigation. Oxford Archaeology East, dated 11th May 2015 (unpublished)

Brudenell, M 2015b Marsh Lane (West), King’s Lynn, Norfolk, Revised Written Scheme of Investigation. Oxford Archaeology East, dated 30th June 2015 (unpublished)


Davis, S 1992 A rapid method for recording information about mammal bones from archaeological sites. AML rep. 81/91 London.


English Heritage 2008 Management of Research Projects, PPN3: Archaeological Excavation


Grey, C 2015 Ground Investigation Report, Marsh Lane, King's Lynn, Norfolk. Richard Jackson Ltd Report No 45751


Jacomet, S 2006 Identification of cereal remains from archaeological sites. (2nd edition, 2006) IPNA, Universität Basel / Published by the IPAS, Basel University.

Jennings, S 1981 Eighteen Centuries of pottery from Norwich. E. Anglian Archaeol. 13, Norwich Survey/NMS.


Owen, A.E.B 1975 Medieval salting and the coastline in Cambridgeshire and North West Norfolk. In Salt. The study of an ancient industry. Colchester Archaeological Group


Pollard, J., 2001 ‘Excavation of a Medieval Saltern at Parson Drove, Cambridgeshire’ in
Hall, D. and Lucas, G.  Lane, T. and Morris, E. A Millennium of Saltmaking: Prehistoric and Romano-British Salt Production in the Fenland 426-456, Lincolnshire Archaeology and Heritage Reports Series No. 4.


Rudkin, E.H 1975 Medieval Salt Making in Lincolnshire


**APPENDIX G. OASIS REPORT FORM**

All fields are required unless they are not applicable.

**Project Details**

<table>
<thead>
<tr>
<th>OASIS Number</th>
<th>Project Name</th>
<th>Project Dates (fieldwork) Start</th>
<th>Finish</th>
</tr>
</thead>
<tbody>
<tr>
<td>oxfordar3-229639</td>
<td>A Late Saxon to Medieval Saltern at Marsh Lane, King's Lynn, Norfolk.</td>
<td>22-05-2015</td>
<td>28-07-2015</td>
</tr>
<tr>
<td>No</td>
<td>No</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Previous Work (by OA East)**

**Project Reference Codes**

<table>
<thead>
<tr>
<th>Site Code</th>
<th>Planning App. No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>XNFMLL15</td>
<td>Pre-application</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>HER No.</th>
<th>Related HER/OASIS No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENF137496</td>
<td>ENF137497</td>
</tr>
</tbody>
</table>

**Type of Project/Techniques Used**

- Direction from Local Planning Authority - PPS 5

**Please select all techniques used:**

- [ ] Field Observation (periodic visits)
- [ ] Full Excavation (100%)
- [ ] Full Survey
- [ ] Geophysical Survey
- [x] Open-Area Excavation
- [ ] Part Excavation
- [ ] Part Survey
- [ ] Recorded Observation
- [ ] Remote Operated Vehicle Survey
- [ ] Salvage Observation
- [ ] Salvage Excavation
- [ ] Systematic Field Walking
- [ ] Systematic Metal Detector Survey
- [ ] Test Pit Survey
- [ ] Watching Brief

**Monument Types/Significant Finds & Their Periods**

List feature types using the NMR Monument Type Thesaurus and significant finds using the MDA Object type Thesaurus together with their respective periods. If no features/finds were found, please state "none".

<table>
<thead>
<tr>
<th>Monument</th>
<th>Period</th>
<th>Object</th>
<th>Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>hearths</td>
<td>Medieval 1066 to 1540</td>
<td>pottery</td>
<td>Medieval 1066 to 1540</td>
</tr>
<tr>
<td>filtration units</td>
<td>Medieval 1066 to 1540</td>
<td>fired clay</td>
<td>Medieval 1066 to 1540</td>
</tr>
<tr>
<td>waste deposits</td>
<td>Medieval 1066 to 1540</td>
<td>industrial slags</td>
<td>Medieval 1066 to 1540</td>
</tr>
</tbody>
</table>

**Project Location**

<table>
<thead>
<tr>
<th>County</th>
<th>Site Address (including postcode if possible)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Norfolk</td>
<td>Marsh Lane, King's Lynn, Norfolk, PE30 3AD</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>District</th>
<th>Study Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>King's Lynn &amp; W. Norfolk</td>
<td>1.5 ha</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parish</th>
<th>National Grid Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gaywood</td>
<td>TF 6331 2163</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>HER</th>
<th></th>
</tr>
</thead>
</table>
### Project Originators

<table>
<thead>
<tr>
<th>Organisation</th>
<th>OA EAST</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Brief Originator</td>
<td>James Albone (NCC/HES)</td>
</tr>
<tr>
<td>Project Design Originator</td>
<td>Dr Matthew Brudenell (OA East)</td>
</tr>
<tr>
<td>Project Manager</td>
<td>Dr Matthew Brudenell (OA East)</td>
</tr>
<tr>
<td>Supervisor</td>
<td>Graeme Clarke (OA East)</td>
</tr>
</tbody>
</table>

### Project Archives

<table>
<thead>
<tr>
<th>Physical Archive</th>
<th>Digital Archive</th>
<th>Paper Archive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Norfolk Museum</td>
<td>OA East</td>
<td>Norfolk Museum</td>
</tr>
<tr>
<td>ENF137496</td>
<td>ENF137496</td>
<td>ENF137496</td>
</tr>
</tbody>
</table>

### Archive Contents/Media

<table>
<thead>
<tr>
<th></th>
<th>Physical Contents</th>
<th>Digital Contents</th>
<th>Paper Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Animal Bones</td>
<td>x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ceramics</td>
<td>x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Environmental</td>
<td>x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Glass</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Human Bones</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Industrial</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Leather</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Metal</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stratigraphic</td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>Survey</td>
<td></td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Textiles</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wood</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Worked Bone</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Worked Stone/Lithic</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Digital Media

- Database
- GIS
- Geophysics
- Images
- Illustrations
- Moving Image
- Spreadsheets
- Survey
- Text
- Virtual Reality

### Paper Media

- Aerial Photos
- Context Sheet
- Correspondence
- Diary
- Drawing
- Manuscript
- Map
- Matrices
- Microfilm
- Misc.
- Research/Notes
- Photos
- Plans
- Report
- Sections
- Survey

### Notes:
Figure 1: Site location showing overall development (red) and excavation areas (black)
Figure 2: Map showing location of NHER records & pre-existing tidal creeks mapped from historic photograph (NHER reference: TF62_TF6321_A_RAF_16Apr1946.tif)
Figure 3: Site layout plan

Phase 1: Strip & Map Evaluation & Excavation
Phase 2: Excavation
Phase 3: Excavation

© Oxford Archaeology East Report Number 1866

Marsh Lane East

(OA East Evaluation - Webster 2015a)
Figure 4: Period 1: (mid-) Late Saxon salt-making features (excavation phase 3)
Figure 5: Period 1: Late Saxon salt-making features (excavation phase 2)

© Oxford Archaeology East
Figure 6: Evaluation and strip & map excavation (excavation phase 1)
Figure 7: Plan of Period 2 brine boiling hearth 205
Figure 8a: Selected sections
Figure 8b: Selected sections
Figure 8c: Selected sections
Plate 1: Marine deposits, group 240, looking north-west

Plate 2: Silt filtration unit 253 with clay lining, looking south-west
Plate 3: Silt filtration unit 258 with clay lining and turves, looking south

Plate 4: Hearth waste group 200 in plan, looking west
Plate 5: Hearth waste group 200 in section, looking west

Plate 6: Hearth 205 with superstructure 107 and hearth base 115, looking north-east
Plate 7: Hearth 205 showing section of hearth base 115

Plate 8: Working shot of saltern feature group 1, looking east