

**THE POTHOUSE,
LUNESIDE EAST,
LANCASTER,
LANCASHIRE**



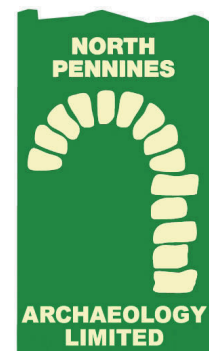
KILN FURNITURE ASSESSMENT

CP. No: 620/09

27/02/2009

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Quality Assurance

This report covers works as outlined in the brief for the above-named project as issued by the relevant authority, and as outlined in the agreed programme of works. Any deviation to the programme of works has been agreed by all parties. The works have been carried out according to the guidelines set out in the Institute for Archaeologists (IfA) Standards, Policy Statements and Codes of Conduct. The report has been prepared in keeping with the guidance set out by North Pennines Archaeology Ltd on the preparation of reports.

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SUMMARY

In October 2007, North Pennines Archaeology Ltd carried out an archaeological evaluation and excavation out on the site of The Pothouse, on St George's Quay, Lancaster (SD 4689 6227) on behalf of Scott Wilson Ltd. An archaeological assessment by Lancaster University Archaeological Unit (LUAU 2000) had highlighted the presence of the building, a pottery, which was known from documentary evidence to have produced Lancastrian delftware in the 18th century; the pottery and its products were largely unknown, and as such the site was highlighted as being of regional if not national significance. The site was granted outline planning permission (Application No: 01/01287/OUT) on condition of a programme of archaeological work being carried to fulfil condition 7 of the consent.

An area equating to the building foundations of the pottery known from cartographic sources, measuring c.28m by 20m, was excavated by machine under archaeological supervision down to the level of the highest significant archaeological horizon, and was then subject to manual excavation. The excavation uncovered sandstone walls and cobbled floors relating to the 18th century pottery, and also succeeded in uncovering the kiln and shardruck, the waste tip. The kiln was a 'continental style' kiln, typical of the production of delftware, and was square in plan, and constructed of stone with brick flues and floor. Remnants of the final firings were recovered from the floor, as well as large quantities of saggars and pottery. The shardruck was only partially uncovered during the excavation, and following discussions with all parties, the excavation area was extended east to examine these deposits in greater depth. The shardruck was found to be approximately 1m deep, and tip-lines for the successive dumps of sagger, biscuitware and delftware were visible within the excavated sections. A methodology for removing the pottery was established, and approximately 30 tonnes of pottery waste was removed in bulk, from four different areas, by truck to the NPA offices at Nenthead. Control samples were taken from most identified layers, and as much delftware as possible was collected over the extension period.

The material recovered has now been stored for about 18 months in an unprocessed state, pending agreement of post-excitation costs, and in the intervening period the original client has pulled out of the scheme. English Heritage has now stepped in with emergency PPG16-assistance funding, to allow the processing and storage of the pottery. The current works concentrate on the classification and assessment of the kiln furniture from the hand-collected material in order to inform future policy regarding work on the unprocessed material.

This assessment examined the results of this classification, and assesses the potential for future analysis of each category of data with regard to the project's research aims. The process has been designed to correspond to the objectives laid out in the guidance document *Management of Archaeological Projects* 2nd edition (English Heritage 1991b)

and in *Management of Research Projects in the Historic Environment* (English Heritage 1st Edition 2006b). An updated research design is presented, and an appropriate programme of analysis outlined. It is recommended that, after analysis, the assessment of the kiln furniture be published as an academic article.

ACKNOWLEDGEMENTS

North Pennines Archaeology Ltd (NPAL) would like to thank English Heritage for commissioning the work. NPAL would also like to thank Douglas Moir and Peter Iles of Lancashire County Archaeological Service for their continued support and assistance in the course of the project. Support from English Heritage has been provided by Kath Buxton, Mark Bowden and Sarah Jennings; the latter is thanked for taking time out to visit the offices and assess the pottery in person.

Further invaluable information on the site was provided by Alan James, James Price, and Dr Andrew White, Former Curator of Lancaster City Museum. Paul Thompson, Museums' Manager North at Lancashire County Council, is cordially thanked for taking time to visit the site, as is all the staff of Lancaster's City and Maritime Museums for also taking such a keen interest. Heather Davis, Conservation Manager with Lancashire County Museums Service, is thanked for her advice regarding storage and deposition. Information on national delftware production was also provided by: Giles Emery (NAU Archaeology); Jo Dawson (Greenlane Archaeology, who also visited the site during its excavation), and Hamish Cole.

The processing was undertaken by Claire Mason, who also quantified the finds. Barbara Blenkinship, Claire Mason and Matthew Town produced the type-series. The assessment report was written by Matthew Town, assisted by Barbara Blenkinship, and the drawings were produced by Matthew Town. The report was edited by Martin Railton, Project Manager for NPAL. The project was managed by Frank Giecco, Technical Director for NPAL.

1. INTRODUCTION

1.1 CIRCUMSTANCES OF THE PROJECT

- 1.1.1 In October 2007, North Pennines Archaeology Ltd carried out an archaeological evaluation and excavation out on the site of The Pothouse, within the former The St. George's Works complex on St George's Quay, Lancaster (SD 4689 6227; Figure 1) on behalf of Scott Wilson Ltd. An archaeological assessment by Lancaster University Archaeological Unit (LUAU 2000) had highlighted the presence of the building, a pottery, which was known from documentary evidence to have produced Lancastrian delftware in the 18th century; the pottery and its products were largely unknown, and as such the site was highlighted as being of regional if not national significance. The site was granted outline planning permission (Application No: 01/01287/OUT) on condition of an archaeological evaluation being carried to fulfil condition 7 of the consent.
- 1.1.2 Parts of the site had been occupied by a modern building, the Grubbs Building, which was demolished prior to excavation starting. The concrete pad on which the building had been constructed was removed by machine under archaeological supervision, and an evaluation trench, Trench 1, was excavated along the northern side of the site. On excavation of the trench, it became immediately apparent that the foundations and floor surfaces of the pottery buildings were very well preserved, and following the agreed methodology set out in the Project Design (Broughton 2006), and with acceptance from all parties, the site went immediately to excavation.
- 1.1.3 An area equating to the building foundations of the pottery known from cartographic sources, measuring c.28m by 20m, was excavated by machine under archaeological supervision down to the level of the highest significant archaeological horizon, and was then subject to manual excavation. The excavation uncovered sandstone walls and cobbled floors relating to the 18th century pottery, and also succeeded in uncovering the kiln and shardruck, the waste tip (Figure 2). The kiln was a '*continental style*' kiln, typical of the production of delftware, and was square in plan, and constructed of stone with brick flues and floor. Remnants of the final firings were recovered from the floor, as well as large quantities of saggars and pottery. The shardruck was only partially uncovered during the excavation, and following discussions with all parties, the excavation area was extended east to examine these deposits in greater depth. The shardruck was found to be approximately 1m deep, and tip-lines for the successive dumps of sagger, biscuitware and delftware were visible within the excavated sections

extensive waste deposits of sherds and kiln furniture were encountered (Figure 3). Some finds were retrieved by hand, but very limited time was allowed on site for excavation, and therefore very little material could be collected in this way. Therefore, the waste deposits were bulk sampled (the total sample being approximately 30 tonnes), to get as large an assemblage of material from the site as possible. This was particularly important as the proportion of decorated sherds was very low within the waste deposits, and collecting as many of these decorated fragments as possible was necessary in order to gather data on the patterns produced at the site. In addition to many of the more commonly occurring types of kiln furniture, the assemblage includes previously unrecorded types, which is of particular importance as it has been thought that the kiln furniture for tin-glazed earthenware production changed little, if at all, for several centuries (Barker 1998, 319). A very wide range of patterns is also present, in polychrome and in blue, and it is likely that almost all of these are previously unrecorded.

- 1.1.4 The material recovered has now been stored for about 18 months in an unprocessed state, pending agreement of post-excavation costs, and in the intervening period the original client has pulled out of the scheme. English Heritage has now stepped in with emergency PPG16-assistance funding, to allow the processing and storage of the pottery. The current works concentrate on the classification and assessment of the kiln furniture from the hand-collected material in order to inform future policy regarding work on the unprocessed material.
- 1.1.5 This report summarises the initial assessment and characterization of this kiln furniture from the site, and provides recommendations for further analysis based on the current works.

2. METHODOLOGY

2.1 PROJECT DESIGN

- 2.1.1 A project design was submitted by North Pennines Archaeology Ltd, in response to a request by English Heritage, for an archaeological assessment of the kiln furniture from the hand-collected material. The project design set out a methodology for the work, and assessed the potential for future analysis of each category of data with regard to the project's research aims. The process has been designed to correspond to the objectives laid out in the guidance document *Management of Archaeological Projects* (English Heritage 2nd Edition 1991b) and in *Management of Research Projects in the Historic Environment* (English Heritage 1st Edition 2006b). The project is also SHAPE-compliant (Strategic framework for Historic environment Activities and Programmes in English Heritage – English Heritage 2008).
- 2.1.2 Following acceptance of the project design by English Heritage, North Pennines Archaeology Ltd was commissioned to undertake the work. The project design was adhered to in full, and the work was consistent with the relevant standards and procedures of the Institute for Archaeologists (IfA), and generally accepted best practice.

2.2 KILN FURNITURE ASSESSMENT

- 2.2.1 *Introduction:* the works involved a structured assessment based on an outline proposal for processing of the bulk pottery waste (shardruck) recovered from the site, to cover this and all future works (Town 2009); a refinement to this methodology is set out in the Updated Project Design (Section 7) and this methodology may be subject to further change following discussion and comment by English Heritage and Lancashire County Council, and following the results of this assessment.
- 2.2.2 The most immediate and pressing conservation requirements stem from the storage of the pottery waste removed in bulk, which corresponds to approximately 30 tonnes of sagger, pottery and other finds in a soil matrix, stored in separate piles in the NPAL yard (500m above sea level). This material is currently under threat from the elements. In addition to the 30 tonnes of pottery waste material, a further (approximate) eighty-five 10l tubs of material was also hand collected.
- 2.2.3 In order to expedite the processing of the 30 tonnes of waste, English Heritage advised (Sarah Jennings *pers. comm.*) the initial processing of the eighty-five 10l tubs of hand collected material in order to:

- provide a type series for all the various types of kiln furniture likely to be encountered;
- identify other material of lesser interest within the hand-collected material, such as brick, unidentified fired ceramic and other fabrics.

2.2.4 This report summarises the work undertaken as part of this first stage.

2.2.5 *Methodology:* the material from the eighty-five 10l tubs was placed on a 5mm mesh sieve, and spread across the sieve to provide even coverage of material. At this stage, individual sherds of delftware and biscuitware (fragile) were removed as identified by eye, and separated into different category areas (trays). The remaining material was then subject to a rapid wash with a hose, to remove any dirt or residue to expose further pottery; any further sherds of delftware or biscuitware were selected and removed. Finally, any fragments of sagger or kiln furniture were removed and placed in a separate tray. The remaining dirt and waste material (stones etc) was discarded.

2.2.6 All material was then sorted at the end of the first stage into individual trays by context – sagger, delftware, biscuitware and ‘other’.

2.2.7 The sagger and ‘other’ material was then be sorted and examined by a pottery specialist, who, along with NPA staff, produced a type-series for the kiln furniture. All delftware, biscuitware, sagger and ‘other’ were allowed to dry, and are currently stored in temporary archive boxes. None of the material from the eighty-five 10l tubs has been discarded.

2.2.8 In summary, the main objectives of the processing were:

- to identify and quantify (by bulk quantification) the amount of kiln furniture within the hand-collected material
- to produce a type-series of this material
- to make recommendations for further work or for discard policies for the kiln furniture
- to make recommendations for the bulk pottery waste based on the information retrieved from the assessment.

2.3 THE ARCHIVE

2.3.1 Recommendations for deposition are given in Section 5.

2.3.2 North Pennines Archaeology, English Heritage, and Lancashire County Council, support the **Online Access to the Index of Archaeological InvestigationS (OASIS)** project. This project aims to provide an on-line index and access to the extensive and expanding body of grey literature,

created as a result of developer-funded archaeological work. As a result, details of the results of this project will be made available by North Pennines Archaeology, as a part of this national project.

3. BACKGROUND

3.1 THE POTHOUSE

- 3.1.1 The site (Figure 1, SD 4690 6225) is situated on the flood-plain forming the south bank of the river Lune, some way west of the historic medieval core of the town of Lancaster. The exact date of the establishment of the pottery is not known, but it is thought to date from 1754, as a lease in the papers of the Lancaster Port Commission dated to the 11th of January of that year mention the release of a plot of land *“for the purpose of building a pot house (at) £60 plus a yearly rent of 10/-”* (Adams 1972a). The document continues saying *“the said purchasers intend to erect and build a Pott House and other works convenient and necessary for such a branch of business upon said lott of ground and have made a beginning thereof...”* (Adams 1972b), implying establishment at this time. Fire Insurance policies taken out with the Sun Insurance Company on the 12th of June in the same year seem to confirm this, citing John Beakbane and William Chamley as the principal founders. The policy describes the building as a *“Pothouse only Stone Brick & Slated on the North End of the Quay Lands in Lancaster”* valued at £800 (Adams 1972b). By the 24th of March 1755, the value had increased to £1200, with an extra £400 of stock and also included, at £200, *“their Windmill only which grinds their Colours Stone built situate in a Field near the said Pothouse”* showing considerable growth (ibid), and also that the potters were not only making their ware but decorating it as well (Price 1973b). The pottery at Lancaster clearly had strong links with the Liverpool potteries, and was ideally located to make use of its riverine and coastal position for the import of raw materials.
- 3.1.2 Nine potters are listed on the Lancaster Militia Ballot list of 1757, which excluded men below eighteen and above fifty years of age, and as such apprentices and older potters must have been excluded (White 2004). The Liverpool Poll List for the Parliamentary Election of 1761 between Sir William Meredith Bar and Charles Pole includes all the Liverpool Freemen allowed to vote, providing the names of many local potters, also includes the names of seven potters who had left Liverpool to work at Lancaster (Adams 1972b).
- 3.1.3 On May 14th 1786 in the Cumberland Paquet, John Beakbane was announced to have died *‘last week’*. In his will, he ordered his share of the pottery (left to his wife) be sold on his death (Adams 1972b; Price 1973a). It is unclear whether the business continued after this, and from references in the Freemen’s Rolls it would appear the kilns had ceased working by 1785-6, and the workforce had either returned to Liverpool or moved into other

businesses (White *pers. comm.*). No record existed of the type of pottery being produced until 1821, when Binns' survey and map of that year describes the building as the "Pot House formerly a Delft ware manufactory".

- 3.1.4 Delftware was the common name given to earthenware with a buff body glazed with lead made white by the addition of tin oxide, then painted with cobalt giving blue decoration. The pieces were then fired at low temperature to allow the glaze and decoration to become one (Price 1973a). Delftware was a development of the later medieval decorated pottery traditions of the Netherlands, and was a combination of imitations of Chinese designs fashionable during this period and this tradition (Crossley 1990). No delftware has ever been given a Lancaster provenance, and Lancaster museum hold no pieces (Price 1973a). This is likely to be due in part to the use of trained craftsmen from Liverpool producing similarly stylized pottery in Lancaster to that manufactured there, with pieces wrongly categorized to the Liverpool kilns (LUAU 2000).

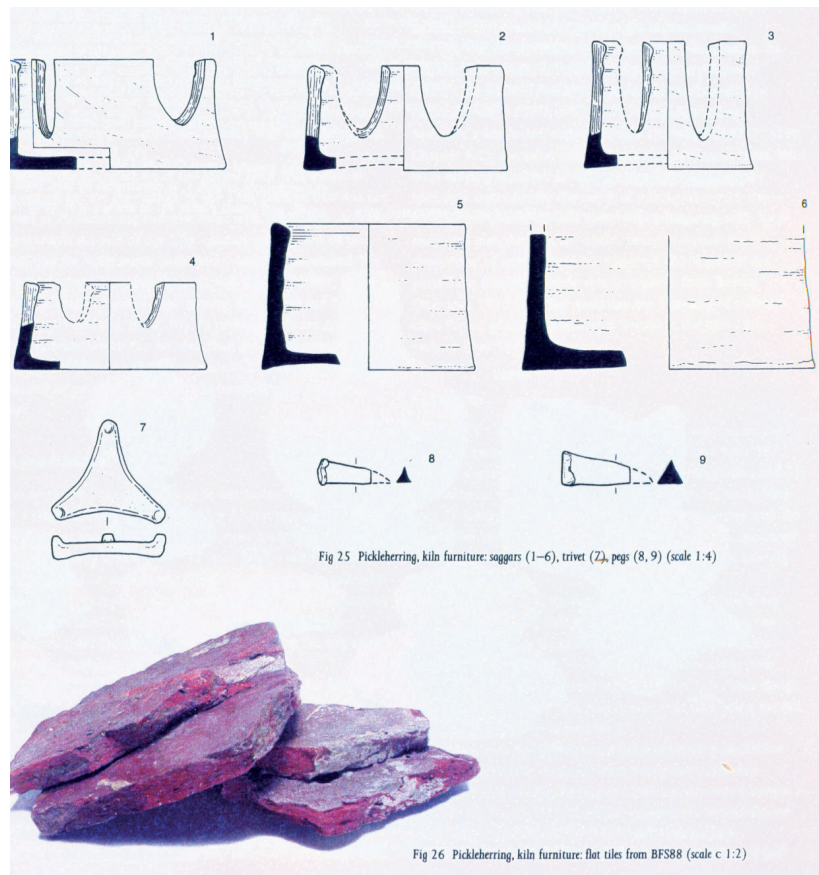


Fig 25 Pickleherring, kiln furniture: saggars (1–6), trivet (7), pegs (8, 9) (scale 1:4)

Fig 26 Pickleherring, kiln furniture: flat tiles from BFS88 (scale c 1:2)

Plate 1: Kiln Furniture from Pickleherring Pothouse (after Tyler et al 2008)

3.2 PREVIOUS KILN FURNITURE AND DELFTWARE STUDIES

- 3.2.1 The known archaeology for the production of delftware in the United Kingdom is limited. Probably the earliest delftware pottery production site is in Norwich; two Dutch settlers moved there in 1567 and stayed for three years. Their site has been uncovered on Ber Street recently by Norfolk Archaeology Unit, shortly to be published in *Post-Medieval Archaeology* (Emery *pers. comm.*). No known remains of the kiln were found, and only wasters were uncovered to show it had been on that site. The potters then moved to Aldgate in 1570 and established a pottery, with about a dozen pot-painters and potters joining them from the Netherlands. The pottery ran for fifty years.
- 3.2.2 Pickleherring Quay, Southwark in London appears to have been one of the earliest locations for delftware production, from about 1612 (Crossley 1990). Montague Close in Southwark was another site of delftware production from 1613 to 1755 (Tyler *et al* 2008). Excavations of a moated manor house belonging to Bermondsey Priory at Rotherhithe found intact and fragmentary delftware vessels and wasters dated between 1638 and 1684 (*ibid*).
- 3.2.3 Delftware production then began to spread nationally. A Southwark potter moved to Brislington in 1642, and established a pottery, a forerunner of the Bristol Industry, which began in 1683. A potential kiln base was excavated in Bristol, but regrettably all record of this has now been lost (Crossley 1990). The Southwark potters also moved to Liverpool in 1710, where fourteen factories were established between 1710 and 1760; regrettably, not one site of the well-known tin-glazed earthenware industry in Liverpool has ever been investigated, though an unpublished circular delftware kiln in Liverpool has been recorded (Crossley 1990). The Bristol potters moved to Wincanton in 1740 to start a short-lived pottery which ended in 1750. The Wincanton pottery was at Ireson House, and the site has recently been excavated by Hamish Cole, and the kiln and pottery wasters uncovered (Cole *pers. comm.*). Pottery was also produced in Dublin (1735-1770), Glasgow (1748 to late 18th century), and from the middle of the 18th century in Belfast, Limerick, Whitehaven, and, of course, Lancaster (Crossley 1990).
- 3.2.4 The following summarises the evidence for kiln furniture from some different national sites, concentrating on sites with good published records of kiln furniture for comparison.

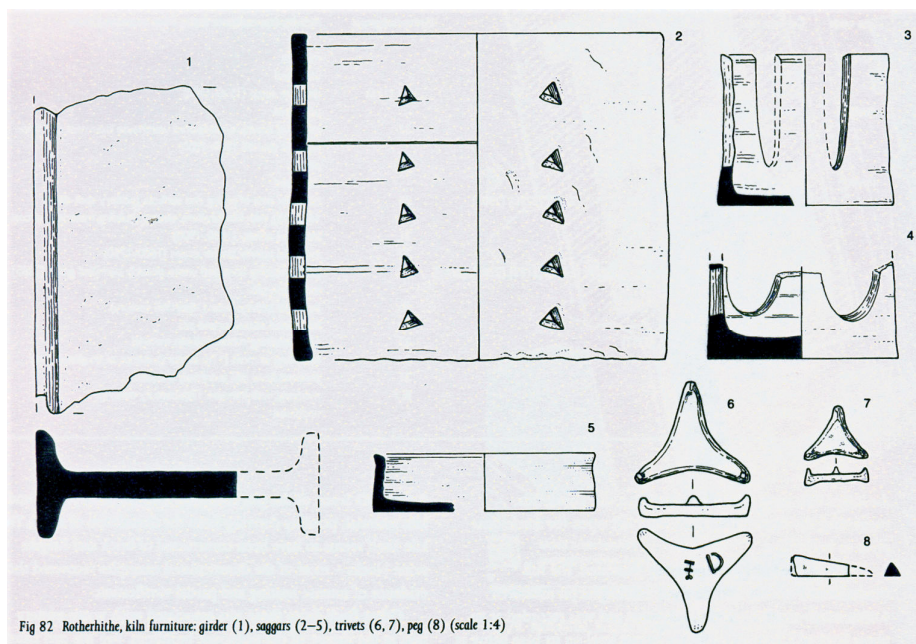


Fig 82 Rotherhithe, kiln furniture: girder (1), saggars (2–5), trivets (6, 7), peg (8) (scale 1:4)

Plate 2: Kiln Furniture from Rotherhithe Pothouse (after Tyler et al 2008)

- 3.2.5 *Pickleherring Pothouse, Southwark, 1618 to 1723*: excavations were undertaken on nine sites adjacent to Pickleherring Pothouse between 1987 and 1992, with Vine Lane and Abbots Lane producing evidence of kiln structures; the remainder of the sites produced redeposited dumps of tin-glazed material (Tyler *et al* 2008, 26). The excavations uncovered large quantities of kiln furniture (see Plate 1) in the form of: saggars with cutaway sides (No's 1-6); trivets (No 7); and kiln pegs (No's 8 and 9); as well as highly fired red earthenware kiln tiles (colour photo). Interestingly, despite the presence of pegs, no plate saggars were recovered.
- 3.2.6 *Rotherhithe Pothouse, Southwark, 1638-1684*: excavations were undertaken on four sites between 1986 and 1991, on a site then recorded as Platform Wharf, adjacent to Edward III's Rotherhithe residence (Tyler *et al* 2008, 60); the site was known as 'Moat' or 'Moated Place' in the 17th century, and occupied part of the complex of buildings related to the Royal residence. No evidence of the kiln was uncovered (presumed to be inside the former Royal residence, now a Scheduled Monument and not available for excavation) and pottery was mainly uncovered from backfill of the moat and a series of pits in the southern end of the site. The kiln furniture recovered (see Plate 2) comprised: girders (No 1); plate saggars (No 2) and associated pegs (No 8); saggars with cutaway sides (No's 3 and 4); and trivets (No's 6 and 7). Tiles were also uncovered in a variety of fabrics.

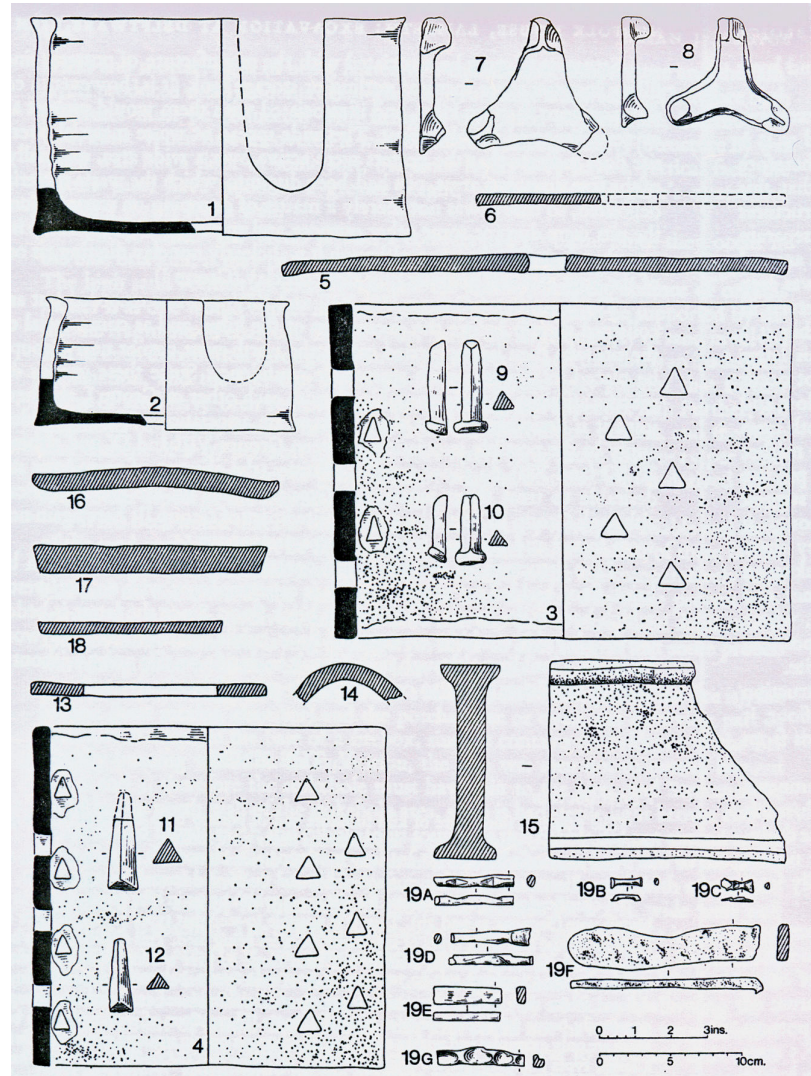


Plate 3: Kiln Furniture from Norfolk House, Lambeth (after Bloice 1971)

3.2.7 *Norfolk House, Lambeth, 1680 to 1737*: in September 1968, a rescue excavation was undertaken of a delftware pottery site during building operations for a new Metropolitan Police transport centre (Bloice 1971). Remains of kilns were uncovered, as well as a considerable quantity of finds. Further excavations were also undertaken between 1988 and 1990 at the site, uncovering further pottery waste (Tyler *et al* 2008, 96). Bloice provides a typology of the kiln furniture, based on the excavations at Norfolk House, as well as material uncovered from other Southwark and Lambeth sites. The material discussed comprises: bowl saggars (Types 1 and 2); plate saggars (Types 3 and 4) and associated kiln pegs (Types 9-12); trivets (Types 7 and 8); discs (Types 5 and 6); kiln tiles (Type 16); girders (Type 15) and various biscuit tiles, discs and setters are also illustrated (Plate 3).

3.2.8 *Limekiln Lane, Bristol, 1706 to 1746*: limited information has been published regarding the kiln waste material from Limekiln Lane, Bristol (Jackson, Jackson and Beckey 1991); most of their typology follows that set out for Norfolk House. The material discussed comprises: bowl saggars (Types 101 to 104); plate saggars (Type 108) and associated kiln pegs (Type 109); kiln tiles (Type 107); girders (Type 105-106) and a single trivet (not illustrated) (Plate 4).

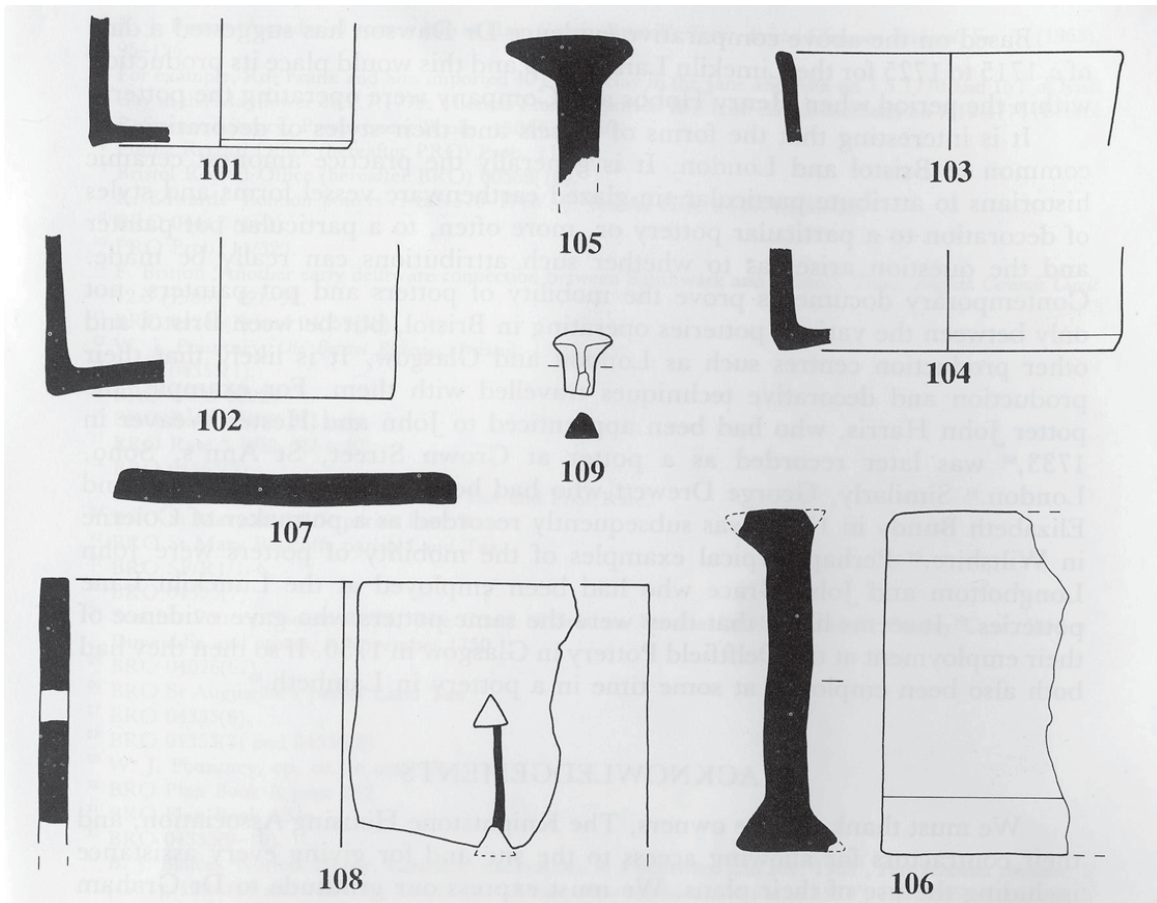


Plate 4: Kiln Furniture from Limekiln Lane, Bristol (after Jackson, Jackson and Beckey 1991)

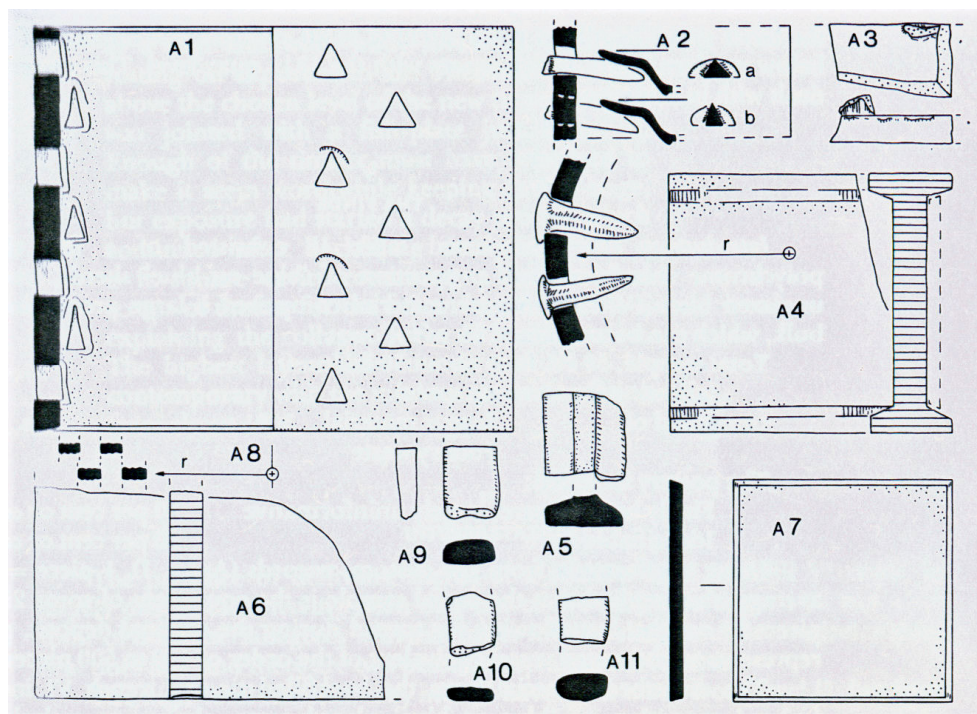


Plate 5: Kiln Furniture from Glasgow Delftfield Pottery (after Denholm 1982)

3.2.9 *Glasgow Delftfield Pottery, 1748 to late 18th century*: in late 1974 to early 1975, two trenches were excavated on the side of James Watt Street, in order to examine the kiln waste deposits on the river bank, following the demolition of some sheds on the quayside (Denholm 1982). The western trench did not uncover any remains, but the eastern trench succeeded in identifying a series of stratified dumps of kiln waste, comprising mainly saggars, biscuitware, and some delftware. The saggars comprised approximately 816kgs in total, of which 221kgs were examined from the different layers. The material comprised: plate saggars (A1) and associated kiln pegs (A2); kiln tiles (A3, A6); girders (A4, A5) and various biscuit tiles and kiln lining remains are also illustrated (Plate 5).

3.2.10 *Glasshouse Street Pothouse, Lambeth, 1743 to 1784, and 1823 to 1846*: the Glasshouse Street pothouse represented London's (and probably England's) final tin-glazed pottery. The pottery produced delftware for part of the 18th century, with concurrent porcelain production between 1751 and 1763. It then began making stoneware until 1823, before switching back to tin-glazed earthenware until 1846 (Tyler *et al* 2008, 105). The site was excavated in 1980, 1987 and 1989, and a kiln (probably for porcelain production) was uncovered. Kiln furniture uncovered comprised (Plate 6): two different sizes of plate sagger (No's 1 and 2); 'bucket-like' saggars for bulkier items (No 3 and girders (No 4).

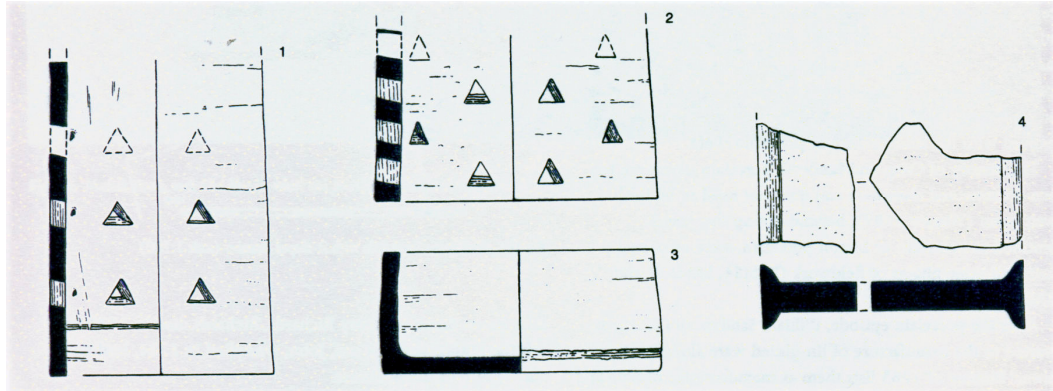


Plate 6: Kiln Furniture from Glasshouse Street Pothouse (after Tyler et al 2008)

3.2.11 *The Liverpool Potteries, c.1710 – c.1760*: little has been published on the pottery recovered from Liverpool, other than isolated finds reports (e.g. Davey and McNeil 1980), and as such it is hard to say anything definite regarding the material from this area, which is disappointing in view of the close links between the potteries. The authors visited the Liverpool Museum and Art Gallery to examine some of the pieces there, and the following images represent material seen in the collections, with 'Lancaster' typologies attached.



Plate 7: Kiln Furniture from Liverpool – Type 3 (top, right and left); Type 4c (bottom left), Type 1 (bottom right)

3.3 PREVIOUS EXCAVATIONS AT LANCASTER

- 3.3.1 Prior to 1972, the location of the pottery at Lancaster was well known, and sherds of delftware were being collected from the site (Adams 1972a), particularly during the construction of a later building on the site in the 1950s (LUAU 2000). James Price (1973b) carried out limited excavations to the north and west of the new buildings in September 1972, but was unable to discern much stratigraphy due to the disturbed nature of the ground caused by the construction of the workshop. Over 170 pieces of biscuitware were recovered (hollow ware, jugs, teapots, dishes and pressed ware, and possible cast wares), as well as kiln furniture (a spur), but only a few sherds of decorated ware were uncovered, either with a blue flower or green design. No trace of the shardruck (tip of broken pottery and fired clay) was found, so little could be said of the wares being produced.
- 3.3.2 The site was further visited on the 19th October 2000, as part of the archaeological assessment phase for the current works (LUAU 2000). A four metre stretch of wall was identified protruding through the tarmac surface, identified as part of the Pothouse, immediately west of the Grubbs building, and bases of undecorated delftware (biscuitware) were identified within the rubble along the edge of the site (*ibid*).

4. KILN FURNITURE ASSESSMENT

4.1 AIMS AND OBJECTIVES OF THE ASSESSMENT

- 4.1.1 The primary aim of this assessment was to evaluate the hand-collected material from the excavations undertaken at The Pothouse, St George's Quay, Lancaster, in order to formulate a project design for a programme of further analysis appropriate to the potential of this material (corresponding to the sagger and delftware from the c. eighty-five tubs collected on site) and the remaining material as yet unexamined (corresponding to approximately 30 tonnes of unprocessed pottery waste).
- 4.1.2 The process has been designed to correspond to the objectives laid out in the guidance document *Management of Archaeological Projects* (English Heritage 2nd Edition 1991b) and in *Management of Research Projects in the Historic Environment* (English Heritage 1st Edition 2006b). The project is also SHAPE-compliant (Strategic framework for Historic environment Activities and Programmes in English Heritage – English Heritage 2008).

4.2 MATERIAL ASSESSED

- 4.2.1 Due to the large number of artefacts recovered from the site, little processing of the material has been undertaken to-date, pending agreement of the post-excavation resource. Approximately 30 tonnes of pottery waste were removed from the site as a bulk sample. This sample has yet to be processed, but equates to approximately two thousand 10 litre sample tubs.
- 4.2.2 Of the hand-recovered samples, a total of approximately fifty-five 10 litre tubs of pottery and 44 large finds bags remained unprocessed prior to the current works. Some pottery had undergone a swift assessment, in order to provide a basic picture of the assemblage recovered, and this had identified a predominance of saggars with a large number of delft and biscuitware, as well as smaller quantities of clay pipe, other types of pottery and glass. An approximate total of 22 10 litre sample tubs contain processed pottery, with 64 examples of non-pottery finds (Town 2008).
- 4.2.3 The kiln furniture examined is described below by type. There were two immediately identifiable groups during sorting: saggars and tiles of red earthenware, and saggars and tiles of buff earthenware. The material was split initially into the two groups, and then sorted according to diagnostic material (rims, bases, body sherds) and undiagnostic material (unidentifiable, but not including 'lumps' of material used to keep saggars in position during firing). The diagnostic material for two contexts ((120) and

(142) was examined initially, as it occurred in the largest quantities, and then the typologies resulting from the examination were tested against the other boxed material. The undiagnostic material was weighed, but otherwise excluded from the exercise.

4.2.4 The assessment presents:

- ∞ a factual summary, characterising the quality and perceived quality of the data contained within the site archive;
- ∞ a statement of the academic potential of this data;
- ∞ recommendations on the storage and curation (or disposal) of this data.



Plate 8: Type 3 saggars during categorisation

4.3 TYPE 1: PLATE SAGGERS

4.3.1 *Description:* the most recognisable kiln furniture, and indeed the most reported on elsewhere, were the plate saggars. The saggars are cylindrical 'bucket-shaped' vessels (but note Type 1D), with beveled top and base edges and no base. The saggars were made from a buff close-grained fabric, presumably similar to the clay used for the biscuit ware, which was sanded to give a smooth finish.



Plate 9: Type 1A sagger fragments. Fragment to right has rectangular linear impression indicating possible tool used.

4.3.2 The saggars have three groups of stepped peg-holes commonly spaced at 120° around the edge of their circumference; however, there was a feeling during the assessment that some of the Type 1A saggars may have had a larger number of groups, but the sample examined was insufficient to be sure. The exact number per line across each group was unclear, based on the sample examined, though four-and-three arrangements seem common (and are reported elsewhere – e.g. Bloice 1971); however, three-and-two arrangements were visible for the shorter, squatter types recorded at Norfolk House (*ibid*) so the Type 1A saggars may have had this arrangement. The peg-hole sides were typically 1.25cm, approximately $\frac{1}{2}$ an inch, with equal sides, though holes as small as a $\frac{1}{3}$ of an inch were possible with some of the Type 1B and Type 1C saggars. They were presumed to have been cut using a tool, rather than a knife, as the ‘knicks’ usually seen at the edge of knife cuts were absent. The tool, probably a rod with a triangular cross-section, was evidently pushed inwards, as slight bowing was noted around the inside of the vessel along the edges of the holes, where surplus was removed. The holes may have been made against a block, as a rectangular impression around the holes was noted on a Type 1A sherd from context (270) (see Plate 9). Spots of glaze were commonly noted on the plate saggars, as would be expected (see Plate 10). Three different sizes of

plate sagger were noted (Types 1A to 1C) with one entirely new form identified (Type 1D; Plates 10 and 11). The saggars were used with the kiln pegs, which are assigned as Type 1E (Plate 12).

- 4.3.3 *Type 1A*: this type formed the largest of the plate saggars, and was identifiably thicker and broader than the rest. The sides of the plate sagger measured approximately 2cm in thickness, equivalent to $\frac{3}{4}$ of an inch. The internal diameter of the sagger was 28cm, approximately 11 inches; this is the same diameter as recorded in Bristol (Jackson, Jackson and Beckey 1991). The full height of this type was not ascertained from the fragments examined, though a height at least equivalent to the width is suggested elsewhere (e.g. Denholm 1982), and is probable here as well. The sagger remains from Delftfield and Norfolk House accommodated plates of 22.5cm (9"), so the plates produced from Lancaster are slightly larger, though some caution needs to be exercised with regards to the material examined. Denholm (1982) indicates the larger sizes (9.5" to 13" – 24cm to 32.5cm) are more likely to relate to dishes and bowls, and this is probably the case here, and, perhaps, in Bristol.



Plate 10: *Type 1B sagger with glaze splashes (left); Type 1D sagger – note angled profile.*

- 4.3.4 *Type 1B*: this type formed the mid range of the plate saggars; there is some possibility that this sub-type and Type 1C could be the same as they are very close in form. The sides of the plate sagger measured approximately 1.5cm

in thickness, equivalent to about $\frac{2}{3}$ of an inch. The internal diameter of the sagger was 16cm, approximately 6 $\frac{1}{3}$ inches, which fits with the Type 2 vessels noted at Norfolk House (Bloice 1971; Plate 3). The full height of this type was not ascertained from the fragments examined, though similar sagers from other sites indicate a height identical to the width.

- 4.3.5 *Type 1C*: this type formed the narrowest range of the plate sagers. The sides of the plate sagger measured approximately 1cm in thickness, equivalent to about $\frac{2}{5}$ of an inch. The internal diameter of the sagger was 16cm, approximately 6 $\frac{1}{3}$ inches. The full height of this type was 24cm, approximately 9 $\frac{1}{2}$ inches.



Plate 11: *infilled hole in Type 1D sagger (left); isometric view of Type 1D sagers (right)*

- 4.3.6 *Type 1D*: this type appeared to be a new form of plate sagger not previously identified. In contrast to the cylindrical profile of the Types 1A-C sagers, the Type 1D sagers had broadly flat sides (with a slight curve), which turned into a rounded corner, forming a right-angle (see Plate 10). The sides of the plate sagger measured approximately 1cm in thickness, equivalent to about $\frac{2}{5}$ of an inch, as for the Type 1C sagers, and were at least 15cm (6 inches) in height (though no full height was seen). A three-and-two arrangement of holes is possible (though not definite due to the incomplete fragments recovered). It was noticeable on a lot of the sagger fragments that a number of the holes towards the base had been visibly infilled with clay to stop smoke and debris entering the sagger (Plate 11); this was presumably because the sagers were altered during their use-life, perhaps incorporating a deeper vessel which sat higher up in the sagger. The vessel fired must have

been ovoid or rectangular in shape to require a sagger of this form. Apart from the shape, the sagger was to all intents and purposes a plate-sagger type, hence the classification with the plate sagers.



Plate 12: a wide range of Type 1E peg sizes recovered (note some headless pegs) (left); detailed view of Type 1E peg with blob of glaze (right)

4.3.7 *Type 1E*: this type covers all the kiln pegs identified. The pegs were elongated rods with tapering triangular cross-section, formed by impressing the clay into a triangular profiled long mould, which was smoothed off with the back of a knife (seen from the very flat backs to the pegs). The mould may have been the same as the implement used to cut the holes, though this is speculative. The peg lengths were then chopped out and the ends flattened off. The head appears formed through thumb pressure. Glaze drips were evident on a number of the pegs (Plate 12). A range of sizes were used depending on the plate-sagger, about 2.5cm (1") to 4cm (1½") being average. At the Delftfield and Norfolk House potteries, remains of headless pegs were also uncovered, with the head deliberately removed with a clean break, suggested to allow their usage as supports for material in the kiln which did not require peg-and-sagger support (Bloice 1971, Denholm 1982). At Pickleherring, only headless pegs appear to have been found, and no evidence of plate sagers, so perhaps pegs were not always used with plate sagers, but occasionally used as supports only (Tyler *et al* 2008). At Rotherhithe, a much earlier pottery site, only headless pegs were uncovered, which suggests they could equally be an earlier tradition, with pegs with heads being more common in the 18th century (*ibid*). A number of headless

pegs were noted from the Lancaster assemblage, but it is unclear whether these were used as supports, or occur in the record due to accidental breakage.

4.4 TYPE 2: BOWL SAGGERS

4.4.1 *Description:* these sagggers were presumably for use with bowls (or low sided circular vessels, such as char-pots); however similar sagggers are depicted on other sites (e.g. Rotherhithe and Pickleherring, Southwark – Tyler et al 2008, 35; Norfolk House, Lambeth – Bloice 1971) with cut-away sections in their sides, described for the firing of jars or mugs (the cutaway section to accommodate the handle). No evidence of any cut-away was noted on any of the sherds, though their absence may be due to the small sample examined. It is possible that the Lancaster pothouse used the Type 3 sagggers for firing mugs and items with handles (see Section 4.5), and that this may have been a later (18th century) development to the (17th century) cut-away sagggers. It is interesting to note that neither the Bristol nor Glasshouse Street pottery record pottery with ‘cut-away’ sections, with vessels depicted being very similar to the Type 2A vessel depicted; this may reinforce the idea of the cut-away section going out of use, and being replaced by vessels with extensions instead.



Plate 13: Type 2A (left) and 2B (right) Sagggers

4.4.2 The sagggers were cylindrical, with a flattened slightly thickened rim, and depths of side-wall (on which the classification is based). The side-walls taper towards the rim, and were slightly everted. The sagggers have an

integral flat base, and one Type 2B sherd had evidence of a central hole (Plate 13), so it is presumed both sub-types had these.

- 4.4.3 The saggars were made from a very fine buff close-grained fabric, very similar to the clay used for the biscuit ware, which was sanded to give a smooth finish. Initially it was thought these could actually be biscuit ware, but their similarity to saggars from other sites seems to preclude this. Glaze drips (such as that shown in Plate 13, left) were quite common, and conform to a positioning of a circular vessel within the sagger.
- 4.4.4 *Type 2A and 2B*: both the sagger types had sides of 1cm ($\frac{2}{5}$ "") at the base, tapering to 0.5cm ($\frac{1}{5}$ "") at towards the rim. The internal diameter of the saggars was 16cm, approximately 6 $\frac{1}{3}$ inches. The Type 2A saggars had side-walls of 4cm ($1\frac{3}{5}$ "") in height, whilst the Type 2B sagger walls were at least 8.3cm ($3\frac{1}{4}$ "") in height, but a full profile was not ascertained from the fragments examined.

4.5 TYPE 3: SAGGERS FOR VESSELS WITH HANDLES

- 4.5.1 *Description*: the saggars identified here have not been previously reported on elsewhere, and therefore the use for these is not entirely clear. The saggars are very distinctive, and were immediately identifiable within the assemblage once the typology had been established.
- 4.5.2 The saggars were mostly recovered as fragments of figure-of-eight type shaped sherds. The saggars were made from a very fine buff close-grained fabric, very similar to the clay used for the biscuit ware, which was sanded to give a smooth finish. The main body of the vessel was of wide diameter and measured 28cm (11"), with a much narrower diameter extension of 4cm ($1\frac{1}{2}$ "") radius on one side of the vessel, forming the smaller section of the '8'; no large diameter fragments were recovered, so it is unclear if the vessels incorporated more than one extension. It seems likely they had two opposing extensions, and from the sherds uncovered, a greater number (e.g. four) is less likely, though a lesser number (i.e. one) cannot be ruled out. The saggars had an integral thin base set at ring angles to the side-walls, which were vertical. The full base was not seen in any examples; examples seen in Liverpool (Plate 7) include a small hole in the centre, in a similar style to the Type 2 saggars (Section 4.4.2). The base width was 1cm, whilst the side-walls measured 1.5cm at the base, tapering to 1cm at the top. The rim was beveled and flattened. Around the outside of the vessels were horizontal striations in a defined band to 5cm (2") in height; these were only seen on these saggars and formed a distinctive trait for their identification.
- 4.5.3 The saggars are thought to have been used for vessels with handles, perhaps tankards, or chamber-pots, in a similar fashion to the cut-away vessels

recovered from London (Tyler et al 2008; but see Section 4.4); a section of curved side-wall from Norfolk House may be evidence of their existence elsewhere (Bloice 1971; Plate 3 – no 16). The sub-types were defined by the height of the side-walls.

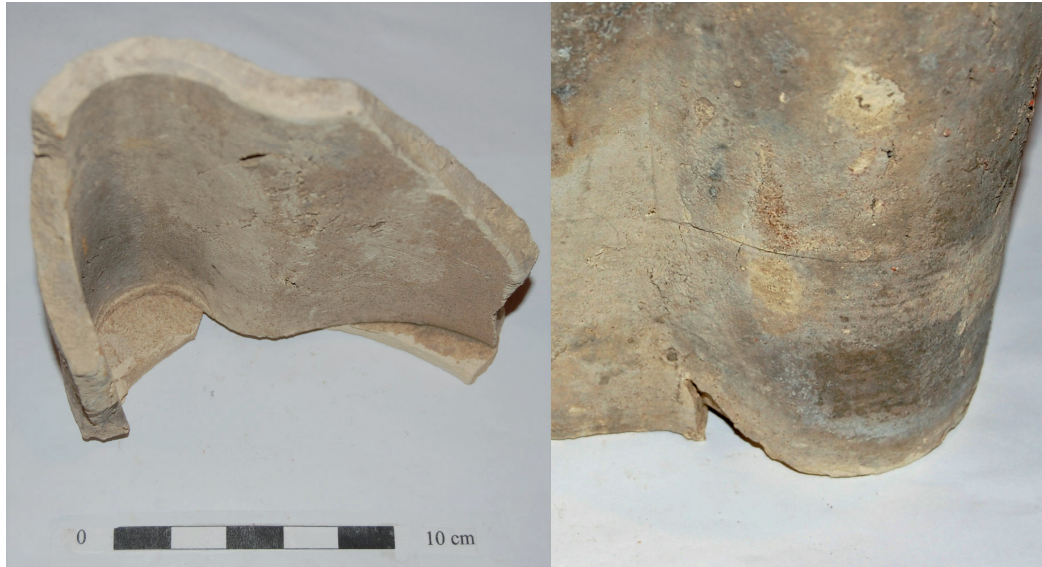


Plate 14: Type 3A sagger – detail of striations on outside on right



Plate 15: Type 3C sagger sherds; note striations on side wall

4.5.4 *Type 3A and 3B:* both the sagger types were largely identical, but the Type 3A saggars had side-walls of 16cm (6 $\frac{1}{3}$ ") in height, whilst the Type 3B

sagger walls were at least 10cm (4") in height. Otherwise the forms were identical.

- 4.5.5 *Type 3C*: this sub-type was slightly different in that no extensions were noted from the saggars examined; the classification to this type was made through presence of the striations on the side walls only, the presumption being that the vessel may have had an extension, but that it was simply not recovered. Only a limited number of sherds of this type were recovered from the sample examined. The sherds were 5cm (2") in height, and had striations across the full extent of their side walls; the width of the side walls was 1cm, and the full diameter of the vessel extended to 28cm (11"), as for the other sub-types.

4.6 TYPE 4: BUFF KILN TILES

- 4.6.1 *Description*: the kiln tiles identified were rectangular, though no complete kiln tiles were identified, so the exact dimensions are unclear. The sub-typing was undertaken on the basis of width (Types 4A and 4B), and also through one set of tiles having ridges on one surface (Type 4C). All the tiles had an average width of 15cm (6") with an undetermined length; the maximum length noted was 17.5cm, so they were clearly not square tiles. For strength, the length is unlikely to have been at a ratio of 1:2 with the width, a ratio of 2:3 being more probable. Therefore a probable length is 22.5cm (9").
- 4.6.2 The tiles were made from a very fine buff close-grained fabric with larger inclusions typically than the material in the saggars; the surfaces often showed 'combing' marks, where the clay had been roughly smoothed. The tiles were used as shelves for the firing of glazed and unglazed pots in the kilns, presumably stacked and arranged outside of saggars. A number of I-shaped girders are recorded at other sites (e.g. Rotherhithe – Tyler et al 2008; Glasgow – Denholm 1982), and it has been suggested that the kiln tiles fit into the recesses of the 'I', and were replaced as they wore out. A number of the tiles have chamfered edges, which are presumably to allow these to fit better into the girders; however, as yet no girders have been recovered from Lancaster, so this remains conjectural. As with the results obtained at Rotherhithe (Tyler et al 2008), not all vessels were fired in saggars and some of the smaller glazed pieces were sat directly on shelves, as shown by the glaze-markings which have run onto the shelves themselves (see Plate 16).
- 4.6.3 *Type 4A and 4B*: both the tiles were largely identical, but the Type 4A tiles were 1.5cm (3/5") in width, whilst the Type 4B tiles were 1cm (2/5") in width. Otherwise the forms were identical.

4.6.4 *Type 4C*: these tiles were largely identical in width and form to the *Type 4A* tiles, being 1.5cm ($\frac{3}{5}$ "") in width, but included a series of rounded ridges on one surface, approximately 2cm ($\frac{4}{5}$ "") apart. The ridges were arranged width-ways, running right to the edge (Plate 17). The arrangement suggests the tiles would have been laid out side by side to form a ridge floor surface – this would presumably have allowed warm air to circulate underneath the vessel, so providing even firing. The presumption is that these were for firing biscuit ware with a wide flat base.



Plate 16: Type 4 Buff Kiln Tiles; note rounded edges (bottom)

4.7 TYPE 5: RED EARTHENWARE SAGGERS

4.7.1 *Description:* large quantities of red earthenware material was recovered, in a variety of forms which appeared to closely mirror the forms made in the buff fabric, but with slight variations. The usage of the red earthenware over the buff earthenware must have had a specific reason, but this was unclear during the assessment. A possibility suggested during the assessment was that the red earthenware sagggers may have been used for other types of vessel, or perhaps for biscuitware – though this does not usually get fired in a sagger, it is possible some measure of protection may have been needed for some of the more fragile objects. The general absence of glaze-splashes and marks on the red earthenware may support this, but insufficient material was examined to establish this for certain, and indeed it would be surprising if sagggers had been specifically created for the purpose of firing biscuitware alone.



Plate 17: Ridged Tiles – Type 4C

4.7.2 *Type 5A:* these sagggers were cylindrical vessels, with beveled top and base edges and no base; the diameter of the sagggers was 28cm (11"), and the sagggers had a side-wall height of 10cm (4"), with a side-wall thickness of 1cm (2/5"). The sagggers were made from a heavily grogged red earthenware, with the exteriors showing what appears to be lead-glazing (Plate 18); this

was particular to this type only, and was not seen on any of the other types. The purposes of the glazing is unclear; it may have been as a by-product of its use or been deliberately applied to the sagger.

- 4.7.3 *Type 5B*: these saggars were identical to Type 5A, but the saggars had a side-wall height of 25cm (10"), with a side-wall thickness of 1.5cm ($\frac{3}{5}$ "). These saggars appear to have been semi-circular, with a straight edge break running down the body, suggesting the two halves fit together perhaps in another vessel (see Plate 19). No evidence of any glazing was noted. The saggars seem very similar in form to the Type 1B plate saggars, though obviously not used as this, as they have no peg-holes in the sides.



Plate 18: *Type 5A saggars – note lead-glazing to exterior*

- 4.7.4 *Type 5C*: these saggars were identical to Type 5B. The height of the sagger was unclear, but measured at least 19cm, so may have been of identical height to Type 5B. The side-wall thickness was 1cm ($\frac{2}{5}$ "). The saggars were mostly recovered as fragments of figure-of-eight type shaped sherds, similar to Type 3A. The main body of the vessel was of wide diameter and measured 28cm (11"), with a much narrower diameter extension of 4cm ($1\frac{1}{2}$ ") radius on one side of the vessel, forming the smaller section of the '8'. The rim was beveled and flattened, and unlike Type 3A, no striations were noted. The maximum noted height was 19cm. It is unclear whether they had an integral base.
- 4.7.5 *Type 5D*: these saggars were identical to Type 5B, but the saggars had a side-wall height of 15cm (6"), with a side-wall thickness of 1.5cm ($\frac{3}{5}$ ").

4.8 TYPE 6: RED EARTHENWARE KILN TILES

- 4.8.1 *Description:* as for the Type 4 kiln tiles, the red earthenware tiles identified were also rectangular, though no complete kiln tiles were identified, so the exact dimensions are unclear. The sub-typing was undertaken on the basis of thickness for all types. All the tiles had an average width of 15cm (6") with an undetermined length; the maximum length noted was 17cm.
- 4.8.2 The tiles were made from grog-tempered red earthenware with larger inclusions typically than the material in the saggors, with fragments of biscuitware noted being used as temper in some cases; the surfaces were fairly rough, and the tiles had been clearly fired to high temperature. Fragments of red tile from Pickleherring Quay (Tyler *et al* 2008), largely identical, are reported, in a highly fired state and with evidence of the firing of pots on their surface indicated by clay scars. The suggestion there was that, as they were not of buff material, they were not manufactured at the site, though it seems unlikely given the large quantities of red earthenware material at Lancaster that that was the case there.



Plate 19: Type 5B sagger (left) - note the straight edge on the left side of the sherd, and Type 5C (right)

- 4.8.3 *Type 6A, 6B and 6C:* all the tiles were largely identical; the Type 6A tiles were 2cm ($\frac{4}{5}$ ") thick; the Type 6B tiles were 1.5cm ($\frac{3}{5}$ ") thick; whilst the Type 6C tiles were 1cm ($\frac{2}{5}$ ") in width.

4.9 CLAY LUMPS

4.9.1 *Description:* in addition to the formed saggars, large quantities of 'lumps' of fired clay were found, and are briefly mentioned here. The lumps generally conformed to pieces of clay which had been hand-pressed and moulded to form small pillars or blocks, which were used mainly inbetween saggars to steady the saggars in the kilns during firing (for example, impressions of the striations from the Type 3 saggars were noted on some – see Plate 20). The lumps mostly occurred as buff material, though red earthenware lumps were also noted. Little significant can be said as regards these pieces, though they are still of interest, as they give a clue to the workings of the kiln.



Plate 20: Clay Lump in Red Earthenware with striations, and matching Type 3 sagger above.

5. CURATION AND CONSERVATION

5.1 INTRODUCTION

5.1.1 Following initial acceptance of the Project Design, and commencement of the works, contact was established with Heather Davis, Conservation Manager, Lancashire County Museum Service, by e-mail and telephone conservation. She advised NPA Ltd as to the general requirements for curation and conservation of the material and the following section summarises information and guidance received.

5.2. RECIPIENT MUSEUM

5.2.1 The ultimate place of deposition for the finds proposed is the Lancaster Maritime Museum (Customs House, St George's Quay, Lancaster, LA1 1RB), and this was initially agreed with Paul Thompson (Museums Manager North, Lancashire Museums Service) during the 2008 assessment (Town 2008). The situation remains as then; future discussions regarding deposition of the archaeological material will be also made with Dr. Stephen Bull (stephen.bull@lancashire.gov.uk) and Edmund Southworth (County Museums Officer, Lancashire County Museum service - edmund.southworth@lancashire.gov.uk), at the request of Ms Davis.

5.3 CONSERVATION

5.3.1 The pressing need for the conservation of the pottery was initially made in general guidance provided by Jo Dawson of Greenlane Archaeology (Dawson 2008). She recommended immediate progress from the current state in which the bulk samples remain unprocessed and nationally significant material was visibly deteriorating. The statement was made in March 2008, after the material had been through a particularly severe winter; the material has now been through a further severe winter since the initial recommendations. The material remains in exactly the same state, and has deteriorated further, with noticeably loss of glaze from some surface pieces, and frost-shattering of more fragile sherds – of which the bulk are the delftware itself.

5.3.2 She recommended that it was imperative that all the material gathered be processed immediately, to ensure that no further deterioration took place. Suggested action involved both the hand collected and the bulk finds being:

- a) washed and allowed to dry;

- b) sorted into categories within their contexts (initially biscuit ware, glazed ware, kiln furniture, and all other material) and properly stored and packaged;
- c) sorted further within their categories, and analysed;
- d) scientifically analysed (for selected material only, based on the results of the previous analysis);
- e) illustrated;
- f) fully published.

5.3.3 The most immediate and pressing conservation requirements stem from the storage of the pottery waste removed in bulk from contexts (142), (159), (219) and (220). The waste corresponds to approximately 30 tonnes of sagger, pottery and other finds in a soil matrix. Currently, the bulk waste is covered by a mix of tarpaulin, wooden boards, and plastic sheeting in an attempt to keep the winter conditions from attacking the finds, but inevitably there has been an effect on the waste from frost and freeze/thaw action, which is of concern. It is therefore recommended that this material be processed as soon as possible, before any significant damage is undertaken to the finds. This will hopefully occur as a second stage to the current works.

5.3.4 The current works concentrated only on stages (a) and (b) for the hand-collected material, with the later stages to form the basis of future work. The hand-collected pottery and other finds are stable, and there are no immediate conservation concerns for these. These have now all been washed and sorted into categories, which are discussed in Section 4.

5.4 STORAGE

5.4.1 Currently, the sorted hand-collected material is in temporary storage in heavy-duty archive boxes at Nenthead Mines Heritage Centre. Discussions with the Museums Service required storage in 1500 micron kraft lined container boxes (400 x 240 x 260, with 130 mm lid) wire stitched on corners, and these have been ordered, but are currently awaiting delivery. The Museums Service also requested Tyvek labels for the boxes and these have been ordered and received; all material will be re-boxed on receipt of the container boxes (but see Section 5.5). Box lists will be prepared and will be updated into a database when the identification of objects is complete.

5.4.2 All material will be prepared following the guidelines set out in *Environmental Standards for the permanent Storage of Excavated Material From Archaeological Sites* (UKIC 1984, Conservation Guidelines 3), *Guidelines for the Preparation of Excavation Archive for Long-Term Storage* (Walker 1990) and *Archaeological Archives - A guide to best practice in creation, compilation, transfer*

and curation by Duncan H. Brown, July 2007 (Archaeological Archives Forum).

5.5 DISCARD POLICY

- 5.5.1 The material from the assessment was sorted into diagnostic material (rims, bases, body sherds) and undiagnostic material (unidentifiable, but not including 'lumps' of material used to keep saggars in position during firing). The diagnostic material forms the basis for the assessment above. The undiagnostic material has been weighed and sorted, and the results are presented in Appendix 1. This material is currently stored in thirteen boxes, from different contexts. It is recommended this material be discarded, as it will not provide any further information through study. In addition, it may be desirable to dispose of any material classed as 'unassignable'; this material was 'typed' to only broad categories, but it was not possible to assign sub-types to this material, and as such its use is limited.
- 5.5.2 The remaining material should be retained for study.

5.6 GENERAL CONSERVATION

- 5.6.1 Outside of the bulk pottery waste, most of the assemblage is well-preserved and in good condition and thus the conservation requirement is low.

6. STATEMENT OF POTENTIAL

6.1 INTRODUCTION

6.1.1 The initial results of the excavation have been presented in an earlier assessment report (Town 2008), outlining the initial findings, and assessing the potential for future research arising from this; therefore the potential from the excavated remains will not be revisited here, except where there is a cross-over with the current artefact study. The research potential contained within the artefactual evidence is considered below.

6.2 STRATIGRAPHIC DATA

6.2.1 The excavations at Luneside East, Lancaster, have provided important information regarding the significance of a hitherto little studied industrial landscape. The pottery was wholly preserved beneath a layer of tarmac and concrete footings of later buildings, with truncation to the site limited to the very upper levels, where concrete sub-structures have been set down, and minor truncation through the excavation of foundation pits for stanchions, and service runs for the modern and 19th century buildings. The amount of information recovered during the excavations, therefore, was significant, and sufficient to facilitate a basic understanding of the kinds of activities which were undertaken on site.

6.2.2 With the exception of the northern edge of the Pothouse building, which lies under the current boundary wall, excavation has allowed a complete stratigraphic record to be made of the whole building, kiln and associated deposits, and has charted its evolution from pottery through to tenements and finally demolition, providing evidence of activity from the mid 18th century to the 20th century. The extents of the waste pottery deposits and the survival of the associated buildings as depicted on the early cartographic sources can only be guessed at, as the excavation was confined only to the building footings and the immediate area around the Pothouse, though more recent excavation work by The Northern Ceramic Society may serve to confirm the extent of the shardruck (Jackson forthcoming).

6.2.3 The stratigraphic and physical relationships have allowed the site to be phased simply (Town 2008), and as such the site is fairly well understood. The archaeological remains have facilitated the construction of a broad chronological framework, and this has been strengthened by the recovery of pottery and other artefacts, which will aid the ultimate publication of the site (not dealt with here).

6.2.4 However, specific questions remain regarding the production of delftware throughout the life-span of the pottery (1754-1785), and further analysis of the material removed from different contexts may allow for a better understanding of the cycles of production, and tastes for different ceramics, in the latter half of the 18th century, not only in the North West of England, but also internationally – most of the produced wares having been made for export to the West Indies and elsewhere. The pottery assemblage provides a sound framework for dating and can provide context to previous pottery assemblages and aid identification of future pottery types. The structural and stratigraphic data from the various phases should form the basis of a synthesised report, which will support studies of the delftware and kiln furniture off the site.

6.3 ARTEFACTUAL DATA

6.3.1 An important and rare collection of delftware (tin-glazed earthenware), biscuitware (undecorated delftware) and kiln furniture (saggers and associated material) has been recovered from the site. The archaeological finds assemblage from the North West as a whole is probably one of the smallest from the country. As a result, sites that generate stratified assemblages are important, as they can be used in the refining of primary type series (particularly of pottery but also of other material).

6.3.2 The depositional processes on this site involved primarily the sequential dumping of kiln waste in specific areas on the site, and the quality and rarity of the material is exceptional within a regional context, as no comparable examples of such dumps are known within North-West of England; indeed the quantity and complexity of the material is also rare nationally. The nearest comparable vessels are those found from Liverpool, but as previously discussed (Section 3.2.10) only material recovered from isolated sites, the bulk of which remain unpublished, has ever been catalogued. Further work is also needed in order to establish the links between the Lancaster and Liverpool potteries. Thermoluminescence dating from different layers may help date the pottery sequences identified (accuracy to c. 8-10%) (English Heritage 2006a). The unusual and distinctive nature of the pottery assemblage is of both regional and national importance, and holds the potential for further study (as outlined in Section 7).

6.4 ENGLISH HERITAGE SCIENCE FOR HISTORIC INDUSTRIES: GUIDELINES FOR THE INVESTIGATION OF 17TH- TO 19TH-CENTURY INDUSTRIES – 2006A

6.4.1 English Heritage guidelines covering the investigation of 17th- to 19th-century industries (English Heritage 2006a) recommend sampling and analysis for pottery production sites, including:

1. Specialist examination of wasters, moulds, and other waste;
2. Analysis of wasters at different stages of production to identify the raw materials and firing regimes (for example SEM/EDS/reheating);
3. Analysis (for example by XRD/EDS/XRF) of residues in coarse vessels and saggars to identify origin and function e.g. glaze and pigment preparation;
4. Sample tanks and pits for evidence of function and also sample distinct deposits (e.g. clay, glaze raw materials) for identification (e.g. by XRD/ICPS);
5. Sample fuel for identification;
6. TL dating of ceramics or archaeomagnetic dating of furnaces.

6.4.2 The current assessment goes some way to addressing Stage 1, but Stages 2 and 3 could only be undertaken following further works on the material from the site. The study of the kiln furniture has the potential to address techniques of manufacture which are often ignored (cf Barker 2004); the current assessment has already identified hitherto unpublished types of sagger, which has raised more questions than answers. The presence of previously unrecorded types is of particular importance as it has been thought that the kiln furniture for tin-glazed earthenware production changed little, if at all, for several centuries (Barker 1998, 319).

6.4.3 With regards to Stage 4, no clay pits were identified on the site, due to the limited excavation undertaken, but a number of the samples of material were taken from the site which appeared to show dumps of clay and raw materials from the site, which could warrant further study. The studies of the kiln furniture and biscuitware recovered would potentially provide further information regarding the origin of the clay (thought to be Carrickfergus).

6.4.4 The kiln was subject to archaeomagnetic dating, which addresses Stage 6, and the results were presented in a short report (Suttie 2008). The dating was undertaken on the baked clay deposits from the kiln floor and produced mixed results – a 66% certainty of a final firing between 1770 and 1800 was

achieved, with a probable final firing of 1785, which fits with the known dates of the pottery.

- 6.4.5 The samples recovered from the site warrant further specialist analysis and interpretation with reference to the site stratigraphy. This analysis, in association with the dateable finds, will aid in the reconstruction of the industrial processes undertaken on the site. This offers a rare opportunity to compare a stratified ceramic assemblage with others sites regionally and nationally.

6.5 ACADEMIC POTENTIAL

- 6.5.1 The establishment of the Pothouse represents an important element in the initial stages of Lancaster's modern industrial history, and its importance should be seen in context of the economic growth of the city in the mid 18th century, as a result of expanding West Indies trade. The Pothouse remains, and associated pottery assemblage, are of regional, if not national, importance. The excavation has highlighted a number of issues regarding the production of delftware both within Lancashire and nationally. In particular the analysis of the stratigraphic and artefactual data from the site has the potential to shed light on the nature of its production, and its eventual distribution across the world.
- 6.5.2 *Industrial Archaeology in Lancashire*: the study of the industrial archaeology of the post-medieval period is recommended as a priority in the English Heritage document *Exploring Our Past* (1991a), which stated that this was a topic in which 'England can claim to have international pre-eminence'. Fletcher (1996) highlights the general neglect of the topic in Lancashire, an area which had been seen as one of the cradles of modern industry. In 1996, only 20% of the Lancashire County SMR sites listed related to an industrial origin (*ibid*), and the chief industries he cites relate to coal mining and the textile (chiefly cotton) industry, though potteries are not mentioned. Fletcher highlights the threat faced by industrial landscapes and buildings, the physical remains of often long-departed industries through development pressures (Fletcher 1996, 164), and though the statement was published over ten years ago, the situation remains one of concern.
- 6.5.3 *National Ceramic Production*: within the context of Industrial Archaeology, the study of ceramic production and coinage provides an interesting indicator of long-term economic continuity and change. Before 1650, ceramic innovation was slow, relying on old technologies. The arrival of tin-glazed earthenwares in the late 16th century marked a development of techniques, using specialist kiln types, the pottery being double-fired in protective saggars. The organization of the wares tended to be capitalized by

entrepreneurs, who utilized a range of specialist craftsmen and who could encourage experimentation in forms and techniques due to the capitalized nature of the processes. The result was a growing diversity and complexity of technology used and a wider economic organization. Ceramics became a fashionable as well as a functional item, and a wider variety of forms, fabrics and finishes was produced (Courtney 2004). The 18th and 19th centuries saw a continued expansion in ceramic production and consumption, seen as a 'ceramic revolution' (Barker 2004). The increased production saw the development of the factory system and the increased number of workers employed.

6.5.4 Barker (2004) notes that *'the developments within the ceramics industry have generally been studied from the narrow perspectives of specific ware types and individual manufacturers, while the investigation of the manufacturing processes and of the factories lags behind'*. Development was a response to inter-related economic, social and technological factors. In the early 18th century, ceramic manufacture concentrated on lead-glazed earthenwares, fired only once, made in small workshops. In contrast, the production of delftware was different, requiring a greater degree of organization, particularly as the fuels and clay were not available locally. Investment was therefore required and partnerships between financial backers and potters were common. Larger workforces, including pot-painters, were also required, and more specialization in specific areas of the factory was therefore needed, and tailor-made factory buildings, rather than ad-hoc developments on the sides of dwellings, became more common (Barker 2004). By the late 18th century, the British share of the world ceramic market had increased, with greater exports abroad, particularly to the New World, and this resulted in larger factories, more rigid division of labour, and rationalization of complex processes (Barker 2004). Nevertheless, pottery production could not rely on machinery, and remained labour intensive, savings only being possible through economies of production (Barker 2004).

6.5.5 *Ceramic Production in the North-West: the situation regarding ceramic studies in the North-West is summarised in detail in the North-West Regional Research Framework:*

'Liverpool became a major producer and exporter of tin-glazed wares and porcelain in the 18th century and the industry continued there into the 19th, with the last works closing in 1840. There seems to be a correlation between the establishment of 18th century factory-scale potteries and ports, presumably because of a connection with the Atlantic trade, though this remains to be investigated. An industry developed at Whitehaven and a short-lived delftware works was set up on the quayside in Lancaster. Other not very successful attempts were made to introduce factory-scale pottery production in Chester, Kendal and Manchester. Of the

factories, only the Lancaster manufactory has received even limited archaeological examination.'

There is a lack of archaeological evidence for the production of pottery in the region at all periods. No production units have been seriously investigated and published [...]. Although a small number of production groups have been recovered from evaluation trenches in Liverpool, none of the sites have been subject to archaeological investigation' (Newman and McNeil 2006a, 157).

- 6.5.6 Given the commercial nature of the project, the main aim was to record and characterise the surviving archaeological remains on the site, particularly those relating to the 18th century delftware pottery buildings. Building on this, the second major aim was to contribute to existing archaeological knowledge relating to the production of post-18th century ceramics, as ceramic manufacture is not well-understood in the North-West (Newman and McNeil 2007a and 2007b). Little archaeological research has been undertaken on any factory sites in the North-West, other than at Prescott in Greater Manchester and Chester (*ibid*), and recently by NPA Ltd at Dearham in Cumbria (Town 2006). The importance of the Pothouse lies in the fact that little is known about the manufacture of delftware in Lancaster, and the site is believed to be the shortest-lived and least known of the delft manufactories. Little is apparently known regarding the kiln's function either in Lancaster or on other sites, or the production of delftware in Lancaster. Little documentary research has been undertaken into the delftware manufactory at Lancaster, and further research may highlight the history of this site. Crucially, there are no known complete Lancaster delftware pieces in existence. There is confusion between Lancaster delft and other delft due to this, and therefore the recovery of such large quantities of pottery from the excavations is of national importance.

7. UPDATED PROJECT DESIGN

7.1 INTRODUCTION

7.1.1 This section presents the original aims of the assessment of the kiln furniture, and then presents some conclusions that highlight both the excavated data that relates to these research questions, and also the potential for this excavated data to address these research questions.

7.2 ORIGINAL PROJECT AIMS

7.2.1 The original project design (Town 2009) set out three main aims for assessment of the kiln furniture from the hand collected material. These were:

- provide a type series for all the various types of kiln furniture likely to be encountered;
- identify other material of lesser interest within the hand-collected material, such as brick, unidentified fire ceramic and other fabrics;
- to inform wider regional, national and period based research frameworks.

7.2.2 The following section presents initial conclusions that can be drawn from the assessment of the kiln furniture, and provides an assessment of the research potential of material, and the potential for further work.

7.3 SUMMARY OF RESULTS OF ASSESSMENT

7.3.1 The following summarizes the results of the assessment of each type of material, and highlights areas which could warrant further analysis. The areas refer to objectives set out in Section 7.5, with a methodological programme set-out in Section 7.6. To note, the assessment concentrated on *hand-collected material*, which obviously lent a sample bias to the material examined – some further work is therefore recommended for most types, in order to confirm the typologies definitively.

7.3.2 *Type 1 – the Plate Saggars, and associated Kiln Pegs*: the material assessed conformed very closely to other types of plate saggars noted from other sites; the dimensions, grouping of peg-holes, and general forms are fairly well known, and reported elsewhere (indeed of all the types of kiln furniture identified, these are the most readily recognizable, and probably most collected). The kiln pegs (Type 1E) have largely been covered by the current

programme of works, and therefore no further recommendations are made for these, other than illustration and publication. The following recommendations are made:

- To examine more material relating to the Type 1A-C saggars through the processing of a sample of the unprocessed pottery waste, to specifically address issues regarding the full height and diameters of these vessels, as this could not be concluded definitively from the sample examined (**Objective 1,3**).
- To retrieve more examples of the Type 1D saggars, which have not been hitherto identified nationally, in order to address the dimensions and profile of these vessels, and to establish what forms of pottery they were intended to protect (**Objective 1,3**).
- To illustrate all the Type 1 kiln furniture recovered (**Objective 4**).
- To publish all the Type 1 kiln furniture as a journal article, and ultimately to publish these as a future monograph (**Objective 5**).
- To deposit all the Type 1 kiln furniture within a museum (**Objective 6**) or discard as appropriate (**Objective 7**).

7.3.3 *Type 2 – the Bowl Saggars*: the material assessed conformed very closely to other types of saggars noted from (for example) Bristol and Glasshouse Street. Some questions remain as to the presence or otherwise of a cutaway section within these sagger forms; none was noted here, or in Bristol or Glasshouse Street, but this could be due to the small assemblage examined. The following recommendations are made:

- To examine more material relating to the Type 2A-B saggars through the processing of a sample of the unprocessed pottery waste, to specifically address issues regarding the full height and diameters of these vessels, as this could not be concluded definitively from the sample examined (**Objective 1,3**).
- To examine more material relating to the Type 2A-B saggars through the processing of a sample of the unprocessed pottery waste, to specifically address issues regarding the presence or otherwise of a cut-away section on these vessels, as this could not be concluded definitively from the sample examined (**Objective 1,3**).
- To illustrate all the Type 2 kiln furniture recovered (**Objective 4**).
- To publish all the Type 2 kiln furniture as a journal article, and ultimately to publish these as a future monograph (**Objective 5**).
- To deposit all the Type 2 kiln furniture within a museum (**Objective 6**) or discard as appropriate (**Objective 7**).

7.3.4 *Type 3 – Saggors for Vessels with Handle*: the material assessed has not been published previously anywhere nationally, though sherds definitely exist in Liverpool, so usage of this form is likely there, and, potentially, elsewhere. No definitive form for this sagger was recorded; only fragments of the body were seen, and it was not possible to reconstruct the vessels from the material examined in this assessment. Questions remain as to the actual form of this vessel. The following recommendations are made:

- To examine more material relating to the Type 3 saggors through the processing of a sample of the unprocessed pottery waste, to specifically address issues regarding the full height and forms of these vessels, as this could not be concluded definitively from the sample examined (**Objective 1,3**).
- To illustrate all the Type 3 kiln furniture recovered (**Objective 4**).
- To publish all the Type 3 kiln furniture as a journal article, and ultimately to publish these as a future monograph (**Objective 5**).
- To deposit all the Type 3 kiln furniture within a museum (**Objective 6**) or discard as appropriate (**Objective 7**).

7.3.5 *Types 4 and 6 – Buff and Red Earthenware Kiln Tiles*: the material assessed is fairly well known and reported elsewhere (apart from the Type 4c kiln tiles, though these are present in Liverpool), and, other than retrieving a definitive dimension for the types uncovered, little further work is recommended. The following recommendations are made:

- To illustrate all the Types 4 and 6 kiln furniture recovered (**Objective 4**).
- To publish all the Type 4 and 6 kiln furniture as a journal article, and ultimately to publish these as a future monograph (**Objective 5**).
- To deposit all the Type 4 and 6 kiln furniture within a museum (**Objective 6**) or discard as appropriate (**Objective 7**).

7.3.6 *Type 5 – Red Earthenware Saggors*: the material assessed has not been published previously anywhere nationally. No definitive form for these sagger was recorded; only fragments of the body were seen, and it was not possible to reconstruct the vessels from the material examined in this assessment. Questions remain as to the actual form of this vessel, and as to its usage – was it made to fire biscuitware? The following recommendations are made:

- To examine more material relating to the Type 5 saggors through the processing of a sample of the unprocessed pottery waste, to specifically address issues regarding the full height and forms of these vessels, as

this could not be concluded definitively from the sample examined (**Objective 1,3**).

- To illustrate all the Type 5 kiln furniture recovered (**Objective 4**).
- To publish all the Type 5 kiln furniture as a journal article, and ultimately to publish these as a future monograph (**Objective 5**).
- To deposit all the Type 5 kiln furniture within a museum (**Objective 6**) or discard as appropriate (**Objective 7**).

7.3.7 *Clay 'Lumps'*: little further work is recommended on this material. The following recommendations are made:

- To illustrate a selection of the lumps recovered (**Objective 4**).
- To publish a selection of the lumps as a journal article, and ultimately to publish these as a future monograph (**Objective 5**).
- To discard the lumps once examined (**Objective 7**).

7.3.8 *Other material*: most other sites show evidence of trivets or girders within the archaeological record, and yet no evidence of either has yet been uncovered from the Lancaster material (though there is evidence a trivet has been previously recovered from site – Price 1972a). This may be due to the sample bias and the small sample collected. It is recommended therefore that:

- More material is examined through the processing of a sample of the unprocessed pottery waste, to specifically the presence or absence of these artefacts, as this could not be concluded definitively from the sample examined (**Objective 1,3**).
- To illustrate all the material if recovered (**Objective 4**).
- To publish all the material if recovered as a journal article, and ultimately to publish these as a future monograph (**Objective 5**).
- To deposit all the material if recovered within a museum (**Objective 6**) or discard as appropriate (**Objective 7**).

7.4 REVISED PROJECT AIMS

7.4.1 The principal aims of the subsequent post-excavation work can be summarised as follows:

- *to produce, concurrently with the proposed assessment of the material as yet not examined, an integrated interpretive synthesis of data for publication, in order to provide a nationally recognized type series for both the Lancastrian kiln furniture and delftware from the site at Luneside East, Lancaster.*

- *Undertake analysis of identified categories of data at appropriate levels of detail in order to meet the project aims and objectives.*
- *To contribute to regional and national academic research objectives, including the North West Regional Research Framework, in relation to the themes outlined above (Section 6).*
- *To create and deposit an ordered and indexed research archive in The Maritime Museum, Lancaster.*

7.5 REVISED PROJECT OBJECTIVES

7.5.1 Following from the assessment report in relation to the aims above it is possible to set out a number of objectives that which should be addressed by the programme of work set out in Section 7.6, refer to the issues raised in Section 7.4:

[1] To further examine material from the 30 tonnes of unprocessed pottery waste to fully confirm the type series established in this report, and to provide detailed data regarding the different types for which insufficient data was retrieved from the current exercise.

[2] To further examine material from the 30 tonnes of unprocessed pottery waste to retrieve delftware and biscuitware from the piles, and to bulk quantify these for future analysis.

[3] To lay out and sort the kiln furniture, searching for any joins or groups, and joining sherds where possible and appropriate. To sort the pottery into fabric types and record. To incorporate the fabric types into the catalogue and make any necessary adjustments to catalogue.

[4] To illustrate and publish the kiln furniture as a journal article.

[5] To publish and disseminate the final results of the post-excavation analysis initially as a journal article relating to the kiln furniture, and ultimately as a monograph report covering the kiln furniture, biscuitware and delftware (as detailed in Section 7.6).

[6] To deposit an ordered and indexed research archive in The Maritime Museum, Lancaster (as discussed in Section 5, and detailed in Section 7.6), or

[7] to discard the material once weighed and classified (as discussed in Section 5, and detailed in Section 7.6) following consultation with English heritage and Lancashire Museums Service.

7.6 REVISED METHODOLOGY

- 7.6.1 Prior to this assessment, English Heritage (Jennings *pers. comm.*) recommended as the next stage of works that only 25% of the 30 tonnes of waste should be processed, and NPA Ltd are happy to concur with this. In order to test the type series of kiln furniture, retrieve further examples of the delftware and biscuitware, and dispose of most of the kiln furniture once quantified, the following methodology was previously provided (Town 2009).
- 7.6.2 As a type-series of kiln furniture and 'other' material has now been established, the individual heaps will be rapidly scanned for kiln furniture and other material, and this material will be rapidly sorted into individual type-series categories and weighed. The material will not be subject to any form of washing, and will be discarded once quantification has been completed. This will result in heaps which are formed of more concentrated and 'finer' material, hopefully with an increased proportion of delftware and biscuitware.
- 7.6.3 The remaining concentrated material will be taken off individual heaps in fixed amounts (for example 50L at a time) and will be placed on a 5mm mesh sieve, and spread across the sieve to provide even coverage of material. At this stage, individual sherds of delftware and biscuitware (fragile) will be removed as identified by eye, and separated into different category areas (trays). The remaining material will be subject to a rapid wash with a hose, to remove any dirt or residue to expose further pottery; any further sherds of delftware or biscuitware will then selected and removed. The remaining dirt and waste material (stones etc) will be discarded.
- 7.6.4 All delftware and biscuitware will be sorted at the end of the second stage into individual trays by context. All sagger and 'other' will be subject to basic quantification as before, and will be discarded.
- 7.6.5 The delftware and biscuitware will then be subject to washing by hand, and will be allowed to dry in a secure environment, in individual trays. Any significant pieces will be identified and kept to one side (e.g. biscuitware with pencil markings etc), by bagging the pieces in finds bags marked with a context number. The dried pottery will be counted, and the number of sherds entered into a database, with an individual box number assigned for the material. Any significant material will be noted, but will be kept with the general material. The delftware and biscuitware will then be boxed up into kraft lined container boxes with lids, with a waterproof tyvek label affixed to the front with the site code, context number, box number and weight

ascribed, and will be stored within a container on-site. The boxes will be stored in order.

7.7 COSTS, STAFFING AND RESOURCES

7.7.1 The costs for the second stage of processing will be submitted to English heritage once the methodological approaches have been fully established and confirmed. North Pennines Archaeology Ltd can provide the costs for the analysis of this work, as required.

7.7.2 It is envisaged the full analysis of the kiln furniture will be published as a stand-alone article for *Post-Medieval Archaeology* (or similar publication). Once all the delftware and biscuitware are retrieved and in stable condition within archive boxes, further requests to the original client will be made for the publication of the site excavation works, pottery and kiln furniture as a coherent piece of work, probably a monograph. It is proposed that a revised costing be produced for the full analysis and publication of the latter, based on the previous assessments undertaken, and that this will be produced as a separate document.

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APPENDIX 1: KILN FURNITURE TABLE

Table 1: summary of Kiln Furniture Types by weight and context

Box No	Box Type	Saggers				Pottery			Context No(s)	Weight (Kg)	Notes
		Red Earthenware (Diagnostic)	Red Earthenware (Undiagnostic)	Buff Earthenware (Diagnostic)	Buff Earthenware (Undiagnostic)	Delftware	Biscuit Ware	Other			
1	Archival Kraft Box										Contains Type 1A,B,C (142) Type 1A 0.600kg (142) Type 1B 5.900kg (142) Type 1C 6.910kg
2	Temporary Archive Box	X		X					142	13.41	
3		X		X					142	11.85	Contains Type 3, not possible to sub type
4		X							142	8.11	Contains Type 5A-0.360kg & unassignable pieces
		X							142	14.91	Contains Type 5C-0.210kg mostly unassignable, also includes 'lumps' weighing 8.35kg

Box No	Box Type	Saggers				Pottery			Context No(s)	Weight (Kg)	Notes
		Red Earthenware (Diagnostic)	Red Earthenware (Undiagnostic)	Buff Earthenware (Diagnostic)	Buff Earthenware (Undiagnostic)	Delftware	Biscuit Ware	Other			
5	Archival Kraft Box Temporary Archive Box	X							142	18.60	Contains Types 6A,B,C Type 6A 8.400kg Type 6B 9kg Type 6C 1.600kg
6	X			X				142,120	12.19	Contains Type 2A,B & 3A,B,C (142) Type 2A 0.350kg (120) Type 2A 0.300kg (142) Type 2B 0.550kg (142) Type 3A 5.800kg (142) Type 3B 5.190kg (120) Type 3B 0.601kg (142) Type 3C 0.600kg	
7	X				X			142	18.37		
8	X				X			142	9.60		
9	X		X					142	10.81		
10	X		X					142	15.25		
11	X						X	142	12.49		
12	X		X					142	13.38		

Box No	Box Type	Saggers				Pottery			Context No(s)	Weight (Kg)	Notes
		Red Earthenware (Diagnostic)	Red Earthenware (Undiagnostic)	Buff Earthenware (Diagnostic)	Buff Earthenware (Undiagnostic)	Delftware	Biscuit Ware	Other			
13	Archival Kraft Box	X				X			142	17.45	
14	Temporary Archive Box	X			X				142	24.09	checked and not assignable
15		X							142	20.90	Contains Type 6A,B Type 6A 6.100kg Type 6B 13.800kg
16		X							142, 120	13.70	Contains Type 5 A,B,C (142) Type 5A 3.201kg (142) Type 5B 3.500kg (142) Type 5C 3.889kg (120) Type 5C 2.205kg (142) Type 5D 0.901kg
17		X				X			120	5.75	Contains Type 1A Large saggers
18		X							120	9.90	Contains Type 5A saggers (plus charred 'lumps')
19		X					X		120	11.50	Contains Type 1B Medium Tile

Box No	Box Type	Saggers				Pottery			Context No(s)	Weight (Kg)	Notes
		Red Earthenware (Diagnostic)	Red Earthenware (Undiagnostic)	Buff Earthenware (Diagnostic)	Buff Earthenware (Undiagnostic)	Delftware	Biscuit Ware	Other			
20	Archival Kraft Box			X					120	11.75	Contains Type 1C (small saggers)
21	Temporary Archive Box				X				120	13.60	
22			X						120	3.58	
23		X							120	15.25	Contains Type 5B & 6B Tile (120) Type 6B 14.950kg (120) Type 5B (chamfered edge) 0.300kg
24		X			X				120	4.00	Contains Type 1D Angular (120) Type 1D 2.400kg (120) (pieces with moulded lumps) 1.600kg

Box No	Box Type	Saggers				Pottery			Context No(s)	Weight (Kg)	Notes
		Red Earthenware (Diagnostic)	Red Earthenware (Undiagnostic)	Buff Earthenware (Diagnostic)	Buff Earthenware (Undiagnostic)	Delftware	Biscuit Ware	Other			
25	Archival Kraft Box Temporary Archive Box				X				120,142	29.46	Contains Type 4A,C Thick & Ridged tile (142) Type 4A (Thick) 4.500kg (120) Type 4A (Thick) 22.359kg (142) Type 4C (Ridged) 2.400kg (120) Type 4C (Ridged) 0.200kg
26									120,142	13.20	Contains Type 4B Medium Tile (142) Type 4B 1.500kg (142) Type 4B (dark blue glaze and delft glaze evident) 0.100kg (120) Type 4B Medium Tile 11.600kg

Box No	Box Type	Saggers				Pottery			Context No(s)	Weight (Kg)	Notes
		Red Earthenware (Diagnostic)	Red Earthenware (Undiagnostic)	Buff Earthenware (Diagnostic)	Buff Earthenware (Undiagnostic)	Delftware	Biscuit Ware	Other			
27	Archival Kraft Box	X									
28	Temporary Archive Box	X	X						120	13.36	includes brick/kiln material, sagger pegs & 'lumps'
29			X				X		120	8.20	Contains Type 5B saggers
30		X	X						120	14.50	Contains Type 3A sagger (120) Type 3A (bases) 3.200kg (120) Type 3A (extensions/lines) 11.300kg
31		X	X				X		219	5.89	Contains Types 1B,2A,2B,3,3B,5A, includes 'lumps', pegs and unassignable
									219	5.30	Contains Types 4C,6B & unassignable pieces

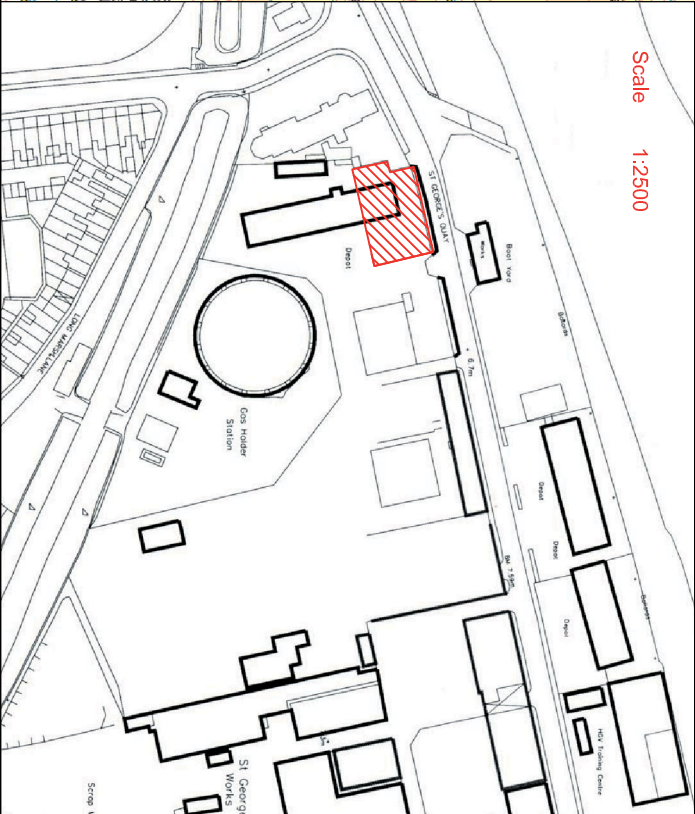
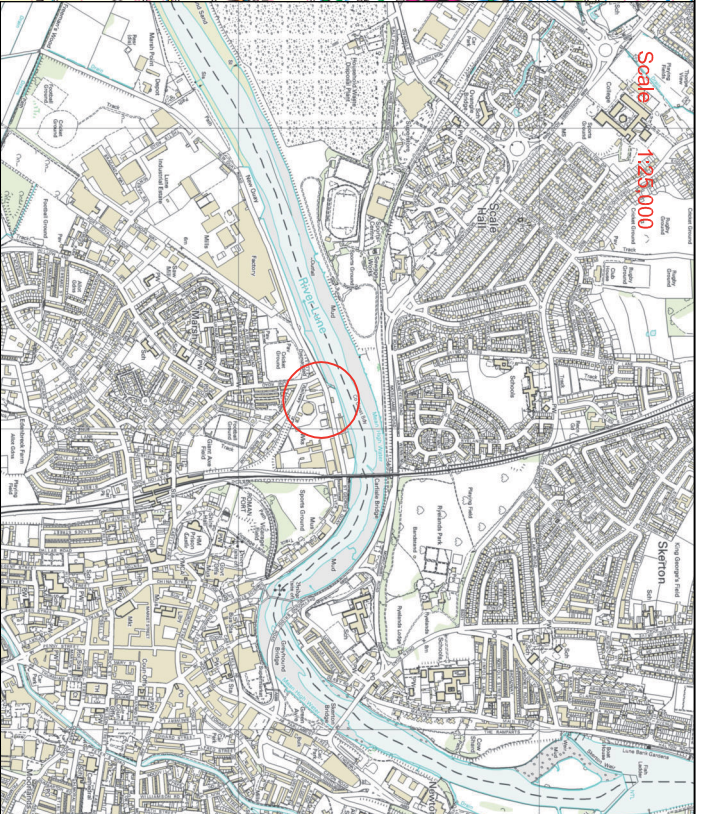
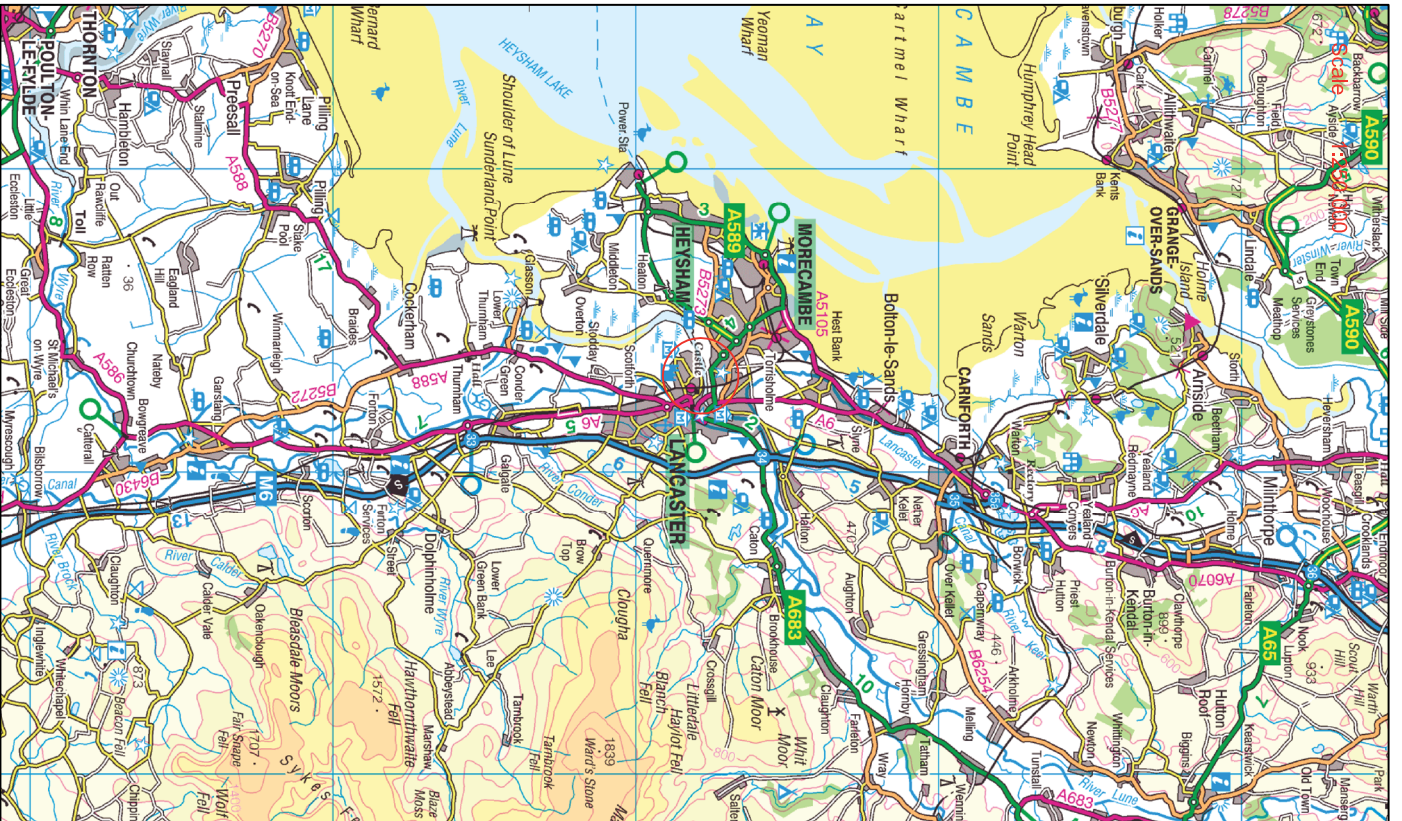
Box No	Box Type	Saggers				Pottery			Context No(s)	Weight (Kg)	Notes
		Red Earthenware (Diagnostic)	Red Earthenware (Undiagnostic)	Buff Earthenware (Diagnostic)	Buff Earthenware (Undiagnostic)	Delftware	Biscuit Ware	Other			
32	Archival Kraft Box	X									Contains Types 1B,C,3,3A,6B Type 1B 0.500kg Type 1C 0.789kg Type 3 (unable to sub type) 1.300kg Type 3A (bases) 0.150kg Type 6B 1.100kg Checked not assignable 2kg 'Lumps' 0.300kg
	Temporary Archive Box	X						267	6.14		

Box No	Box Type	Saggers				Pottery			Context No(s)	Weight (Kg)	Notes
		Red Earthenware (Diagnostic)	Red Earthenware (Undiagnostic)	Buff Earthenware (Diagnostic)	Buff Earthenware (Undiagnostic)	Delftware	Biscuit Ware	Other			
33	Archival Kraft Box Temporary Archive Box	X	X							u/s Type1B,3 -2.50kg (153) Type 1D-0.620kg (156) Type 4C-0.050kg (159) Types 1A,B,C,2A,3,4C-2.53kg (166) Types 1A,B,C,3,3A,3B-1.11kg (220) Types 2A,3,3B- 1.01kg (277) Types 1C,2B,3,4C- 0.75kg (278) Types 1A,B,2B,3,3A,4C-0.625kg (280) Type 3- 0.100kg (285) Type 3- 0.300kg (289) Types 1A,B-0.740kg	
34		X						278,166,159,277,288,285,284,287,215,216,289,283,276,271,272,268,273,270,	12.18	Contains Types 5A & unassignable pieces	

Box No	Box Type	Saggers				Pottery			Context No(s)	Weight (Kg)	Notes
		Red Earthenware (Diagnostic)	Red Earthenware (Undiagnostic)	Buff Earthenware (Diagnostic)	Buff Earthenware (Undiagnostic)	Delftware	Biscuit Ware	Other			
35	Archival Kraft Box										
	Temporary Archive Box	X		X					166,283,280,278,166,U/S,277,159,128,287,215,138,285,282,138,284,276,271,272,268,273,270	14.85	Contains Types 1B,3A,4A,B,5B & pieces that are unassignable
36		X							278,166,159,U/S,277,282,284,285,287,216,214,138,276, 271,272,268,273,279,283	19.07	Contains Types 5A & 5B but mostly 6A & B, also 'lumps'
37		X			X				273,270,279,268,272,U/S,271,159,276,283,151,287,157	15.15	Contains Types 1A,B,C,2B,,3A,B,4B,C includes 'lumps' and pegs
38		X	X	X	X				203,274	12.22	Contains Types 1A,1B,1C,3,3A,5A,6B,6C
39		X							U/S 285	2.25	buff and red together due to small amount

Box No	Box Type	Saggers				Pottery			Context No(s)	Weight (Kg)	Notes
		Red Earthenware (Diagnostic)	Red Earthenware (Undiagnostic)	Buff Earthenware (Diagnostic)	Buff Earthenware (Undiagnostic)	Delftware	Biscuit Ware	Other			
41	Archival Kraft Box										
	Temporary Archive Box	X					X				
									166,203,270,271,272	3.88	(166)-0.380kg (203)0.415kg (270)-0.370kg (271)-0.805kg (272)-1.910kg

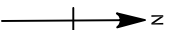
APPENDIX 2: FIGURES



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Scale Varies

DRAWN BY: MT
DATE: 25.02.09



KEY:



Excavation Area

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Figure 1 : Site Location



Figure 2: Outline Site Plan, showing Location of Main Contexts



North Pennines Archaeology Ltd
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Scale 1:125

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DATE: 25.02.09

LOCATION:



KEY

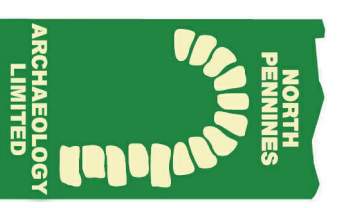
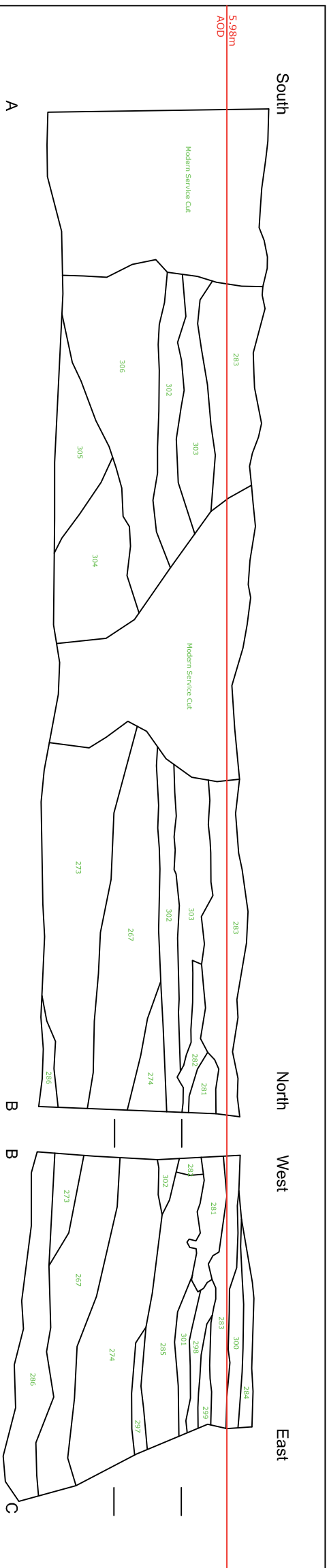
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- ROOM 1 Room Number
- Extent of Excavation
- 18th Century Phase
- 19th Century Phase
- 20th Century Phase

REPORT No:

CP 620/09

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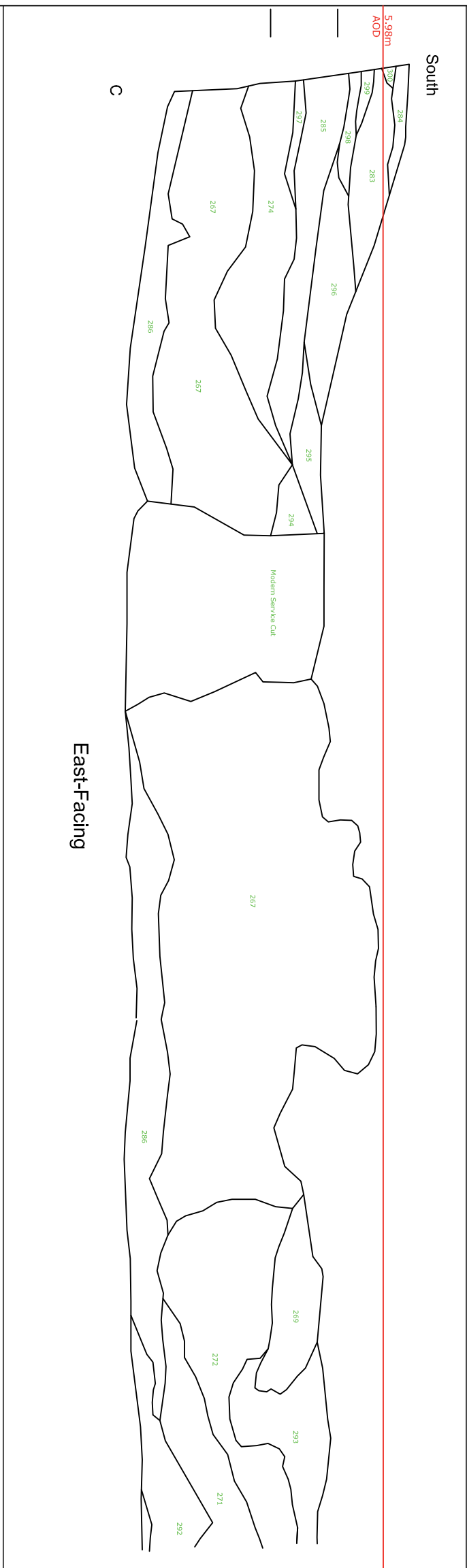


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(261) Context Number

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Figure No: 3

Figure 3: Section 3, showing principle Tip-lines through Shardruck Waste Deposits