HALE WHARF, FERRY LANE, TOTTENHAM N17 9NE AN ARCHAEOLOGICAL ASSESSMENT

SITE CODE: FRR17

LOCAL PLANNING AUTHORITY: LONDON BOROUGH OF HARINGEY

DECEMBER 2018

PRE-CONSTRUCT ARCHAEOLOGY

Hale Wharf, Ferry Lane, Tottenham N17 9NE;

An Archaeological Assessment

Central National Grid Reference: TQ 34782 89475

Written and Researched by Ellen Green

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Project Manager: Helen Hawkins

Post-Excavation Manger: Lucy Whittingham

Commissioning Client: John F Hunt

Contractor:

Unit 54 Brockley Cross Business Centre

96 Endwell Road

Brockley

London SE4 2PD

Tel: 020 7732 3925

Fax: 020 7732 7896

E-mail: hhawkins@pre-construct.com

Web: www.pre-construct.com

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Pre-Construct Archaeology Ltd
Unit 54
Brockley Cross Business Centre
96 Endwell Road
London
SE4 2PD

CONTENTS

Figure list

Plate List

1 ABSTRACT

1.1 This report details the results a of an archaeological excavation undertaken as mitigation by Pre-Construct Archaeology Limited between 4th January and 28th March 2018 at Hale Wharf, Ferry Lane, Tottenham N17 9NE (TQ 34782 88475) on behalf of John F. Hunt.

1.2 The excavation/mitigation (the site) took place in the southeast part of the Phase 1 Hale Wharf development (the development) as the result of the remains of Tottenham Mill being identified in an earlier watching brief (Harris and Green 2018), The site was bounded by the Lea Navigation Channel to the west, the River Lea Flood Relief Channel to the east and Ferry Lane (A503) to the south (Figure 1).

1.3 Geologically the site was underlain by London Clay, which was overlain by Superficial Deposits (former flood plain and river deposits) formed of a mixture of alluvial clay, silt and gravels. The site was relatively low lying and almost level at c.9.30m OD. A layer of peat (encountered at 6.24m OD in evaluation Trench 3 to the northeast of the site) produced a radiocarbon date in the early medieval period (Harris and Green 2018), but such deposits were not investigated in the excavation/mitigation area as, if present, they would have been below the level of impact in this area of the development. No further remains of this date were identified.

1.4 The remains of several post-medieval phases of Tottenham Mill were recorded in this excavation, dating from the late 16th/early 17th centuries to the 19th century. These included various rebuilds of rooms within the footprint of the Mill building and bases for possible mechanical hoists or grinding wheels.

1.5 The earliest archaeological phase encountered during the excavation was a flood event dating to the late 16th century. In the southern portion of the site a Mill building was uncovered dating to the late 16th/ early 17th century as the first of several buildings observed during excavation. A series of buildings and rooms were constructed and demolished in this southern area of site throughout the post-medieval period, possibly reflecting changes in the Mill's use or as a result of ownership, destructive fire or flooding events.

1.6 During the late 18th/early 19th century an additional Mill outbuilding was constructed in the northern portion of the site. This building was also demolished and rebuilt before being abandoned in the late 19th century.

2 INTRODUCTION

2.1 This report details the results and working methods of an archaeological field excavation undertaken by Pre-Construct Archaeology Ltd (PCA) between 4th January and 28th March 2018 at Hale Wharf, Ferry Lane, Tottenham NE17 9NE (NGR TQ 34782 88475) (Figure 1). These works took place in advance of residential development and were commissioned by John F. Hunt. The project was overseen on behalf of the main client by PCA Heritage, acting as the client's archaeological consultant.

2.2 The archaeological excavation, carried out as mitigation following a watching brief (Harris and Green 2018), was undertaken within one trench, located in the southern portion of the Phase 1 Hale Wharf development, bounded by Ferry Lane to the south and the River Lea Flood Relief Channel to the east (Figure 2). The mitigation/excavation area of 108 m^2 was excavated only to the site formation level of c.7.00m OD and therefore the natural sequence of the site was not reached in the excavation/mitigation area. Previous geoenvironmental and geotechnical investigations, carried out in 2014 and supplemented in 2017 under the technical guidance of Ramboll (Ramboll 2017), suggested that the top of the gravel terrace, where potential Lea Valley Floor geoarchaeology could be located, was generally at about 4m below ground level.

2.3 The site is located within an Archaeological Priority Zone as defined by the London Borough of Haringey. The site does not contain, nor is adjacent to any Scheduled Ancient Monuments.

2.4 The site was previously the subject of an Archaeological Desk Based Assessment (Ramboll; Emery et al. 2016), followed by a geoarchaeological watching brief carried out by MOLA in 2017 (MOLA 2017). A subsequent evaluation and Watching Brief within the Phase 1 Hale Wharf development was monitored by PCA in 2018 (Harris and Green 2018). These revealed the presence of the mill leat as well as post-medieval structures which were identified as the remains of Tottenham Mill and a tollhouse. The aim of the mitigation work was to further determine the date and character of the surviving Mill building and activity associated with the use of the River systems of the Lea Valley, the results of which are presented in this report.

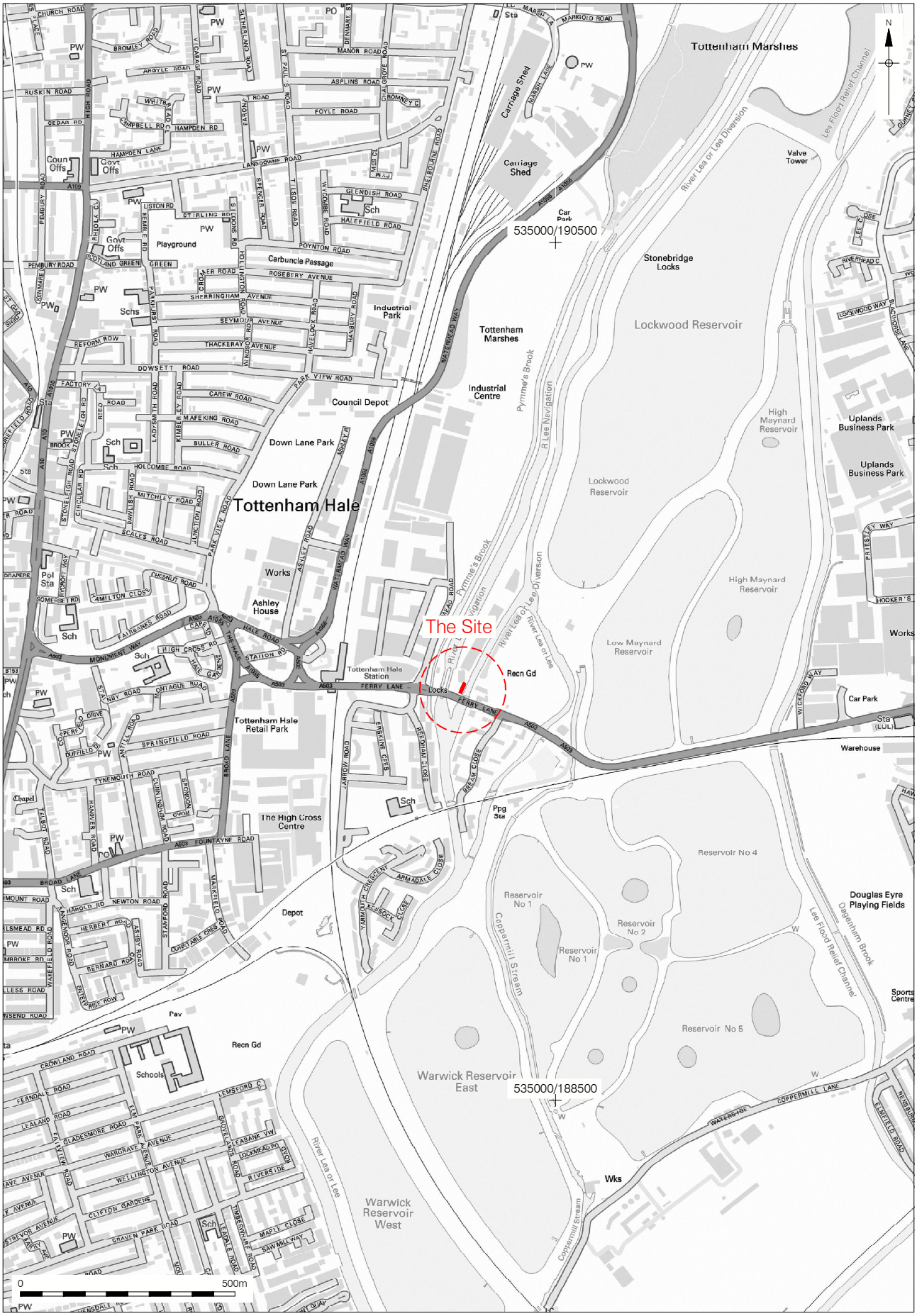
2.5 Both a Written Scheme of Investigation (Ramboll 2016) and a Health and Safety Method Statement and Risk Assessment (Hawkins 2017) detailing the methodology and work programme for the archaeological investigation were prepared prior to the fieldwork.

2.6 The field excavation was undertaken by Pre-Construct Archaeology Ltd. under the supervision of the author and the project management of Helen Hawkins, overseen on behalf of the client by Jacek Gruszczynski of PCA Heritage. The work was additionally monitored for the local planning authority by Adam Single, Archaeology Advisor at the Greater London Archaeological Advisory Service (GLAAS) at Historic England.

2.7 The completed archive, composing written, drawn and photographic records as well as the physical archive of all finds, will be deposited at the Museum of London Archaeological Archive

(MOLAA), 46 Eagle Wharf Road, London N1 7ED.

2.8 The site was allocated the unique site code FRR17 by MOLAA.



01/10/18 RM

Figure 1
Site Location
1:12,500 at A4

01/10/18 RM

Figure 2
Trench Location Plan
1:500 at A4

3 PLANNING BACKGROUND

3.1 National Guidance: National Planning Policy Framework

3.1.1 The National Planning Policy Framework (NPPF) was adopted on March 27th, 2012 and revised 24th July 2018. The NPPF constitutes guidance for local planning authorities and decision-takers both in drawing up plans and as a material consideration in determining applications.

3.1.2 In considering any planning application for development the local planning authority will be guided by the policy framework set by the NPPF, by current Local Plan policy and by other material considerations. Chapter 16 of the NPPF concerns the conservation and enhancement of the historic environment.

3.2 Regional Policy: The London Plan

3.2.1 The relevant Strategic Development Plan framework is provided by the London Plan published 22 July 2011. Policy relevant to archaeology at the site includes *Policy 7.8; Heritage Assets and Archaeology*

3.3 Local Policy: Archaeology in the London Borough of Haringey

CSV8: ARCHAEOLOGY Planning permission will only be granted for development which would adversely affect areas of archaeological importance if the following criteria are met:

a) applications are accompanied by an archaeological assessment and evaluation of the site, including the impact of the proposed development.

b) development proposals will preserve in situ, protect and safeguard important archaeological remains and the settings and, where appropriate, provide for the permanent display and interpretation of the remains.

3.3.1 The Council will ensure the proper investigation, recording of sites and publication of the results is conducted by a suitably qualified archaeological contractor, as an integral part of a development programme where a development incorporates archaeological remains or where it is considered that preservation in situ is not appropriate.

3.4 The site had been assigned an archaeological planning condition, requiring archaeological evaluation, which developed into excavation as mitigation prior to construction work. Investigation was instructed to assess the potential for archaeological remains of importance on the site with particular reference to the any surviving remains relating to Tottenham Mills in this vicinity and their association with the River Lea as a navigation route leading to the Thames.

4 GEOLOGY AND TOPOGRAPHY

4.1 Geology

4.1.1 As reported in the Desk-Based Assessment report (Emery et al. 2016), the bedrock geology of the site consists of the London Clay formation. The London Clay is overlain by Superficial Deposits (former flood plain and river deposits) formed of a mixture of alluvial clay, silt and gravels laid down in the Quaternary period.

4.1.2 The local environment was and continues to be dominated by a river setting. The local deposits were formed by rivers depositing mainly sand and gravel detrital material in channels to form river terrace deposits, with fine silt and clay from overbank floods forming flood plain alluvium, and some bogs depositing peat.

4.1.3 Layers of peat were encountered in evaluation Trenches 3 and 4 suggesting that various channels and floodplains associated with the River Lea have dried out and been filled with peat in both the prehistoric and early medieval periods. A layer of peat discovered at 6.24m OD in evaluation Trench 3 and also in Trench 4 (5.96m OD) was only identified in the northern part of the development, as the excavation area did not extend deeper than the site formation level of 7.50m OD. Alluvial deposits were found in evaluation Trenches 1, 3 and 4, at levels of 6.72m OD, 7.24m OD and 7.12m OD respectively, showing the previous extent of the River Lea. The peat seen in Trench 3 was sent for C14 dating and produced an early medieval date (540-645 cal AD, BETA- 497424-AMS, Harris and Green 2018, 60) which is different to the prehistoric peat found at most other nearby sites. The gravel, peat and alluvial layers were all located c. 2m higher than those found at Ferry Lane Industrial Estate, Forest Lane to the east of the site (4.5-4.55m OD, Batchelor and Young 2017, 23), suggesting they probably relate to later channels or floodplain hollows that have infilled at a later date with peat. The formation of the peat c. 1000 years later than Ferry Lane (400-200cal AD, BETA-453364) is also indicative of the Hale Wharf site becoming drier at a later date.

4.2 Topography

4.2.1 The site was broadly flat at a height of between 9.23m OD and 9.38m OD, except at the southern entrance where it rose to accommodate bridge abutments. The eastern edge of the site fell away into a largely silted up section of the River Lea Flood Relief Channel.

5 ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

5.1.1 The site has previously been the subject of an Archaeological Desk Based Assessment (Emery et al. 2016) as well as an evaluation and watching brief (Harris and Green 2018). The following represents a summary of the archaeological and historical background to the site, as presented in that report:

5.2 Prehistoric

5.2.1 The application site lies within the Lea Valley Conservation Area and the Lea Valley Archaeological Priority Area (APA) where alluvial floodplains and resources have been exploited since the earliest times. Remains from the prehistoric periods, including wooden structures and a single dug-out canoe, have been discovered, as has evidence for early occupation areas. Use of the Lea as a navigation route during the Roman period, a period well represented by archaeological remains, most probably had its origins in prehistoric times, although recorded explicit evidence for this, for example in the form of boat remains, is currently limited. The waterlogged conditions of the Lea valley lead to excellent survival of organic remains, and such deposits are very important to our understanding of past environments and land conditions.

5.2.2 Excavation at the Low Maynard Reservoir in 1868 revealed an assortment of Bronze Age metalwork in association with a set of timber piles. The same excavation also found an assortment of Iron Age metalwork.

5.2.3 A peat horizon was recorded during an archaeological evaluation at Ferry Lane Industrial Estate, Forest Lane, LB Waltham Forest for which the date could not be narrowed further than to the prehistoric.

5.3 Roman

5.3.1 Little Roman material has been found in the area round the site, however it is known that Tottenham High Road follows the course of Ermine Street, the Roman road that ran north from London to Lincoln and York and the River Lea was used as a navigation route during the Roman period. A small assemblage of Roman pottery was found at the Low Maynard Reservoir in 1868.

5.4 Early Medieval

5.4.1 Daniel Lyson's 'Environs of London' states that ancient records refer to the area as Toteham or Totham.

5.4.2 It is believed that the Saxon village known to have existed by the 11th century may have been situated either at the junction of Tottenham High Road and Lordship Lane or around the location of Tottenham High Cross. The settlement of Hale is believed to have been centred at the junction of Broad Lane and the Hale.

5.4.3 Further evidence of the Saxon landscape has been provided by a radiocarbon date of 540-645 cal AD (BETA- 497424-AMS, Harris and Green 2018, 60) retrieved from peat discovered at 6.24m OD in the northern part of the Hale Wharf Phase 1 development. This is a natural accumulation within a river channel/floodplain hollow and demonstrates that the Lea Valley was drying out at this time and land formation was taking place on the edges of the valley.

5.4.4 The Domesday Book provides the earliest historical mention of Tottenham which, prior to the Norman Conquest was known to be a manor in its own right. A weir, worth 3s is also reference in Domesday, within the Tottenham manor and most likely sited near the later Tottenham mill.

5.4.5 An early Viking sword found in the River Lea within the vicinity of the site.

5.5 Medieval

5.5.1 Medieval habitations within the Tottenham Hale area are suggested by the existence of a mill by 1254, although the name Hale first occurs in 1318 in a reference to John of Hale. The old manor of Tottenham was divided into three separate manor houses in 1254.

5.5.2 The centre of the village was marked by the high cross and the green. The cross was first mentioned in 1409. The green, known as Page Green, was mentioned as early as 1348 and stretched eastward from the High Road a short way south of Tottenham Green, along Broad Lane towards a crossing of the Lea close to Tottenham mill. By the mid 15th century as many as six inns were recorded, all of them, it is assumed, positioned along the High Road.

5.6 Post-Medieval

5.6.1 From the end of the 16th century a number of large houses in the area began to be leased to Londoners as country retreats, and the village of Tottenham Hale is documented from the early post-medieval period. The Hale is documented separately from at least 1754 and had its own Inn.

5.6.2 The pattern of development appeared to focus on areas of the High Road already popular by the 17th century, and the marshes were described as pleasant meadows with a tendency to occasionally flood.

5.6.3 In close proximity to the site, and possibly associated with Forest Road was “Mill Bridge”. This was in existence from at least 1594 and was described as “one of the most useful over the Lea”. In 1760 the bridge was rebuilt as a private toll road (called Ferry Bridge or Hillyers Turnpike) and replaced again in 1854 by an iron version. The bridge was finally demolished in 1915. A ferry house lay adjacent to the bridge and a ferry was documented alongside the bridge from at least 1722. The Ferry Boat Inn, a Grade II Listed building, is of a contemporary date.

5.6.4 Little industry, other than brick-making, is documented for Tottenham, and that which did exist was generally confined to riverside mills producing flour and leather, until the early 19th century. After 1810, other industries, including a lace factory, silk factory and tanning yard, became

established. By the mid 19th century no businesses of any size however are noted, except for breweries.

5.6.5 A series of Mill buildings can be seen on historical maps in the southern area of the site. The earliest cartographic source for the area, the Duke of Dorset's Survey from 1619 (Emery et al. 2016, fig 8), shows a building in the area which almost certainly represents Tottenham Mills. Further historic maps from 1798, 1844, 1864, 1915 show a series of buildings identified as the Tottenham Mills complex in the same area, however by 1915 the Tottenham Mills were described as disused. Historical sources state that the mill complex was badly damaged in a flood in 1817 and was not rebuilt after a fire in 1860. The ruins, however, survived until 1920 (Baggs, et al. 1976).

5.6.6 Historical sources refer to a number of industries taking place at the Tottenham Mills complex; corn (1530, 1619 1770, 1778), leather (1619), oil (1788), paper (1680) and gun powder (1656) (Baggs, et al. 1976).

5.6.7 The 1844 Parish tithe map shows a mill leat cutting diagonally across the southern extent of the site. The leat is no longer visible on the Ordnance Survey map of 1864, by which point the canal along the site's western boundary had been constructed, including Tottenham Lock at its southern west corner. A portion of this leat was identified during the archaeological evaluation (Harris and Green 2018).

5.6.8 The opening of a railway station in 1840 and a church in Wood Green precipitated the establishment of a local board in 1848 and marked the start of a spread of building development eastwards. By 1863 Tottenham Hale was integrated with the village around the high cross via buildings along the south side of High Cross Lane.

5.6.9 During the mid 19th century Tottenham began to change from a select residential neighbourhood into a crowded, lower middle and working-class suburb.

5.6.10 The 1884 Parish Tithe map shows a building, identified as a toll house present in the southern portion of the site. This building is visible on maps until the 1971 ordinance survey map. This building was identified during the watching brief on the site (Harris and Green 2018).

5.6.11 By the 1890s increased development meant that the former hamlets of Tottenham Hale, West Green and St. Ann's had merged together. The only open spaces remaining comprised the nursery gardens south of Tottenham Hale and to the extreme north, and the fields adjacent to the sewage works. As the population continued to increase throughout the early 20th century, land formerly undesirable for housing, such as that near the marshes or railway became utilised for factories.

5.6.12 Development of any remaining open ground continued throughout the 20th century, and local authorities constructed numerous estates within the wider area. Municipal building increased again after the Second World War, mostly on older sites or bombed-out premises.

6 ARCHAEOLOGICAL METHODOLOGY

6.1 Project Design

6.1.1 On the discovery of the Mill remains during the watching brief in January 2018, a mitigation scheme was designed in which a single open area of excavation (Trench 1, Figure 2) would target the remains of Tottenham Mills in the south eastern portion of the development. In consultation with Historic England/GLAAS, it was agreed the excavation would stop at 7.00m OD which was the site formation level.

6.1.2 The excavation was undertaken by a mechanical 360 excavator under archaeological supervision in controlled spits of 100mm until archaeological deposits, features or structures were encountered. These were then cleaned, investigated and recorded using hand tools.

6.1.3 All works were undertaken in accordance with the approved Written Scheme of Investigation (Ramboll 2016).

6.1.4 All site records were identified using the unique Museum of London site code FRR17, which was allocated to the site by the London Archaeological Archive (MOLAA) in 2017 at the start of the evaluation. All numbering (i.e. trenches, contexts, sections etc.) was sequential from the previous phase of work to ensure no duplication.

6.1.5 The investigation of all significant archaeological deposits, features and structures was undertaken by full time archaeologists employed by PCA. All significant deposits and features were assigned individual context numbers and recorded using the standard Museum of London single context recording system. Context information was recorded on pro-forma context sheets and all plans and sections were drawn, at a scale of 1:20 and 1:10 respectively, on polyester based drawing film (permatrace).

6.1.6 A full photographic record of the site was maintained in HQ digital photography.

6.1.7 All finds from the site were retained for off-site assessment. Samples were taken from appropriate contexts for off-site processing and assessment.

6.1.8 Feature and site plans were drawn from a site grid established by PCA and surveyed to the OS grid. The site grid was checked by PCA's surveyor at regular intervals.

6.1.9 Site levels and datums were established from spot heights installed on the site at various locations by the PCA surveyor using GPS survey equipment.

6.1.10 Upon completion of all phases of work the archive will be submitted to the MOLAA for deposition under the site code FRR17.

7 PHASED ARCHAEOLOGICAL SEQUENCE

7.1 Phase 1: Natural geology

7.1.1 Natural deposits were not reached in the area of excavation but had been identified in the previous evaluation trenches as deposits made up of pale grey brown gravel. This layer represented the natural strata and was consistent with the river terrace gravels as described by the British Geological Survey (Harris and Green 2018).

7.1.2 These natural deposits of gravel sloped down from 6.15m OD in the south to 5.66m OD in the north.

7.2 Phase 2: Early Medieval

7.2.1 Material from the early medieval period was not encountered in the area of excavation as it did not extend to the depth where early medieval peat was noted in the evaluation. The peat had been observed at 6.24m OD in evaluation Trenches 3 and 4 (to the northeast of the excavation/mitigation site), subsequently radiocarbon dated to 540-645 cal AD (BETA-497424-AMS, Harris and Green 2018, 60).

7.3 Phase 3: Late 16th/ Early 17th century (Figure 3)

7.3.1 The earliest deposit reached in the area of excavation was a layer of blue alluvial clay [320] located at 7.47m OD. This alluvial clay layer was likely to be the result of a flooding event and contained fragments of early post-medieval pottery dated between 1580 and 1600. A channel [399] cutting through the alluvium [320] on the southern half of the site was filled with a silty clay deposit [398], possibly as part of the site being levelled. This deposit sloped down to the south from 7.38 m OD to 6.98m OD.

7.4 Phase 4: Late 16th/ Early 17th century (Figure 4)

7.4.1 Cut into the channel fill [398] in the southernmost part of the excavation/mitigation area was a foundation [403] which made up the northern extent of Building 1. The foundation ran east-west and extended outside the western limit of excavation (LOE). The foundation measured 0.25m in width and was made up of tightly packed brick rubble. The highest recorded point of the foundation was 7.35m OD. The bricks (type FFR1) used in the foundation had sunken margins, were hand-made and their dimensions indicated an early post-medieval date between 1500-1700.

7.4.2 To the north of Building 1, a masonry drain [404] ran on a similar east-west alignment. The drain measured 2.46m by 0.44m and was constructed of unfrogged red brick bonded with a sandy yellowish white mortar. The highest point of the drain was 7.24m OD from where it sloped down to the west. Pottery recovered from the construction backfill of the drain [407] dated this backfill as between 1400 and 1650.

7.4.3 Between drain [404] and Building 1 a single posthole [369] was cut into the channel deposit [399]. The posthole was roughly rectangular and measured 0.35m by 0.25m and was 0.07m

deep. No dating evidence was recovered from its fill [397] and no other postholes were located which could be from an associated structure.

7.5 Phase 5.1: Late 16th/ Early 17th century (Figure 5)

7.5.1 Drain [404] was truncated by two pits, one roughly half way along its length [402] and one at its eastern end [363]. Pit [402] was oval in shape, measuring 0.6m by 0.47m, and 0.09m deep. The highest point of the fill [403] was recorded at 7.13m OD. Pit [363] was roughly square in shape, measured 1.10m by 0.24m and 0.24m deep and was recorded at 7.41m OD at the highest point. Pottery dating from 1550-1650 was recovered from the fill [354] of this feature.

7.5.2 In the south eastern corner of the area of excavation, pit [394] was recorded at 7.38m OD. The pit was oval in shape and extended outside of the LOE to the east. It measured 1.30m by 0.54m. Recovered from fill [393] of this feature was a pottery assemblage dated to 1580-1700.

7.5.3 In the northern portion of the area of excavation the alluvium was overlain by a dump deposit [391]. This deposit measured 4.35m east-west and 2.20m north-south and was located at 7.16m OD. Pottery dating from the late 16th/early 17th century was recovered from this feature.

7.6 Phase 5.2: Late 16th/ Early 17th century (Figure 6)

7.6.1 The pits were sealed by a levelling horizon of dumped material [387], [388], [390], [385], [395] which extended over the entire southern portion of the site. This horizon measured 11.48m north-south and extended beyond the LOE to the east and west. A fragment of French Burr stone quernstone was also recovered from [385] indicating the discard of old mill stones in this phase from previous use of the site as a Mill. These quern stones, usually used for fine grained flour production, may indicate the presence of flour milling in the nearby vicinity from as early as the 15th century. A large late 16th /early 17th -century pottery assemblage, including late 16th -century high status table vessels (Sudds, Appendix 3), was also recovered from this horizon, along with two copper-alloy belt buckles <SF34>, <SF37> of a 16th-century type (Gaimster, Appendix 6). Two fragments of early 18th-century tin-glazed earthenware (TGW) in levelling deposit [395] were considered to be intrusive. The horizon was located between 7.50m OD in the north to 7.31m OD in the south and had a gradual slope.

7.6.2 Cut into this levelling horizon was Building 2. Building 2 was represented by a series of brick walls [344], [372], [376], [378], [380] laid on foundations [379], [373] and [400] constructed of a mixture of stone and brick within construction cuts [375], [382], and [384]. The building was rectangular in plan and aligned roughly north-northeast/south-southwest with total dimensions of 9.60m north-south by 4.40m east-west. The northern and western extent of the building was represented by wall [344] while internal walls were represented by walls [372], [376], [378] and [380]. The building extended outside the LOE to the south and east and so may have originally been larger with further rooms than found in the area of excavation. Pottery assemblages were recovered from the construction backfill [386], [389], [381] associated with the foundations of Building 2 which dated to 1580-1650. These dates are further supported by the brick dates for

the walls, all of which fall between 1500 and 1700 and a single sherd of pottery found in foundation [400] which was dated to between 1480 and 1600.

7.6.3 A single fragment of vessel glass was recorded to have been found in wall [378] dating from 18th/19th century, however, this was incongruous with associated contexts and is likely to be of erroneous provenance.

7.6.4 The masonry elements which comprised Building 2 varied somewhat in width and surviving depth. Internal walls [378] and [372], which ran north-south, were the most substantial, measuring 0.60m and 0.68m in width respectively. Similarly, foundation [373] which was associated with walls [378] and [372], measured 0.75m in width, as compared to foundation [400], which corresponded to the external wall, and was 0.40m in width. The highest recorded point of Building 2 was wall [372] at 7.71m OD. All walls were between 0.20-0.34m in height and were constructed of sandy red bricks.

7.6.5 Within the confines of the excavation area three rooms could be discerned from the building's footprint, however no internal features from this phase survived within these rooms.

7.6.6 Room 1 was located in the northernmost part of the building and was defined by wall [344] to the north and west and walls [376] and [380] to the south. The room had the recorded internal dimensions of 4.29m east-west and 2.57m north-south, although it extended to the east beyond the LOE.

7.6.7 Room 2 was located in the southwest portion of the building and was defined by wall [344] to the west, walls [376] and [380] the north and walls [380], [378] and [372] to the east. The internal dimensions of the room measured 6.75m north-south and 1.46m east-west. Room 2 extended to the south beyond the LOE.

7.6.8 Room 3 was located in the south-eastern corner of the building and was defined by walls [372] [378] [380] to the west. The internal dimensions of the room measured 4.65m north-south and 1.63m east-west. The northern extent of the room was uncertain due to a modern truncation, and the room extended outside the LOE to the south and east.

7.7 Phase 6: Mid/Late 17th century- (Figure 7)

7.7.1 In the central section of the area of excavation, to the north of Building 2, a small pit [368] was cut into levelling layer [395]. The pit had an irregular shape and extended outside the eastern LOE. Measuring 0.92m by 0.90m the pit was 0.30m deep and had a gravel fill [367] containing iron objects and animal bone. The pit was overlain by a dump of charcoal rich material [324] measuring 0.94m by 0.22m. The layer was located at 7.40m OD.

7.7.2 The mill building erected in the previous phase of activity continued in use during this period. While the building was mostly retained from the previous phase, alterations and additions were made to the structure (Building 2, Figure 7).

7.7.3 The northern extent of the building was extended 0.35m by brick walls [326] and [329]. These walls were 0.65m in width and stood between 0.28-0.19m high. They were located at 7.39m OD and were constructed of bricks dated between AD 1500 and 1800.

7.7.4 The new northern extent of Room 1 was represented by walls [326] and [329]. Within the room, the ground level was raised 0.30m by a levelling horizon [361], [353], [333]. These deposits were composed of silty clays and contained a mixture of domestic waste (animal bone, pottery) and demolition rubble (CBM, stone, iron nails). These pottery assemblage in these levelling layers within Room 1 was very similar in composition to assemblages from Phase 5.2, also associated with Building 2 and dated between 1580 and 1650, suggesting that these two phases of Building 2 were close in date. In addition, a single sherd of early 19th century glass in levelling layer [361] is considered to be intrusive in a context disturbed by a later robber Trench [307].

7.7.5 At the southern end of the Building 2, wall [358]/ [371]/ [343], running east-west, was added to modify the southernmost part of the building, possibly shortening this building. It extended across the entire area of excavation and beyond the LOE both to the east and west, implying that Building 2 may have been widened and whilst wall [344] was still in use it may no longer have been the western limit of Building 2. This wall had a width of 0.47m at its widest point and was constructed of bricks dating between 1500-1700. The wall was observed at 7.80m OD and had a surviving height of 0.26m-0.48m.

7.7.6 Within Building 2 the internal walls [380] and [376] were demolished and covered by a levelling horizon [360], [351], [392], [362] indicating that, at least in the northern part of the building, Rooms 1 and 2 were merged. Levelling deposit [362] contained a pottery assemblage dating between 1550 and 1600 and CBM dated to 1600-1800. A single pipe bowl dating to the 18th century was also recovered from this levelling deposit [362] and is intrusive as it was directly overlain by later demolition layer [305].

7.7.7 Wall [372] was retained during this period, but it was modified. At 7.40m OD, a small rectangular pit [365] was cut into the north-eastern corner of the wall. The pit measured 0.62m by 0.36m and was oriented north/south in line with the wall. Within the fill [364] there was a large amount or mortar and frequent CBM fragments, probably as a result of demolition/alterations taking place within Building 2. On the west side of wall [372], additional masonry was added to support the wall, potentially to compensate for the part removed the on the eastern face. This additional brick wall support [355] measured 0.30m square and 0.12m high and was located at 7.53m OD.

7.7.8 Over this additional brick support, a strip measuring 0.64m by 0.21 of a mortar ‘floor’ surface [341] was observed respecting the western edge of wall [372]. This surface, located at 7.67m OD, likely represented a floor though it had been heavily truncated. The floor abutting the western face of wall [372] could have related to Room 1/2 (now combined) within Building 2.

7.7.9 In the south eastern corner of the building, a hearth [352] was added and indicates the likely position of the eastern external wall of Building 2 (not seen as it lay outside of the excavation/mitigation area). The hearth was rectangular and measured 0.74m by 0.30m. The hearth was truncated to the east by a modern intrusion and likely extended further. The hearth was 0.22m deep and contained a mixture of burnt clay and ash [338]. Directly to the west of the hearth, a small fragment of floor [334] and its associated bedding layer [335] survived. The floor was constructed of bricks dating between 1500-1700 and measured 0.62m by 0.2m and appears to respect the position of the hearth suggesting these features are of a similar date pre-dating the 18th century.

7.8 Phase 7: Late 17th /Early 18th century (Figure 8)

7.8.1 Cutting through demolition layers of Building 2 and though the floor levelling deposit [333] in the north-western corner of former Room 1 was a small pit [340]. The pit measured 1.02m by 0.55m and was roughly semi-circular in shape. Located at 7.47m OD, the pit was 0.55m deep and was likely to be external to Building 3. The pit pre-dated Building 3's construction in the early 18th century.

7.8.2 A horizon of demolition and levelling deposits [346] [305] [322] [325] [321] [311] covered the southern part of the site. This horizon measured 14.82m north-south and extended between 4.4m-1.43m east west. It was located at approximately 7.78m OD. Pottery and ceramic building material assemblages recovered from this horizon dated between 1580 and 1700 alongside clay tobacco pipes dated to 1680-1710. These deposits related to the demolition of Building 2 and the collapse of wall [344] in the late 17th to early 18th century, dated by clay tobacco pipes of c. 1680-1710 in at least two contexts. These demolition layers were superseded by Building 3 in c 1730.

7.8.3 Located in the south-eastern area of excavation were the remains of another phase of the mill building represented by Building 3 (Plate 1, Figure 8). This building was represented by wall [312], floor surfaces [286] and brick structure [287]/[297]. The southern extent of the building was represented by wall [312] which extended beyond the area of excavation in the south and east. The northern boundary of the building was uncertain, as no surviving walls were present, although the linear edges of brick structure [287] and floor [286] indicated the possible position of the western and northern walls of Building 3.

7.8.4 An assemblage of clay tobacco pipes (1730-1800) recovered from floor surface [286], dated the earliest features of Building 3 to c. 1730.

7.8.5 Only one wall [312] of Building 3 survived, located in the south-eastern corner of the site and represented one room at the southern end of this building. Wall [312] defines the western façade of the building and a probable internal wall assuming the building extended further to the north. The wall measured 2.92m east-west and 1.82m north-south and was 0.42m high. The wall, which was located at 7.85m OD, was 0.48m wide and stepped out at the base. No internal features survive to the south of wall [312].

7.8.6 Abutting wall [312] to the north was a circular brick structure and surface [287] measuring 2.36m by 2.24m and built up to a height of 0.37m. The highest point of this structure was located at 7.80m OD. The central slot, which was 0.27m deep was aligned south-southeast/ north-northwest and measured 1.42m in length and 0.68m wide and was lined at the base with a brick floor [297]. Pottery recovered from the bedding layer [313] for this floor dated between 1400 and 1600 but is considered residual as this structure fits within the footprint of the former mill Building 2 of Phases 5.2 or 6.

7.8.7 To the north of brick structure [287], and in a similar alignment, was a chalk floor surface [286] (Figure 8). This partially surviving surface measured 1.84m by 2.12m and was 0.10m thick, formed of compacted chalk pebbles in a clay matrix, located at 7.77m OD. The layer of chalk was overlain by a 0.12m thick layer of gravelly sand [284] and together they represented a floor surface within Building 3.

7.9 Phase 8: Mid 18th century (Figure 9).

7.9.1 In this period Building 3 was replaced by Building 4. Building 4 comprised wall [302], foundation structure [296] and a possible floor surface [237] with associated levelling layer [236] seen only in section (not illustrated). Building 4 also utilised the circular brick structure [287] from Building 3, adding slight modifications [269]. The western extent of Building 4 was represented by wall [302] and foundation [296]. The building extended beyond the area of excavation, both to the south and east. The northern extent of the building was uncertain as no wall survived, however given the placement of drain [251] it seems likely that the northern extent of Building 4 is less than that of Building 3.

7.9.2 An L-shaped foundation wall [296] overlaid the corner of wall [312] and part of the brick surface [287] from the previous Building 3. It was constructed of brick and burnt clay and made up a portion of Building 4's western extent. The foundation measured 0.65m by 0.8m and was located at 7.83m.

7.9.3 Wall [302] of Building 4 sat above foundation [296] and within cut [304] running north-south. Extending outside of the excavation to the south, the wall was 1.7m long and 0.35m wide. Located at 8.06m OD, wall [302] was 0.21m in height and constructed of unfrogged red bricks.

7.9.4 Banked up against wall [302] to the east was bedding layer [238]. The layer, which respected the line of B3 wall [312] to the north was composed of sandy clay and was 0.08m thick. This layer was overlain by a very thin layer of black material [237] at 7.90m OD, which most likely represented a floor surface within the southern part of Building 4.

7.9.5 Building 4 incorporated the circular brick structure [287] from Building 3, building it up with additional brickwork [269] measuring 2.1m by 1.4m to a level of 7.96m OD (Plate 2). The bricks used in the modifications dated to 1750-1850.

7.9.6 Banked up against wall [302] to the west was a large rectangular layer of levelling material [285]. This layer, which was comprised of dark brown sandy silt, contained frequent demolition rubble and its highest recorded point was 7.86m OD. An assemblage of clay tobacco pipe was

recovered from this layer, spot dated to 1760-1780. Layer [285] served as bedding to cobbled surface [288]. Surface [288] ran north-south along the eastern edge of the layer, following the line of wall [302]. Located at 7.92m OD, the surface was composed of rounded flint cobbles and measured 2.70m by 0.10m. Layer [285] was also overlain by compacted gravel surface [257]. This surface, which was 0.18m thick, likely represented an external yard surface and was located at 7.91m OD.

7.9.7 Cut into layer [285] to the north of surface [288] was a drain [251] which ran east-west across the area of excavation. The drain, which was located in cut [247], was constructed of unfrogged red brick and tile fragments. Drain [251] was 1.7m in long, 0.5m wide and sloped down towards the west. It was located at 7.86m and contained two fills [252], [246] which related to the drain silting up and going out of use. An assemblage of clay tobacco pipe and window glass was recovered from the fill, dated to the 18th/19th century. The location of drain [251] suggested that the northern boundary of Building 4 was further south than that of Building 3.

7.10 Phase 9.1: Late 18th/ Early 19th century (Figure 10)

7.10.1 In this period Building 5 was constructed in the northern portion of the area of excavation. Building 5 comprised wall [218], floors [316], [231] and [278], bedding layer [294], brick structure [318] and masonry structure [342] (seen in section only). The building was rectangular in plan and extended beyond the LOE to the east. Building 5 was aligned north-south on a similar line to Building 4. The building measured 6.40m north-south and 2.5m east-west. The masonry external wall [218] of Building 5 was 0.5m wide and 0.65m high and survived to a height of 8.16m OD. It was made up of unfrogged bricks with a mix of yellow and red fabrics which suggested a date range of 1800-1900.

7.10.2 Within Building 5 a large rectangular brick structure [318] (Plate 3) with two buttresses on the western side measured 3.10m north-south, 1.25m east-west and was 0.70m high. The structure sat below the floor surface of Building 5 and most likely functioned as a support for machinery within the building.

7.10.3 Overlaying the brick machine base [318] was a bedding layer [294] for floors [316], [213] and [278] from which a pottery assemblage of 1670-1800 was recovered.

7.10.4 The interior floor surface of Building 5 was represented by three surviving areas of brick floor [316], [213] and [278]. These were laid over bedding layer [294] and abutted the brick support structure [318]. The floor was composed of unfrogged bricks and was located at 8.08m OD in its highest instance and 7.96m OD in the lowest. In the portions of the floor made up by [231] and [278] the bricks were laid flat, while in the portion made up by [316] they were laid on edge. It is probable that the difference was indicative of repairs being made to the building.

7.10.5 In the southern portion of the excavation/mitigation area there is no clear evidence of a building, but a short-lived period of demolition and clearance seen in robber trenching, pitting and drainage. A linear robber trench [307] ran north-south, appearing to target a wall in similar a position to that of wall [344] from the earlier Building 2. Measuring 4.45m north-south and

0.80m east-west, the trench was 0.35m deep and cut from 7.66m OD. The backfills [306] and [308] of the robber trench contained frequent ceramic building material and mortar fragments and pottery of a mid to late 19th -century date as well as earlier residual pottery dating from 1580-1650. A single piece of late medieval pottery was also recovered from the robber trench along with a wooden board [359].

7.10.6 A series of intercutting pits [254], [266], [261], [282] in the southern portion of the excavation/mitigation area truncated drain [251] and robber trench [307]. These pits were all recorded at between 7.82m OD and 7.71m OD. The pits were all sub-circular in shape and ranged in size from 0.63m by 0.5m to 1.98m by 0.82m. All four were truncated, either by the LOE or modern truncations and as such these dimensions are not representative of the true size of the pits. The pits ranged from 0.07m-0.87m in depth. Fill [265] of pit [266] contained a large Creamware plate made by Spode with a stamp to the reverse dated to c.1780-1790, while the rest of the pottery recovered was residual, dating from the 16th and 17th centuries. A similar assemblage was also recovered from fill [281] of pit [282]. Fill [260] of pit [261] contained a mixed assemblage of pottery (1590-1750) with clay tobacco pipe and glass, which combined to date the context as mid/late 18th century. The glass and some clay tobacco pipe in this pit have been noted as heat-altered which may relate to destructive fires at the mill prior to the mid 18th century.

7.10.7 Overlaying the pits and robber cuts was a horizon of made ground [274], [273], [200] comprised of dumps of gravelly clay approximately 0.58m thick. The highest point of this horizon was 8.25m OD in the south. In the north this horizon lay to the west of Building 5.

7.10.8 Two chalk lined soakaways [259] and [241] were cut into this horizon, one in the northern portion of the excavation just to the west of Building 5 and one in the southern portion of the site. The soakaways were both roughly circular in shape measuring 1.18m in diameter and 0.20m in depth, lined with chalk [223], [242] and filled with silty clay [258], [244]. No finds were recovered from these soakaways, and both had been truncated to the east by later buildings (Buildings 6 and 7 in Phase 9.2).

7.10.9 In the southern part of the excavation/mitigation area there were no obvious remains of a building associated with Phase 9.1. The interval between the demolition of Building 4 and the construction of Building 6 may have been short-lived and represented only by clearance in the form of a robber trench, pitting and drainage into a soakaway. The retention of brick structure [269] as a functional feature in Building 6 suggests very little time passed between the demolition of Building 4 and the construction of Building 6.

7.11 Phase 9.2: Late 18th/ Early 19th century (Figure 11)

7.11.1 Building 5 fell out of use during this period, possibly as a result of flooding as mentioned in the historical record (Baggs et al. 1976). Two new buildings were constructed in the area of excavation.

7.11.2 In the southern portion of the site Building 6 was constructed of walls [210], [211], and [212], associated bedding layers [279] and [280], floors [226], [275], [234] and [235] (floors [234] and [235] were seen in section only) and beam slot [291] (seen in section only, Plate 5). The building was rectangular in plan and aligned roughly north-south with dimensions surviving of 10.13m north-south and 2.36m east-west. The building extended outside of the LOE to both the south and the east. Walls [211] and [212] were truncated to the east by a modern wall. The highest recorded point of the building was located at 8.35m OD. The bricks used in the construction of the walls dated to 1700-1850, and clay pipes found in the bedding layer of walls were dated to 1730-1780. The bedding layer [279] for walls [210] and [212] contained a late 18th /early 19th century half penny <SF24> (Gaimster, Appendix 6)

7.11.3 The masonry elements comprising Building 6 varied in width and surviving depth. The external wall [210] was the most substantial, measuring 0.42m wide at its widest point and standing 0.39m high. Internal walls [211] and [212] were both 0.32m wide and stood 0.35m high. All walls were constructed of unfrogged bricks with a mix of orange and dark maroon fabrics and laid in alternating courses of headers and stretchers.

7.11.4 Room 1 was defined by wall [210] in the north and west and wall [212] in the south. It measured 4.70m north-south and 2.36m east-west. Surviving within the room was a small fragment of brick floor [257]. The floor measured 0.63m east-west and 0.37m north south and was constructed of a single layer of unfrogged bricks similar to those used in the construction of the building's walls. The highest point of the floor was located at 8.19m OD.

7.11.5 Room 2 was defined by wall [210] in the west, wall [212] in the north and wall [211] in the south. It was truncated to the east by a modern wall. The room measured 2.24m north-south and 1.92m east-west. Within Room 2, brick surface [226] had been built over brick structure [269] raising its height and narrowing the slot in the middle, most likely to accommodate different machinery. The slot was backfilled with a reddish brown silty material [250] containing degraded wood and several nails, possibly indicating the presence of boards. The brick surface [226] was 0.15m thick and constructed of unfrogged red bricks and square floor tiles bonded together with light brown mortar with small chalk inclusions (Plate 4). It was semi-circular profile in the south-eastern corner of the room, possibly functioning as the brick base for hoisting or grinding machinery. The bricks used to make the floor were dated between 1700 and 1850. This feature did not extend wall to wall and packed in the remaining space were layers of levelling material [268], [332] topped with a thin layer of clay [267] which potentially represented a surface. Pottery dated between 1630 and 1900 was recovered from layer [332] and pottery dating between [1580-1700+] was recovered from [267].

7.11.6 Room 3 was defined by wall [210] in the west and wall [211] in the north. It extended beyond the LOE to the south and was truncated to the east by a modern wall. The room was observed measured 2.04m north-south and 1.97m east-west. Within the room was a bedding layer [236] cut by a beam slot [291] and its associated rotted out post [290] (seen in section only). The beam slot measured 0.15m in width and depth and was located at 7.99m OD. Overlying the

beam slot was a thin layer of dark silty sand [235] possibly representing an occupation layer at 8.14m OD. This in turn was covered over by a clay surface [235] which had been patched and repaired [233], [232] during its use.

7.11.7 In the northern portion of the area of excavation Building 7 was built over Building 5 (Plate 6, Figure 11). Building 7 was composed of external wall [219] and floors [221], [256] and as well as retained floors [278] and [231] from Building 5. The footprint of the building was rectangular and it followed the same alignment as Building 6 to the south. The total dimensions of the building were 5.04m north-south and 2.71m east-west. The building extends beyond the LOE to the east and its highest recorded level was 8.43m OD.

7.11.8 Wall [219] made up the external wall of Building 7 and was constructed of a mixture of un-frogged and shallowly frogged red bricks bonded together with soft brownish grey mortar with frequent chalk flecks. The bricks were dated between 1780 and 1850. Wall [219] had a width of 0.22m and was 0.27m high.

7.11.9 The interior of Building 7 was resurfaced in this period with brick floors [256] and [221]. A shallow layer of yellowish brown sandy silt [264] made up the bedding layer for the floor [256]. Cut into this bedding layer was a small posthole [263], measuring 0.24m by 0.12m which was 0.11m deep. This post was most likely associated with wall [219]. Overlaying this posthole was a brick floor [256] constructed of unfrogged orange and maroon bricks laid flat. The floor was very uneven and sloped down towards the east from 8.15m OD to 8.02m OD. In the centre bricks were either missing or had been worn very thin, probably as the result of the floor being worn down by industrial machinery or from heavy use as an industrial building.

7.11.10 A thin layer of burned material [229], [249] covered the inside of Building 7, overlying floors [256], [278] and [231]. Overlying the burned material was bedding layer [228] for a later phase of flooring [221]. Floor [221] was made up of reused local sandy bricks with red and yellow fabrics ranging in size from 100mm by 230mm by 60mm to 100mm by 160mm by 70mm.

7.11.11 During this phase both soakaways went out of use and were capped with a mixture of broken quern stone and brick fragments. Surface [213] which capped soakaway [259] was built up against Wall [210] and was located at 8.33m OD. Surface [220], which capped soakaway [241] was built up against wall [219] and was located at 8.31m OD.

7.12 Phase 10: Late 19th/ Early 20th century.

7.12.1 During this period both Building 6 and Building 7 went out of use. Documentary evidence states that the mill was abandoned in 1860 following a fire (Protz 2010, 89).

7.12.2 The southern half of Building 6 was overlain by a layer [209] of ash and charcoal approximately 0.19m thick. This layer contained frequent broken and burned roof tiles, dating 1630-1900 as well as a large amount of carbonised bread wheat (Turner, Appendix 10, <4>), building fittings and a scrap of woollen rug or matting. The layer measured 4.40m north-south and 2.92m east-west and was located at 8.22m OD.

7.12.3 Overlaying layer [209] was a horizon of demolition rubble [202], [409], which covered the foot-print of Building 6. This horizon was 0.35m thick and was located at 8.52m OD. This layer contained residual material including two coins <SF13> and <SF14> of George II or III (1760-1797) (Gaimster, Appendix 6)

7.12.4 Building 7 was backfilled with a layer [222] of loose charcoal rich silt with frequent demolition rubble inclusions. This layer located at 8.32m OD.

7.12.5 Cut into layer [284] was robber trench [314]. The robber trench measured 1.10m north-south, 3.90m east-west and 0.68m deep. Located at 7.78m OD, it aligned east-west and the fill [308] contained frequent CBM and mortar fragments. The robber trench targeted the northern wall of Building 2 [326], [329] and contained refined whiteware with under-glaze transfer-printed plate with a mid-blue scroll and flower design dated to the mid or late 19th century.

7.12.6 Overlaying the northern portion of the area of excavation was a levelling horizon of dump layers [271] [272] [201]. The horizon measured 0.13m in thickness and was located at 8.30m OD.

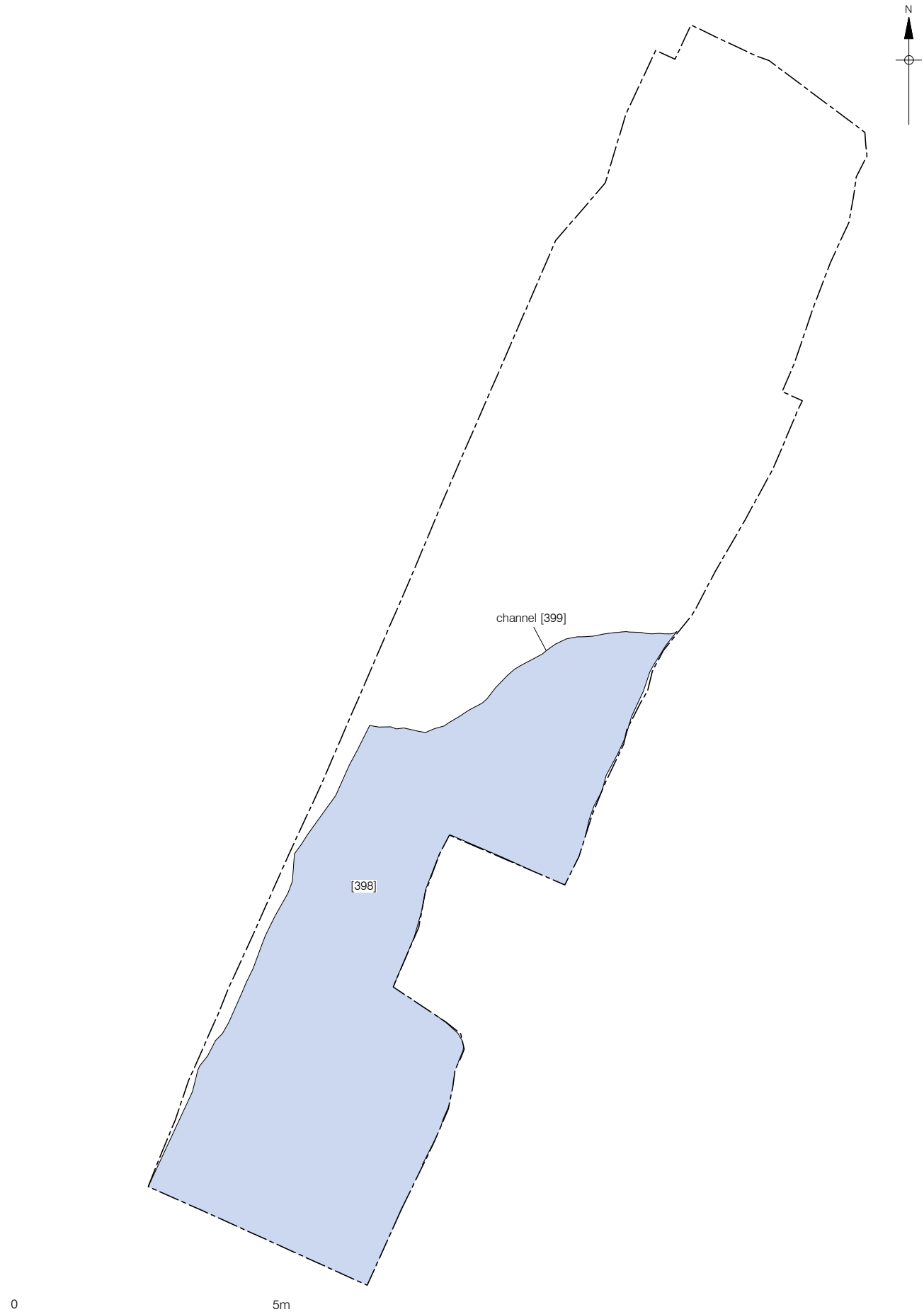
7.13 Phase 11: Late 19th / Early 20th century.

7.13.1 The entire area of excavation was sealed by a layer of compacted chalk [204]. This layer was located at 8.62m OD and varied in thickness between 0.02-0.08m. This layer was also observed during the watching brief and evaluation stages of the project and ranged across a large portion of the southern portion of site.

7.13.2 Overlaying chalk layer [204] was a layer of demolition rubble [205] 0.28m thick. The CBM was dated between 1620 and 1800.

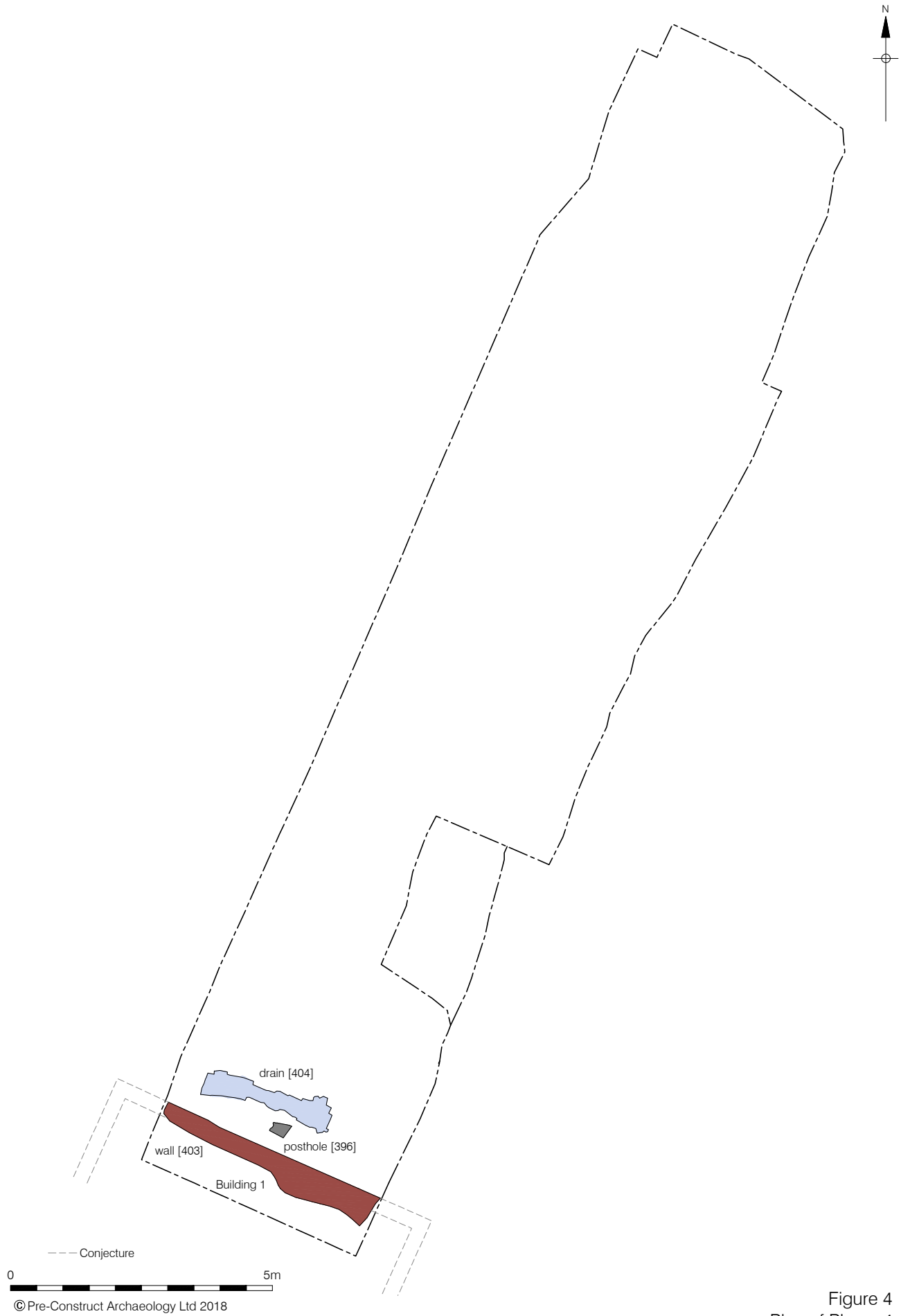
7.13.3 Cut [217] into this layer was a large brick structure [214] which sat on a concrete foundation. The structure measured 3.17m by 1.60m and was not fully excavated. The structure continued outside of the LOE to the east and was likely associated with the construction of the flood relief channel.

7.13.4 Overlaying the area of excavation was a thick layer of made ground [206]. This layer measured 1.10m in thickness and contained pottery dating between the late 19th century and early 20th century. This layer was located at 9.82m OD.



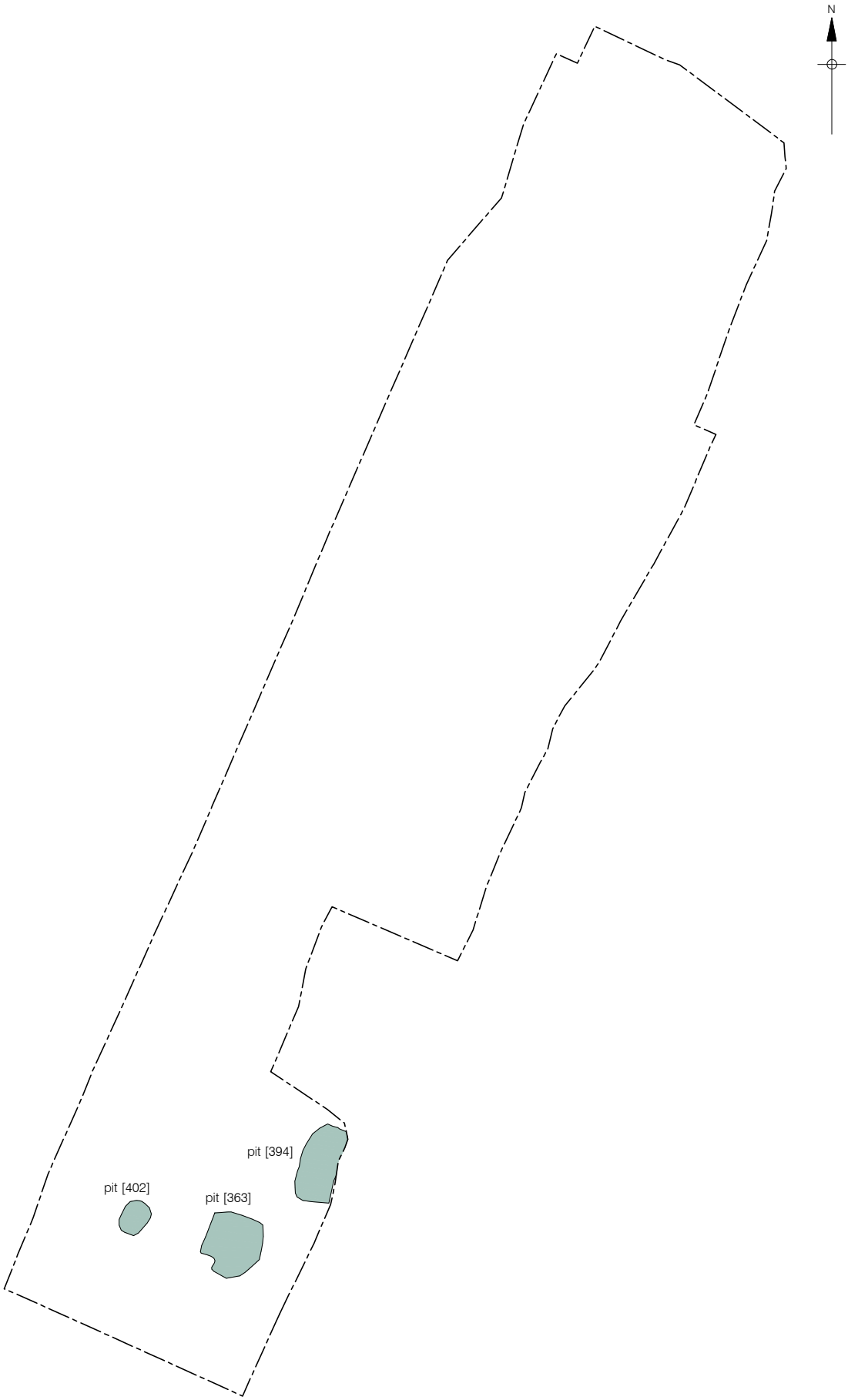
01/10/18 RM

Figure 3
Plan of Phase 3
1:100 at A4



01/10/18 RM

Figure 4
Plan of Phase 4
1:100 at A4



01/10/18 RM

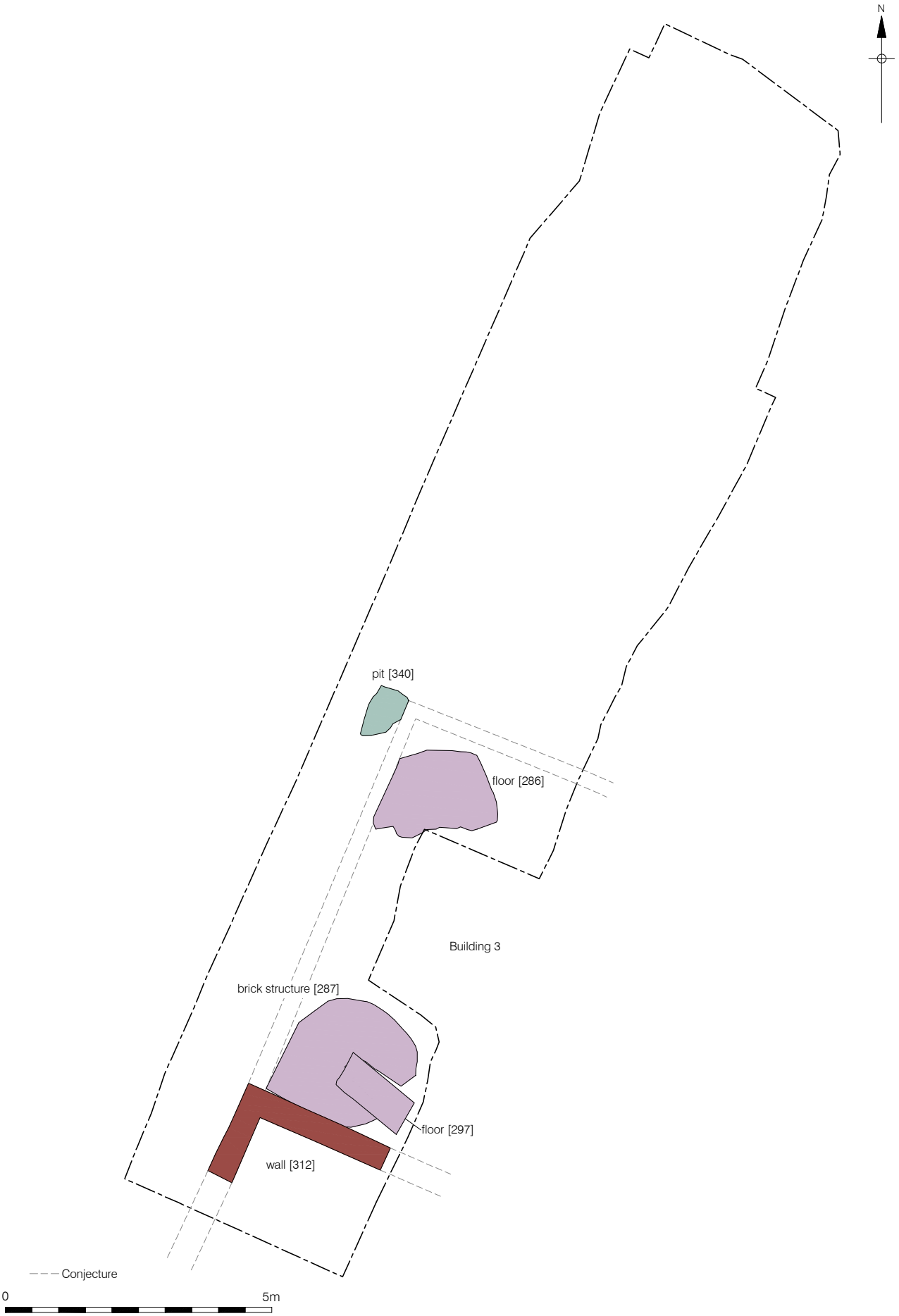
Figure 5
Plan of Phase 5.1
1:100 at A4

01/10/18 RM

Figure 6
Plan of Phase 5.2
1:100 at A4

30/07/18 RM

Figure 7
Plan of Phase 6
1:100 at A4

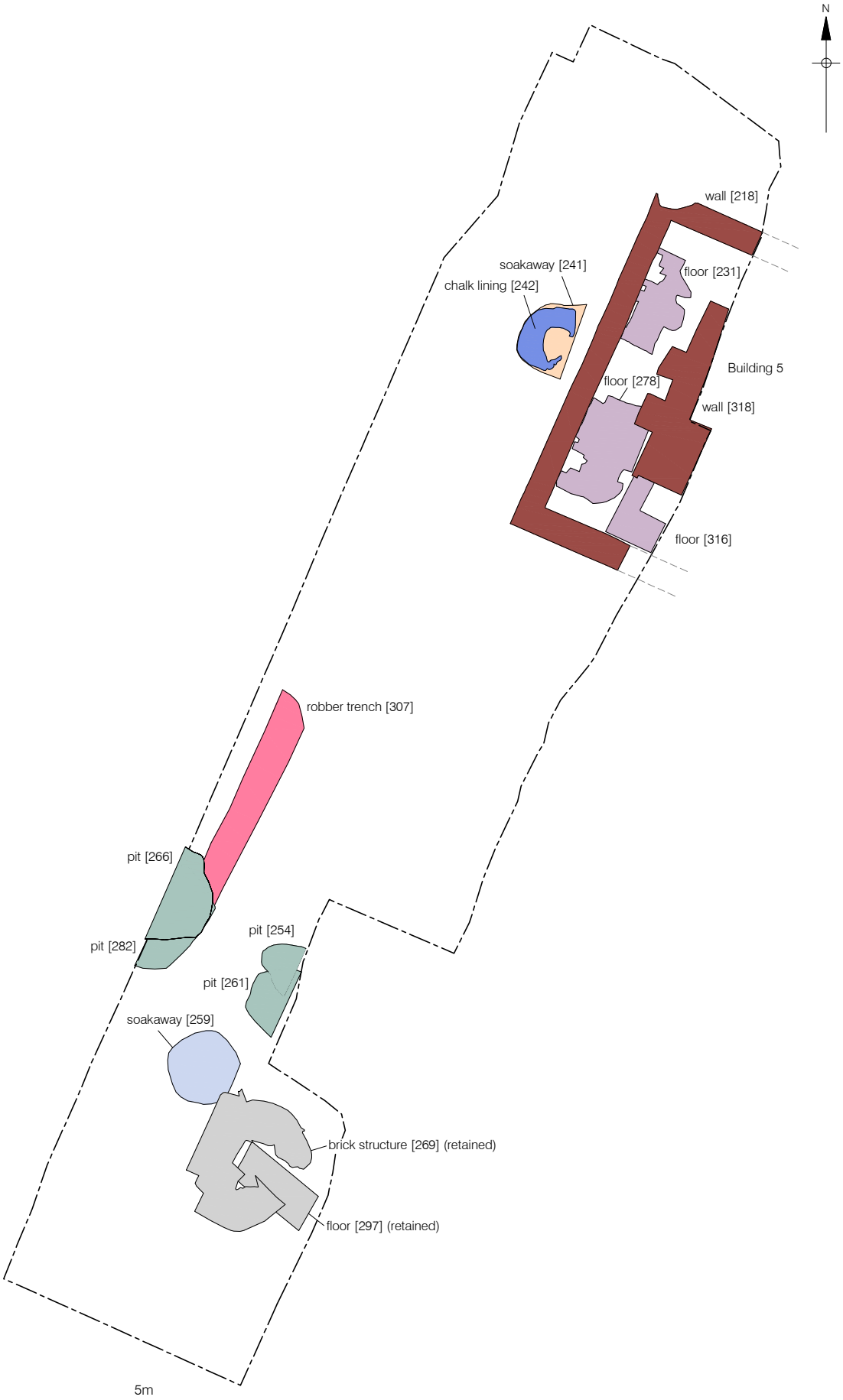


30/07/18 RM

Figure 8
Plan of Phase 7
1:100 at A4

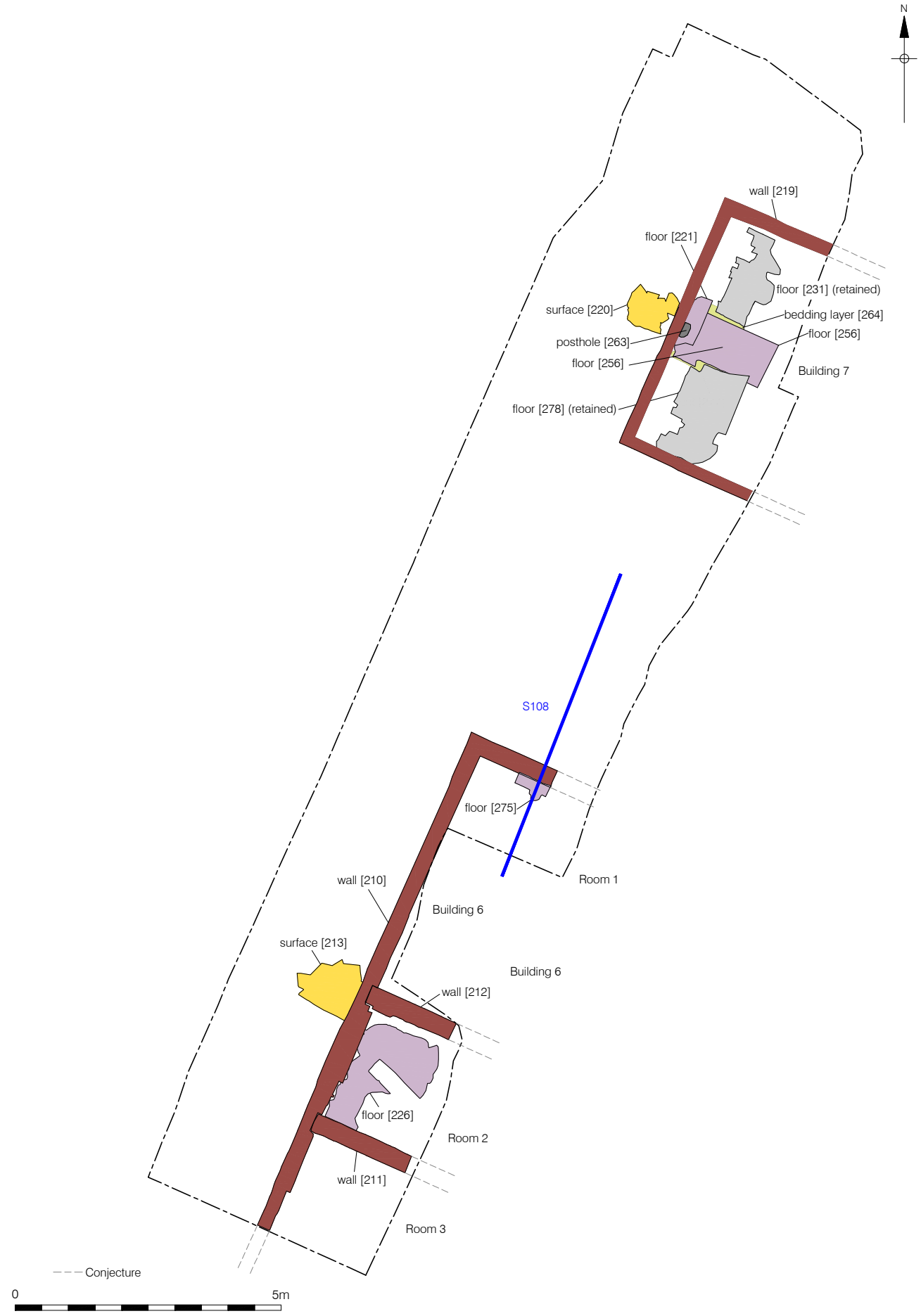
01/10/18 RM

Figure 9
Plan of Phase 8
1:100 at A4



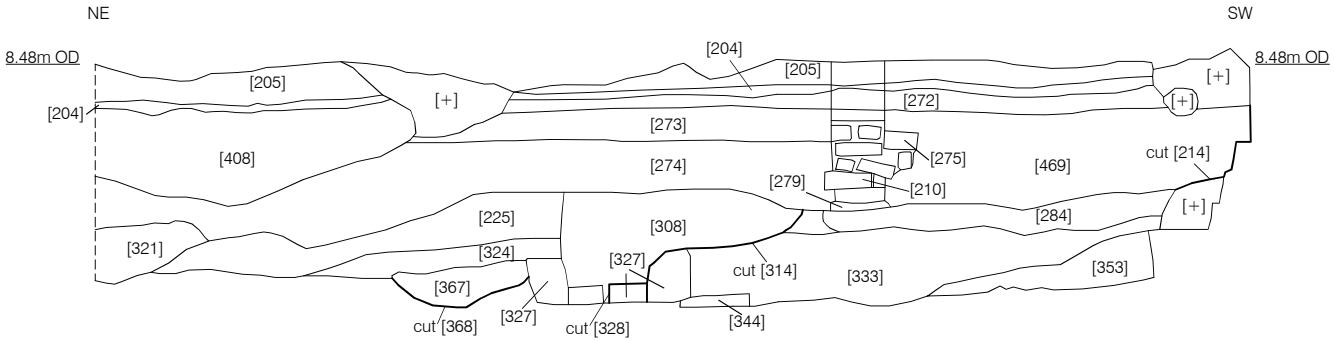
02/10/18 RM

Figure 10
Plan of Phase 9.1
1:100 at A4



30/07/18 RM

Figure 11
Plan of Phase 9.2
1:100 at A4



Section 108
Northwest Facing

0 2m

01/10/18 RM

Figure 12
Section 108
1:40 at A4

Plate 1: Building 3, looking east

Plate 2: Brick structure [287] with later repairs [269] in Building 4, looking south

Plate 3: Brick structure [318] in Building 5, looking east

Plate 4: Brick surface [226] in Building 6, looking south

Plate 5: Building 6, looking east

Plate 6: Buildings 5 and 7, looking south

Plate 7: 19th Century painting of Tottenham Mills, Ferry Lane by John Bonny © Bruce Castle Museum (Haringey Culture, Libraries and Learning). Based on a steel engraving of 1838 by J. Henshall (Trotter 2012). This view is from the north, looking south.

8 ARCHAEOLOGICAL PHASE DISCUSSION

8.1 Phase 1: Natural

8.1.1 Natural deposits were not encountered in the area of excavation. However, a deposit composed of pale grey brown gravel was encountered in all of the evaluation trenches. This layer represented the natural strata and was consistent with the known underlying geology (Quaternary flood plan and river deposits) as described by the British Geological Survey (Harris and Green 2018). The natural deposits were recorded at between 6.15-5.66m OD.

8.2 Phase 2: Early Medieval

8.2.1 Although no early medieval material was present in the area of excavation, a layer of peat exposed during the evaluation, in the northern part of the development, produced a radiocarbon date of 540-645 AD (BETA 497424 AMS) (Harris and Green 2018, Appendix 5). No features from this period were observed in the excavation/mitigation area as the excavation was not taken to the depths at which this Saxon peat was located. Saxon activity has been observed within the Lea Valley, as shown at Springfield Park, where a Saxon log boat was discovered in the alluvium dating to AD 950-1000.

8.3 Phase 3: late 16th/ early 17th century.

8.3.1 The earliest deposits encountered in the area of excavation provided evidence of a flooding event, as shown by the thick layer of clay and associated channel (Figure 3). Such flooding events along the River Lea are frequent in the historical record (Baggs et al. 1976). Pottery sherds found in the flood deposit [320] indicate a date of late 16th/ early 17th century (1580-1600).

8.4 Phase 4: late 16th/early 17th century.

8.4.1 During this phase, human activity was restricted to the very southernmost part of the excavation area. Documentary evidence indicates that a mill was present in this area since the medieval period; however, the earliest evidence of a mill building observed in the excavation/mitigation area was a single brick rubble foundation dating to the late 16th/early 17th century. The bricks (type FFR1, see Valcarcel, Appendix 7) used in the foundation have sunken margins, are hand-made and have dimensions indicative of an early post-medieval date between 1500-1700.

8.4.2 This foundation [403], representing the northern extent of Building 1 (Figure 4), was likely part of an early post-medieval mill complex such as that seen in the Duke of Dorset's Survey map of 1619 (Emery 2016, Figure 8). Given that Ferry Lane was located to the south of its modern position, it is probable that this building fronted onto the road. An associated drain ran east-west and parallel to this foundation wall and may have been part of a leat channelling water for a water wheel. By the end of the 16th century, milling technology in England had advanced to allow more than one pair of millstones to be driven by a single wheel (Watts 2002). It is possible that these technological advances played a role in the expansion of the mill during this period.

8.5 Phase 5.1: Late 16th/ early 17th century.

8.5.1 During the late 16th/ early 17th century activity in the form of pitting was still localised in the southern most part of the excavation/mitigation area (Figure 5), with the area to the north remaining as open land. The drain to the north of Building 1 fell out of use in this period and was cut by a series of robber pits which contained pottery dated to 1550-1650. This may represent a short-lived period of time between the demolition of Building 1 and construction of Building 2.

8.6 Phase 5.2: Late 16th/early 17th century.

8.6.1 By this phase, Building 1 had fallen out of use indicated by a thick levelling horizon laid across the southern half of the area of excavation in order to facilitate the construction of Building 2. Pottery associated with the construction backfills of walls from Building 2 dates its foundation as between 1580-1650. The Building 2 structure was composed of red brick and consisted of three rooms (Figure 6). The levelling deposit, foundations and walls of Building 2 contained fragments of broken quern stone, presumed to be from earlier mill buildings, possibly including Building 1 and supporting its interpretation as one of the earlier mill buildings located in the area associated with the production of flour.

8.7 Phase 6: Mid/late 17th century.

8.7.1 Building 2 remained in use during this period, however significant modifications were made to the structure. A new wall running east-west was built in the south, following the same alignment as the wall in Building 1, and the wall subdividing Rooms 1 and 2 was removed and covered over with a levelling deposit. A more substantial wall was built in the north, extending Building 2's footprint. A small portion of north-south running wall [372] was removed and a hearth added in the south eastern corner of the building. The pottery assemblages in the levelling layers for floors associated with Room 1 are very similar in composition to assemblages from Phase 5.2, also associated with Building 2, both dating from between 1580-1650. This suggests that both phases of Building 2 are close in date and that the second phase represents minor alterations within the same building. The changes to the internal structure of Building 2 potentially represent a change in ownership or use of the mill with the possible introduction of new machinery. Historical sources list the mills in the area as being used for paper and gunpowder production during this period as opposed to the earlier corn and leather (Baggs, et al. 1976).

8.8 Phase 7: mid/late 17th century.

8.8.1 During this phase a layer of demolition material (CBM, mortar and roof tiles) originating from Building 2 covered the southern portion of the site. Building 3 was constructed on a similar footprint to Building 2 but the area of the building was reduced on the western and northern edges. An assemblage of clay tobacco pipes (1730-1800) recovered from floor surface [286], date the earliest features of Building 3 to c. 1730.

8.8.2 Only one wall of Building 3 was observed, but two floor surfaces indicated the northern and western extents of the building. Two rooms could be observed within Building 3 (Figure 8). Building 3's remains were dominated by a large circular brick-built floor surface with a deep slot

running southwest/northeast through the centre (Plate 1). It is probable that this brick structure represented a machine base and that the slot at one point housed gears which drove the machinery of the mill, however, further clarification of this structure is needed in order to determine its exact function. A chalk surface covered in a thin layer of sand and gravel was present in the northern part of the building, most likely representing a bedding layer for a floor that had been robbed out.

8.8.3 A rubbish pit excavated in what was the north-western corner of Building 2 was sealed by demolition deposits from Building 2 and contained a clay tobacco pipe assemblage of 1630-1710, predating the construction of Building 3. The placement of this rubbish pit on the exterior of Building 2 further supports the idea that the western edge of Building 3 was further east than that of Building 2 (Figure 8).

8.9 Phase 8: Early/mid 18th century.

8.9.1 During this period, Building 4 replaced Building 3, the remains of which survived only as one room (Figure 9). The circular brick structure/surface [287] from Building 3 is, however, mostly retained, with additional repairs added [269]. This suggests that similar machinery was being used during this phase. The footprint of Building 4 was much smaller than that of Building 3, with an outside yard surface [257] present on the western side of the building.

8.10 Phase 9.1: Late 18th/early 19th century.

8.10.1 Substantial robbing of earlier structures took place in the central portion of the excavation area, in the form of a robber trench and several pits.

8.10.2 This is the first phase during which activity was present in the northern portion of the excavation area (Figure 10). Building 5 was made up of brick walls, floors and had a very substantial brick-built support structure located under the floors (Plate 3). The building was almost certainly industrial, with the support structure acting as a machine base. A chalk-lined soakaway was constructed directly to the west of the building. A levelling layer which covered the remains of Building 4 was seen in the northern part of the excavation/mitigation area to the west of Building 5 but has no direct relationship with Building 5.

8.10.3 In the southern portion of the excavation/mitigation area a levelling horizon was laid down partially covering the remains of Building 4. It is likely given the position of soakaway [223] cut into the levelling horizon that a building was still in use in the area. However, no evidence of this was observed during the excavation. Historical records mention a flood that caused severe damage to the mill in 1817, and it is possible that a combination of the water damage and subsequent rebuilding of the mill removed all traces of the building present in this period (Baggs et al. 1976).

8.11 Phase 9.2: Late 18th/Early 19th century

8.11.1 During this period both mill buildings (Building 6 and Building 7) were completely rebuilt and the chalk soakaways were capped with reused quern stones and brick fragments.

8.11.2 Building 5 went out of use and Building 7 was constructed in the same area. Building 7 was repaired and reused the brick floors of Building 5, and the new brick work showed signs of heavy wear, particularly in the area directly above the machine base. It is probable that the building was still being used for industrial processes.

8.11.3 In the southern portion of the excavation area, Building 6 was constructed. Building 6 was made up of three rooms, and utilised the earlier brick structure/machine base, modifying it heavily. The floor was built up and the slot narrowed, potentially representing a change in the machinery used. The resulting surface was roughly square with a circular indent in the south eastern corner. It is likely that the slot and circular indent acted as housing for gears. There was no evidence to indicate the use of the other two rooms of the building.

8.11.4 Documentary sources state that the mill was rebuilt in 1817 after severe flood damage. Dating evidence suggests that the buildings from this phase represent this rebuild. A late 18th/early 19th century half penny <SF4> was associated with bedding layer [279] under walls [210] and [212] in Building 6. Also of significance is a large Creamware plate stamped with a Spode mark for 1780-1790 in Pit [266] which predates Building 6 (Sudds, Appendix 3).

8.11.5 Building 6 may be visible on the 1844 Tottenham Parish Tithe Apportionment map (Emery et al 2016, Figure 9) though Building 7 does not line up with the cartographic sources. Several 19th-century illustrations show Tottenham Mills as comprising a number of weather-boarded buildings which form this complex. Among these are pencil sketches made by T. H. Shepherd in 1828, pen and wash drawings of c.1800 of both Tottenham Flour Mills and Tottenham Oil Mills from the London Metropolitan Archives and a painting by John Bonny reproduced after 1874 (Plate 7) from an 1838 steel engraving by J. Henshall drawn by C. Marshall (Trotter 2012). This is a view of the Mill from the north, with the leat diverting around the western side of the buildings.

8.12 Phases 10 -11: Mid 19th century-modern.

8.12.1 Documentary sources reveal that the mill was abandoned following a fire in 1860. It seems very likely that the thick layer of ash and burned material [209] overlying Building 6 represented the remainder of the fire, and the demolition deposits above the result of abandonment and later the demolition of the buildings.

8.12.2 A large assemblage of bread wheat was recovered from the burned layer [209] indicating that the mill was being used to mill flour during its final phase of use (Turner, Appendix 10).

8.12.3 The mill complex was demolished in 1920 and the flood relief channel which bounds the site to the east was added in the 1930s, truncating the mill remains.

8.12.4 The site was used for warehouses and commercial properties in the late 20th century.

9 REASEARCH QUESTIONS

9.1 Original Research Objectives

9.1.1 The research objectives were contained within the WSI for the watching brief (Hawkins 2017) and are as follows:

9.1.2 **To determine the presence/absence, extent, condition, nature, character, quality and date of any mill remains associated with the use of the river systems of the Lea Valley.**

9.1.3 Seven phases of buildings associated with the mill complex were observed within the area of excavation, ranging in date from the late 16th / early 17th century to early / mid 19th century. The earlier mill buildings were focused in the southern area of the excavation, with the northern portion only being utilized in the late 18th/ early 19th century. The mill remains were all heavily truncated by the flood relief channel to the east but were otherwise in good condition. All of the mill buildings observed were constructed of locally manufactured brick. The excavation stopped at the site formation level, so the presence of mill remains pre-dating the late 16th century was not established. Though not identified in the excavation/mitigation area it is assumed that earlier mill buildings probably existed within close proximity and in the southern part of the Hale Wharf Phase 1 development. The use of French burr quernstones, imported into this country from the 15th century onwards, and found reused as building material within the walls of Building 2 suggests that these earlier mill buildings may have been close by.

9.1.4 **To determine the presence/absence, extent, condition, nature, character, quality and date of any former leats or other channels within the site.**

9.1.5 A single channel [399] was observed within the area of excavation, at 7.09m OD. The channel measured 12.3m by 4.60m and extended beyond the LOE to the south, west and east. While no dating evidence was recovered from the channel fill, the channel must date to the late 16th/early 17th century due to its position in the stratigraphic sequence. The channel appeared to be natural, formed by a flooding event, rather than an intentionally dug leat.

9.1.6 Evidence of a leat was seen during the earlier evaluation and the archaeologically monitored works. Three land ties were encountered, two within Trench 1 along what would have been the south-eastern side of the leat, and the third that would have been attached to the north-west side of the leat, to the west of the excavation/mitigation area and in the southern part of the Hale Wharf Phase 1 development. Associated with the installation of one of these land ties in evaluation Trench 1 was a fragment of pottery was dated c. 1830 (Harris and Green 2018, 10).

9.1.7 **To determine the presence/absence, extent, condition, nature, character, quality and date of any archaeological remains associated with prehistoric use or settlement of the Lea Valley.**

9.1.8 The excavation was not taken to a depth at which prehistoric material might have been present.

9.1.9 During the earlier evaluation, a residual fragment of worked flint was recovered from the upper surface of the alluvium, however no features dating from the prehistoric period were observed in this mitigation excavation.

9.1.10 **To provide geoarchaeological information with which to help build a model of the buried landscape of the site and to provide information with which to help determine the palaeoenvironmental potential of the site.**

9.1.11 Aside from the flooding event evident in Phase 3 of the excavation area, there was little evidence for changes in the landscape visible during these works. The trench was only dug to a depth of 7.01m OD which corresponded with late 16th/early 17th century phases of land use on the site.

9.1.12 The evaluation encountered natural sandy gravel at between 6.15m OD in the south and 5.66m OD in the north. A layer of peat was discovered at 6.24m OD in Trench 3 and seen to extend across the site during the archaeologically monitored works, and alluvial deposits were found in Trenches 1, 3 and 4, at levels of 6.72m OD, 7.24m OD and 7.12m OD respectively, showing the previous extent of the River Lea. The peat seen in Trench 3 was of early medieval date which is different to the prehistoric peat found at most other nearby sites. The gravel, peat and alluvial layers were all located c. 2m higher than those found at Ferry Lane to the east of the site, suggesting they probably relate to later channels or floodplain hollows that have infilled at a later date with peat. The formation of the peat c. 1000 years later than Ferry Lane is also indicative of the Hale Wharf site becoming drier at a later date.

9.2 Additional Research Questions and Aims

9.2.1 The excavations have raised a number of additional research questions. These are:

- How do the mill remains uncovered on site, in addition to the cultural material recovered, contribute to our understanding of the industrial history and archaeology of the Tottenham Hale area of the Lea Valley?
- How do the post-medieval mill buildings observed on this site compare with other examples along the River Lea?
- Are the different rebuilds of the mill indicative of different functions? Is it possible to archaeologically identify the different uses of the mill over time?
- How can the environmental evidence inform our understanding of the mills function?
- Archaeological investigation uncovered a circular brick surface thought to be a machine base which was retained through three separate rebuilds of the mill buildings. Can this surface be attributed to a specific manufacturing process within the mill and have comparable structures been found elsewhere? Can the specific function of this surface be discovered through additional documentary research?

- The Quern Stones found in the foundations and levelling layers of Building 2 were imported from France and indicate earlier mill structures being present in the area. Can further documentary research give a date range for when French Quern stones were first imported into the UK and when the practice became common in order the ascertain the likely dates of earlier buildings?
- Two chalk lined soakaways were located in close proximity to the machine bases observed on site. Is there a relationship between the features and can this provide more insight into manufacturing processes of the time period?
- Can further documentary research pinpoint the flooding event recorded in Phase 3 of the excavation?
- Can further documentary research improve our understanding of the frequent rebuilding of the mill complex over a relatively short period of time and help define the earliest date of the buildings excavated?

10 CONTENTS OF THE ARCHIVE

10.1 Paper Records

• Contexts	332 sheets
• Plans	128 plans
	262 sheets
• Sections	12 sections
	24 sheets

10.2 Finds

10.2.1 Animal Bone	44 bags
▪ CBM	72 bags
▪ Coke	2 bags
▪ Copper	34 bags
▪ Glass	17 bags
▪ Iron	57 bags
▪ Lithic	3 bags
▪ Mortar	2 bags
▪ Pottery	75 bags
▪ Shell	11 bags
▪ Stone	18 bags
▪ Timber	4 bags
▪ CTP	25 bags

10.3 Photographic Record

10.3.1 Digital	756 images

11 IMPORTANCE OF THE RESULTS, FURTHER WORK AND PUBLICATION OUTLINE

11.1 Importance of Results

11.1.1 The majority of phases recorded during the excavations at Hale Wharf are of regional importance in characterising post-medieval industrial activity associated with the River Lea. The identification of seven phases of brick-built industrial buildings relate to a post-medieval period of milling dating from the 16th to 19th centuries in an area known to have been associated with mills and milling of various materials from the medieval period onwards (Baggs et al 1976). Historical sources refer to a number of industries taking place at the Tottenham Mills complex; corn (1530, 1619, 1770, 1778), leather (1619), oil (1788), paper (1680) and gun powder (1656) (Baggs, et al. 1976). Together with artefactual and environmental evidence collected during the excavation it may be possible to characterise the domestic assemblages associated with these various phases of industrial activity at the site. The finds assemblages from the site relate mainly to the domestic use of the buildings whose primary function was related to the River Lea as a significant navigation and commercial route linking with the River Thames in the post-medieval period.

11.1.2 Saxon (Phase 2)

11.1.3 Although no evidence of human activity was recovered from the Saxon phase of the site, the presence of peat of Saxon date at 6.24m OD in evaluation Trench 3 (Harris and Green 2018, Appendix 5) contributes further information to understanding the formation of the palaeolandscape within the Lea Valley area and is therefore of local significance. It shows that organic alluvial accumulation and drier land formation within the River Lea valley continued much later and into the early medieval period than has previously been identified.

11.1.4 Medieval (no stratigraphic phase)

11.1.5 Although no medieval structures or features have been identified during the archaeological investigations and no medieval ceramic building material found, a small residual medieval assemblage has been identified within the pottery assemblage (Sudds, Appendix 3). These represent low-level background activity and probably originate from contemporary settlement in the Tottenham Hale vicinity, perhaps even associated with the mill recorded immediately to the south of site, built in 1254. They may also relate to an earlier medieval iteration of the later mills on the site, located below the site formation level (Emery et al 2016, 14).

11.1.6 Early Post Medieval (Phases 3-6)

11.1.7 The early post-medieval period is of particular importance due to the relatively poor representation of mills from this period (Watts 2002). The series of rebuilds in Buildings 1 and 2 provide an insight into the 16th and 17th century economic and industrial history of Tottenham and the Lea valley and are of both local and regional significance.

11.1.8 The artefact assemblages are particularly large from the early post-medieval period, with a significant assemblage of high status pottery and metal finds associated with levelling layers laid down prior to the building of Building 2. The artefacts from Phase 5 constitute approximately half of the total pottery assemblage and include high status tableware such as a Saintonge chafing dish of late 16th -century date which were probably associated with an earlier manor house (country retreat) rather than mills in this area. Dress accessories in Phase 5.2 include late 16th and 17th century objects such as lace chapes as well as a copper-alloy farthing token (SF28, 1648-1664) from the Angel Tavern in Fenchurch Street. These finds are also indicative of domestic assemblages associated with people visiting country retreats in the area. The reuse of Reigate stone in the mill buildings across the site and in particular examples of Purbeck marble and stone mouldings are also evidence of high status buildings having been located in this area at an earlier date. Reigate stone was not used as a building material beyond the 15th century (Valcarcel, Appendix 7).

11.1.9 The French burr stone quernstones reused in Building 2 are of a high quality and demonstrate an earlier phase of milling associated with the production of fine-grained flour.

11.1.10 Late Post Medieval (Phases 7-9.2)

11.1.11 The mill complex continued to go through several rebuilds (Buildings 3-7) during this period until it was abandoned in 1860. The mill complex itself adds to our understanding of the industrial and economic history of the area, while the constant rebuilding can potentially offer insight into changing technology and milling processes.

11.1.12 The artefact and ecofact evidence associated with Buildings 3 -7 is more characteristic of an industrial complex with very few domestic assemblages of animal bone and small assemblages of pottery. The artefact assemblages include some domestic items such as buttons and buckles but also structural ironwork from buildings such as door strap hinges and iron nails. Tools include a possible spade iron, metalwork sett or chisel and a saw blade. There are no large assemblages of a domestic nature in these later post-medieval phases. The ecofacts are particularly relevant to the function of these buildings as industrial mills with a large grain assemblage associated with Building 6 (Phase 10) showing that the milling of flour was probably one of the latest processes taking place at this site in the late 19th century.

11.2 Further Work

11.2.1 In the process of analysis, leading to a publication of these results, the following tasks have been identified as requiring further work.

11.2.2 Further documentary research needs to be undertaken in order to better understand how the mill complex fits into the broader economic and industrial landscape of the Lea valley as well as to investigate if specific milling processes can be identified from the remains. Map regression appears to place the buildings found on the western edge of the Tottenham Mills buildings identified in the 1844 Tottenham Parish Tithe Apportionment map (1844) and in OS mapping oh 1864 onwards. Investigation should be undertaken to establish if any of the changes in

buildings discovered in the archaeological investigation can be related to changes in ownership, fire or flooding events.

11.2.3 Pottery

11.2.4 In addition to providing dating evidence for the features from which it was recovered, the primary significance of the pottery assemblage is local, specifically arising from the information it can provide about the inhabitants of this part of Haringey in the early post-medieval period. The presence of a fairly high proportion of imports in such a small assemblage is notable and suggests that a household or establishment of some status was located nearby. The small size and unremarkable nature of the later post-medieval assemblage lend it little significance. Any future publication should include a brief summary of the pottery recovered. Approximately 5 illustrations will be required.

11.2.5 Glass

11.2.6 The glass has some significance at a local level. The glass types and forms are typical for the post-medieval period in the London area. None of the glass can be related to activities specifically related to the mill and appear to be associated with domestic occupation at the site. Of interest are the fragments of burnt or heat-altered glass in contexts [248] and [260] which may relate to destructive fires at the mill prior to the mid 18th century. A short report on the glass is recommended for publication.

11.2.7 Clay Tobacco Pipe

11.2.8 The clay tobacco pipes are of local significance and have the potential to date the contexts. The condition of some of the pipes may relate to destructive fires dating from before the mid 18th century. The pipes also possibly demonstrate what was marketed to this area of Haringey and also visitors to the mill.

11.2.9 Research should be undertaken in order to identify, firstly, the possible local pipe makers who may have made the OS12 R H and S W marked bowls and secondly, the possible source of the non-local bowl from context [286]. Five bowls are recommended for illustration in the publication.

11.2.10 Metal and Small Finds

11.2.11 The metal and small finds from Hale Wharf provide some insight into the construction and use of mill buildings on the site in the late 16th to mid-19th centuries. Identifiable finds are chiefly in the form of small dress accessories, iron structural fittings and tools and implements such as possible spade irons, a metalwork sett or chisel and a saw blade. Of particular interest is a private farthing token, minted for an inn keeper in Fenchurch Street in the City and providing evidence of the use and circulation of small change in the mid- to late 17th century.

11.2.12 Metal and small finds potentially provide key elements of domestic material culture and activities related to the investigated site, and relevant objects should be included in any further

publication of the site. For this purpose, some finds have been recommended for x-raying and further identification. Following publication, iron nails and undiagnostic metal may be discarded.

11.2.13 Ceramic and Stone Building Material

11.2.14 The building material recovered and associated with the first and successive phases of the mill, suggests that the building was principally constructed using bricks, with a lesser quantity of stone used, most of them reused quernstones. The presence of small quantities of stone, and mainly present in foundations indicates that were reused. Purbeck marble and moulded Reigate, together with examples of ashlar, probably suggests the existence of a high-status medieval building nearby which had been robbed for some of these quality building materials.

11.2.15 Animal Bone

11.2.16 The general absence of animal bone collections from contemporary sites within this part of London highlights the importance of this site from a faunal point of view. Yet there are clear limiting factors concerning the potential value of this collection, and in particular the small size of the individual phase assemblages. For this reason it is recommended that no further work should be carried out, but that relevant aspects of the information contained within this assessment report should be included with any forthcoming publication document as this is a well-preserved, identifiable assemblage with particular aspects of interest such as the two deer species. Clearly, the bone detritus does represent preparation and general food waste, suggestive of some meal preparation/food consumption on site as well as perhaps opportunistic refuse disposal from the wider community.

11.2.17 Shell

11.2.18 The oyster shell that was recovered from Hale Wharf is likely to indicate that oyster was a part of the diet on this site during the 16th and 17th centuries, though concentrations of shell are minimal and cannot be interpreted to suggest a significant dietary influence. There are not enough complete specimens of oyster in any of the areas assessed to provide a statistically significant sample set, so further analysis and publication is not recommended.

11.2.19 Environmental

11.2.20 Preservation of environmental remains in the Hale Wharf assemblage was mixed across the sample set. The recommendations for additional work are outlined below. A summary of this assessment should be included in any future publications.

Plant Macrofossils

11.2.21 The size of the grain assemblage identified in Building 6 (Phase 10) was significant, and therefore a full specialist quantification of this material should be undertaken prior to publication. Additional analysis may help to shed light on the kinds of wheat that were being milled, and thus help us to better understand diet and subsistence in the local area.

Wood Charcoal

11.2.22 This wood charcoal assemblage was also of a significant size, with over one-hundred identifiable pieces being recovered from sample <4> (Building 2, Phase 6). Additional specialist analysis of this material is suggested, as it may shed light on the types of wood that were being selected for industrial purposes during this period, and for what purpose.

11.3 Publication Proposal.

11.3.1 Considering the regional significance of this site and the several phases of mill that were apparent, the excavation results warrant a short article in a peer reviewed journal such as the London Archaeologist or LAMAS. This article is envisaged as 10-12 pages with up to 15 figures.

11.3.2 The mill complex went through several rebuilds from the late 16th century until it was abandoned in 1860. The mill complex itself adds to our understanding of the industrial and economic history of the area, while the constant rebuilding can potentially offer insight into changing technology and milling processes.

11.3.3 A copy of this report will be made available through GLHER and uploaded to OASIS/ADS.

11.3.4 A pop-up display of finds etc. and a lecture will be held at the Bruce Castle Museum on 25th February 2019.

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APPENDIX 1: CONTEXT INDEX

Site_Code	Context	CTX_Type	CTX_Levels_high	CTX_Levels_low	CTX_Interpretation
FRR17	200	Layer	8.25	8.22	Excavated by machine. Leveling layer
FRR17	201	Layer	8.3		Layer of made ground
FRR17	202	Layer	8.52		Layer of demolition rubble
FRR17	203	Fill	8.77		Modern construction backfill associated with structure [214]
FRR17	204	Layer	8.62		Layer of chalk over the whole site
FRR17	205	Layer	8.77		Demolition layer
FRR17	206	Void	9.82		Layer of made ground
FRR17	207	Void			
FRR17	208	Void			
FRR17	209	Layer	8.22		Layer of ash/ charcoal covering the inside of the mill.
FRR17	210	Masonry	8.35	7.98	External Wall
FRR17	211	Masonry	8.21		Internal Wall
FRR17	212	Masonry	8.21	7.97	Internal Wall
FRR17	213	Masonry	3.33	8.29	Cap for soak away
FRR17	214	Masonry	8.7		Modern brick structure. Truncates entire sequence.
FRR17	215	Fill	8.25		Construction Backfill
FRR17	216	Cut	8.25	7.8	Construction cut for wall [210]
FRR17	217	Cut	8.77		Construction cut of modern brick pillar [214]. NFE
FRR17	218	Masonry	8.16	7.44	External U shaped Wall
FRR17	219	Masonry	8.43	8.17	U shaped external wall
FRR17	220	Masonry	8.31	8.29	Cap for soakaway
FRR17	221	Masonry	8.38	8.34	Floor associated with [219]
FRR17	222	Fill	8.32		Backfill of building
FRR17	223	Masonry	8.29		Chalk lining of soakaway
FRR17	224	Void			
FRR17	225	Void			
FRR17	226	Masonry	8.08	7.54	Floor surface or pad with possible wheel pit.
FRR17	227	Void			
FRR17	228	Layer	8.31		Bedding layer for floor
FRR17	229	Fill	8.13	8.12	Building backfill
FRR17	230	Void			
FRR17	231	Masonry	8.06	7.96	Floor

Site_Code	Context	CTX_Type	CTX_Levels_high	CTX_Levels_low	CTX_Interpretation
FRR17	232	Layer	8.14		Gravel layer. Excavated by machine, only recorded in section
FRR17	233	Layer	8.14		Mortar layer. Excavated by machine, only recorded in section
FRR17	234	Layer	8.14		Flat layer of clay inside 210. Possible floor surface. Excavated by machine, only recorded in section.
FRR17	235	Layer	8.06		Thin layer of silty sand. Excavated by machine, only recorded in section.
FRR17	236	Layer	8.02		Internal layer. Only recorded in section
FRR17	237	Layer	7.9		Thin layer of burned material. Excavated by machine, only recorded in section
FRR17	238	Layer	7.87		Layer of clay. Excavated by machine, only recorded in section
FRR17	239	Void			
FRR17	240	Void			
FRR17	241	Cut+	8.27	8.07	Cut of soakaway
FRR17	242	Masonry	8.26	8.08	Chalk lining of soakaway [241]
FRR17	243	Void			
FRR17	244	Fill	8.11		fill of soakaway
FRR17	245	Void			
FRR17	246	Fill	7.5	7.48	Secondary fill of drain [251]
FRR17	247	Cut	7.71	7.47	Construction cut for drain [251]
FRR17	248	Void			
FRR17	249	Fill	8.12		Building back fill
FRR17	250	Fill	7.81		Fill in the slot of 226
FRR17	251	Masonry	7.86	7.5	Brick drain
FRR17	252	Fill	7.68		Primary fill of drain [251]
FRR17	253	Fill	7.71		Fill of pit
FRR17	254	Cut	7.71	6.84	Cut of pit
FRR17	255	Void			
FRR17	256	Masonry	8.15	7.79	Floor associated with [219]. Bricks very worn
FRR17	257	Layer	7.91	7.86	yard surface
FRR17	258	Fill	8.29		Fill of soakaway
FRR17	259	Cut	8.29	8.08	cut of soakaway

Site_Code	Context	CTX_Type	CTX_Levels_high	CTX_Levels_low	CTX_Interpretation
FRR17	260	Fill	7.76		Fill of pit
FRR17	261	Cut	7.76	7.13	Cut of pit
FRR17	262	Fill	8.09		Fill of posthole
FRR17	263	Cut	8.09	7.98	cut of posthole
FRR17	264	Layer	8.08		Bedding layer for floor [256]
FRR17	265	Fill	7.76	7.74	Fill of pit
FRR17	266	Cut	7.76	7.52	Cut of pit
FRR17	267	Layer	7.65		surface layer
FRR17	268	Layer	7.65		Layer of made ground
FRR17	269	Masonry	7.96	7.87	Patching/repair of floor
FRR17	270	Void			
FRR17	271	Layer	8.25		Dump layer within leveling horizon. Excavated by machine, only recorded in section.
FRR17	272	Layer	8.22		Demo layer within leveling horizon. Excavated by machine and only recorded in section.
FRR17	273	Layer	8.2		Possible yard surface for mill. Excavated by machine, only recorded in section.
FRR17	274	Layer	8.03		Layer of made ground. Excavated by machine, only recorded in section.
FRR17	275	Masonry	8.19	8.14	Floor
FRR17	276	Fill	8.04		Fill of pit
FRR17	277	Cut	8.04	7.99	Small pit
FRR17	278	Masonry	8.08	7.92	Floor
FRR17	279	Layer	7.84	7.76	Bedding layer for walls [210] and [212]
FRR17	280	Layer	7.82		Bedding layer for wall 210
FRR17	281	Fill	7.82		Fill of pit
FRR17	282	Cut	7.82	7.75	Cut of pit
FRR17	283	Fill	7.82		Primary fill of pit [282]
FRR17	284	Layer	7.81	7.78	Leveling layer
FRR17	285	Layer	7.86	7.79	bedding layer for yard surface
FRR17	286	Layer	7.77	7.65	Chalk surface
FRR17	287		7.82		Round floor surface with possible machine slot
FRR17	288	Masonry	7.92	7.82	Cobbled surface
FRR17	289	Void			

Site_Code	Context	CTX_Type	CTX_Levels_high	CTX_Levels_low	CTX_Interpretation
FRR17	290	Fill	8.02		Fill of beam slot. Excavated by machine, only recorded in section
FRR17	291	Cut	8.02	7.87	beam slot. Excavated by machine, only recorded in section
FRR17	292	Fill	7.98		Construction backfill
FRR17	293	Cut	7.75	7.46	Construction cut for wall [218]
FRR17	294	Layer	7.98	7.92	building backfill. Excavated by machine
FRR17	295	Layer	7.81	7.71	Leveling layer. This layer was excavated by machine.
FRR17	296	Masonry	7.83	7.82	Fragmentary part of structure
FRR17	297	Masonry	7.51	7.5	base of machine slot in round floor
FRR17	298	Cut	7.83	7.35	Cut within circular floor
FRR17	299		2.47		Bedding fill for drain [251]
FRR17	300	Void			
FRR17	301	Void			
FRR17	302	Masonry	8.06	7.92	Wall running north/south
FRR17	303	Fill	7.98		Construction backfill
FRR17	304	Cut	7.98	7.71	Construction cut for wall [302]
FRR17	305	Layer	7.76	7.47	Wall collapse
FRR17	306	Fill	7.68		Fill of robber cut
FRR17	307	Cut	7.68	7.31	Robber cut
FRR17	308	Fill	7.78	7.7	Fill of robber cut
FRR17	309	Fill	7.72		Fill of construction cut
FRR17	310	Cut	7.72	7.33	Construction cut for wall [312]
FRR17	311	Layer	7.66		Dump layer
FRR17	312	Masonry	7.85	7.42	Wall
FRR17	313		7.52		Bedding layer for floor
FRR17	314	Cut	7.78	7.17	Robber cut
FRR17	315	Void			
FRR17	316	Masonry	8.34		support structure under the floor in northern building
FRR17	317	Cut	8.34	7.95	construction cut for support structure [316]
FRR17	318	Masonry	8.04		Support structure
FRR17	319	Cut	8.04	7.34	Construction cut for support structure [318]
FRR17	320	Layer	7.47		Alluvium.
FRR17	321	Layer	7.66	7.61	Layer of brown gravel. Excavated by machine.
FRR17	322	Layer	7.64	7.55	Leveling layer

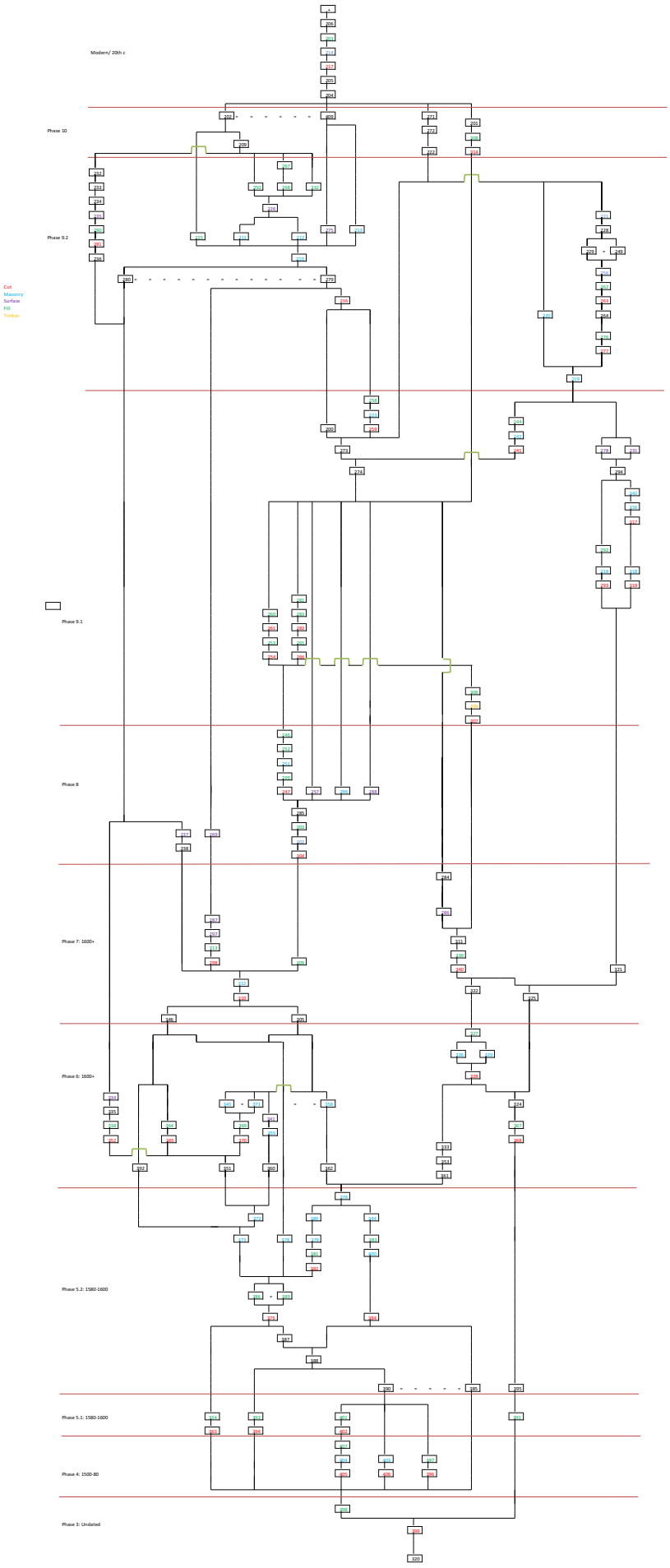
Site_Code	Context	CTX_Type	CTX_Levels_high	CTX_Levels_low	CTX_Interpretation
FRR17	323	Void			
FRR17	324	Layer	7.43		Charcoal rich dump layer
FRR17	325	Layer	7.78	7.23	Demolition spread. Slopes quite sharply down towards the north.
FRR17	326	Masonry	7.49		Wall running east/west
FRR17	327	Fill	7.44		Construction fill
FRR17	328	Cut	7.44	7.21	Construction cut for walls [326], [329]
FRR17	329	Masonry	7.39		Wall running east/west
FRR17	330	Void			
FRR17	331	Void			
FRR17	332	Layer	7.72		Layer of made ground
FRR17	333	Layer	7.59		Layer of made ground
FRR17	334	Masonry	7.71		Heavily truncated masonry. Possibly remains of a floor surface
FRR17	335	Layer	7.67		Mortar bedding for [334]
FRR17	336	Void			
FRR17	337	Void			
FRR17	338	Fill	7.53		Fill of hearth
FRR17	339	Fill	7.47	7.42	Fill of pit
FRR17	340	Cut	7.47	6.92	Cut of pit
FRR17	341	Layer	7.67	7.51	Mortared surface
FRR17	342	Masonry	8.43		wall, only seen in section.
FRR17	343	Masonry	7.72	7.68	Wall running east/west
FRR17	344	Masonry	7.66		L shaped wall
FRR17	345	Void			
FRR17	346	Layer	7.52	7.34	Layer of made ground
FRR17	347	Void			
FRR17	348	Void			
FRR17	349	Void			
FRR17	350	Void			
FRR17	351	Layer	7.63		Mortary layer
FRR17	352	Cut	5.53	7.31	Cut of hearth
FRR17	353	Fill	7.34	7.32	Layer of made ground
FRR17	354	Fill	7.43	7.41	fill of pit

Site_Code	Context	CTX_Type	CTX_Levels_high	CTX_Levels_low	CTX_Interpretation
FRR17	355	Masonry	7.53		Small piece of masonry added on to 372
FRR17	356	Void			
FRR17	357	Void			
FRR17	358	Masonry	7.8		Wall running east/west
FRR17	359	Fill	7.4	7.36	timber board on base of robber cut
FRR17	360	Layer	7.51	7.4	Layer of made ground
FRR17	361	Layer	7.41	7.22	Demolition spread/ dump layer
FRR17	362	Layer	7.52	7.42	Layer of made ground
FRR17	363	Cut	7.41	7.17	Cut of pit
FRR17	364	Fill	7.4		Fill of robber cut
FRR17	365	Cut	7.4	7.25	Robber cut
FRR17	366	Void			
FRR17	367	Fill	7.3	7.23	pit fill
FRR17	368	Cut	7.3	7.01	cut of pit
FRR17	369	Fill	7.33	7.31	Bedding deposit for [343]
FRR17	370	Cut	7.33	7.17	Construction cut for wall [343]
FRR17	371	Masonry	7.79		wall running east/west
FRR17	372	Masonry	7.71		Wall running north/south
FRR17	373	Masonry	7.45		Foundation running north/south. Made up both of bricks and cut stone.
FRR17	374	Void			
FRR17	375	Cut	7.48	7.07	Construction cut for foundation [373]
FRR17	376	Masonry	7.68		Wall running east/west
FRR17	377	Void			
FRR17	378	Masonry	7.66		Wall running north/south
FRR17	379	Masonry	7.32		Foundation for wall [380] and [376]
FRR17	380	Masonry	7.69	7.4	Wall running north/south
FRR17	381	Fill	7.29		Construction backfill
FRR17	382	Cut	7.29	7.12	Construction cut for foundation [379]
FRR17	383	Fill	7.31		Construction backfill
FRR17	384	Cut	7.31	6.92	Construction cut
FRR17	385	Layer	7.25	7.18	Layer of made ground
FRR17	386	Fill	7.35		Construction backfill/bedding for foundation.

Site_Code	Context	CTX_Type	CTX_Levels_high	CTX_Levels_low	CTX_Interpretation
FRR17	387	Layer	7.39	7.3	Dump layer
FRR17	388	Layer	7.31		Dump layer
FRR17	389	Fill	7.3	7.16	Construction backfill/bedding for foundation
FRR17	390	Layer	7.34		Layer of made ground
FRR17	391	Layer	7.16	7.08	Dump layer
FRR17	392	Layer	7.46		Layer of made ground
FRR17	393	Fill	7.38		Fill of pit
FRR17	394	Cut	7.38	6.98	Cut of pit
FRR17	395	Layer	7.5	7.31	Layer of made ground
FRR17	396	Cut	7.31	7.22	cut of posthole
FRR17	397	Fill	7.31		Fill of posthole
FRR17	398	Fill	7.38	6.98	Fill of possible channel.
FRR17	399	Cut	7.09	7.03	Possible channel. Not excavated.
FRR17	400	Masonry	7.32	7.06	Foundation for wall [344]
FRR17	401	Fill	7.13	7.13	Domestic rubbish fill of pit [402]
FRR17	402	Cut	7.13	7.05	Rubbish pit
FRR17	403	Fill	7.35	7.33	Foundation / bedding for a wall
FRR17	404	Masonry	7.24	6.87	Drain
FRR17	405	Cut	2.26	6.79	Construction Cut for drain
FRR17	406	Cut	7.22	7.02	Construction cut for foundation [403]. Not fully excavated
FRR17	407	Fill	7.22		Construction backfill for drain [404]
FRR17	408	Layer	8.24	8.19	Layer of made ground. Excavated by machine, only recorded in section
FRR17	409	Fill	8.35		Backfill of building [210]. Excavated by machine

APPENDIX 2 MATRIX

Appendix 2 Matrix



APPENDIX 3: POTTERY

Berni Sudds

A small assemblage of post-Roman pottery was recovered from the excavation, amounting to 5 boxes. In total, there are 469 sherds, weighing 15,032g. The post-Roman pottery dates from the 13th to the 19th century, although the majority is of early post-medieval date. The assemblage is in good condition, with little evidence for abrasion and was probably deposited fairly rapidly after breakage.

The assemblage was examined macroscopically and microscopically using a binocular microscope (x20), and recorded in an Access database, by fabric, form and decoration. The classification of the pottery types is according to the Museum of London Archaeology typology (LAARC 2017). The forms were identified in accordance with the Medieval Pottery Research Group's guide to the classification of forms (MPRG 1998). The pottery was quantified by sherd count (SC), estimated number of vessels (ENV's) and weight. Pottery was recovered from 42 contexts, the majority of which are small (1-30 sherds), with three medium sized groups (31-100 sherds) and just one large group (100+ sherds). A summary of the pottery types and forms appears below in Table 1, followed by a discussion of the distribution of the pottery including a quantification by phase, by phase and ware type and by context (with date ranges and context considered dates) (Tables 2, 3 and 4).

Pottery types

Fabric Code	Expansion	Date range		Forms	SC	ENV	Wt (g)
HARM	Harlow sandy ware	1200	1500	Jug	1	1	39
BRIM	Brill/Boarstall ware	1250	1500	-	1	1	13
SAIN	Saintonge ware	1250	1650	Chafing dish	3	2	42
CBW	Coarse Surrey-Hampshire border ware	1270	1500	-	3	1	20
DUTR	Dutch red earthenware	1300	1650	Cauldron/ pipkin	1	1	29
DUTSL	Dutch slipped red earthenware	1300	1650	Bowl/dish	4	3	56
LMCSX	Essex late medieval coarse sandy ware	1350	1600	Dish	2	2	29
LMFSX	Essex late medieval fine sandy ware	1350	1600	Jug	12	6	195
LMFSX CH	Essex late medieval fine sandy ware with calcareous inclusions	1350	1600	Cauldron/ pipkin	4	1	134
LMFX	Essex late medieval fine ware	1350	1600	Jug	4	1	51
LMFX CH	Essex late medieval fine ware with calcareous inclusions	1350	1600	-	1	1	20
LLON	Late London-type ware	1400	1500	-	1	1	61

Fabric Code	Expansion	Date range		Forms	SC	ENV	Wt (g)
MISC	miscellaneous unsourced late-medieval/post-medieval pottery	1400	1700	-	2	2	34
MORAN	Midlands orange ware	1400	1820	-	1	1	49
MPUR	Midlands purple ware	1400	1750	Butterpot	10	4	332
CSTN	Cistercian ware	1480	1600	-	1	1	4
DUTR BICR	Dutch bichrome red earthen-ware	1480	1650	-	1	1	6
EBORD	Early Surrey-Hampshire bor-der whiteware	1480	1550	Drinking jug	1	1	6
PMRE	London-area early post-me-dieval redware	1480	1600	Jug, carinated bowl/dish (incl. han-dled), bowl-dish, cauldron/pipkin, han-dled bowl and dish, chafing dish, flanged dish	109	76	4939
PMSR	London-area post-medieval slipped redware	1480	1650	Bowl/ dish	3	2	87
PMSRG	London-area post-medieval slipped redware with green glaze	1480	1650	Jug, carinated bowl/dish (incl han-dled).	36	21	919
PMSRY	London-area post-medieval slipped redware with clear (yellow) glaze	1480	1650	Jug, carinated bowl/dish (incl han-dled), flanged dish, colander.	117	58	4691
RAER	Raeren stoneware	1480	1610	Jug, drinking jug	10	5	171
BORD	Surrey-Hampshire border whiteware	1550	1700	-	1	1	6
BORDG	Surrey-Hampshire border whiteware with green glaze	1550	1700	Bowl, tripod pipkin	14	9	144
BORDO	Surrey-Hampshire border whiteware with olive glaze	1550	1700	-	2	2	15
BORDY	Surrey-Hampshire border whiteware with clear (yellow) glaze	1550	1700	Bowl/dish, tripod pip-kin, skillet	10	9	185
FREC	Frechen stoneware	1550	1700	Jug, drinking jug	4	4	64
FREC INSCR	Frechen stoneware inscribed band jug	1550	1580	Jug	1	1	8
KOLFR EC	Cologne/Frechen stoneware	1550	1580	Drinking jug	1	1	34
RBOR	Surrey-Hampshire border redware	1550	1900	Bowl/dish, bowl	4	3	58
TGW	English tin-glazed ware	1570	1846	Plate	8	4	75
PMBL	Essex-type post-medieval black-glazed redware	1580	1700	Jug, mug	12	5	347
PMFR	Essex-type post-medieval fine redware	1580	1700	Cauldron, bowl (incl. handled), drinking jug, jug	47	17	1009
PMFRB	Essex-type post-medieval fine redware with brown glaze	1580	1700	Cauldron/pipkin	6	5	136
PMR	London-area post-medieval redware	1580	1900	Bowl	1	1	35

Fabric Code	Expansion	Date range		Forms	SC	ENV	Wt (g)
CHPO BW	Chinese blue and white porcelain	1590	1900	Tea bowl	2	1	5
WEST	Westerwald stoneware	1590	1900	-	1	1	2
BLACK	Blackware	1600	1900	Jug	1	1	28
LONS	London stoneware	1670	1926	Jug	1	1	250
TGW H	London tin-glazed ware with pale blue glaze and dark blue decoration (Orton and Pearce style H)	1680	1800	Plate	1	1	33
ENGS	English brown salt-glazed stoneware	1700	1900	Ink bottle	1	1	77
SWSG	White salt-glazed stoneware	1720	1780	Plate	3	1	25
CREA	Creamware	1740	1830	Plate, large plate	3	2	56
CREA DEV	Creamware with developed pale glaze	1760	1830	Plate	11	3	97
TPW	Refined whiteware with under-glaze transfer-printed decoration	1780	1900	Plate, large plate	2	2	36
REFW	Refined white earthenware	1805	1900	Cylindrical jar	1	1	28
TPW3	Refined whiteware with under-glaze brown or black transfer-printed decoration	1810	1900	Storage jar	1	1	318
YELL	Yellow ware	1820	1900	-	1	1	22
YELL SLIP	Yellow ware with slip decoration	1820	1900	-	1	1	12

Table 1: Quantification of the assemblage by ware type. SC = Sherd count. ENV = Estimated number of vessels. Wgt = Weight in grams.

Distribution

Phase	SC	ENV	Weight
Phase 3	6	4	136
Phase 4	2	1	37
Phase 5	269	139	9778
Phase 6	93	75	2456
Phase 7	43	14	1071
Phase 8	1	1	48
Phase 9	16	14	570
Phase 10	7	7	149
Phase 11	2	2	395
Unphased	30	16	392

Table 2: Distribution of the pottery by phase.

SC = Sherd count. ENV = Estimated number of vessels. Weight in grams.

Fabric	3	4	5	6	7	8	9	10	11	SC
HARM			1							1
BRIM							1			1
SAIN			2							3
CBW										3

Fabric	3	4	5	6	7	8	9	10	11	SC
DUTR			1							1
DUTSL		2		2						4
LMCSX				2						2
LMFSX			9	3						12
LMFSX CH			4							4
LMFX			4							4
LMFX CH										1
LLON										1
MORAN				1						1
MPUR			8	1			1			10
CSTN				1						1
DUTR BICR								1		1
EBORD				1						1
PMRE	1		75	24	3	1	4	1		109
PMSR			3							3
PMSRG	3		17	10	4		1	1		36
PMSRY			94	17	2		2	2		117
RAER			3	6	1					10
BORDO			1	1						2
BORD			1							1
BORDY			4	4	2					10
FREC			4							4
FREC IN-SCR			1							1
KOLFREC			1							1
RBOR				4						4
BORDG	1		9	3						14
TGW			3	4				1		8
PMBL			9	1	2					12
PMFR	1		7	7	29		3			47
PMFRB			6							6
PMR							1			1
WEST							1			1
CHPO BW										2
BLACK			1							1
LONS							1			1
TGW H										1
ENGS									1	1
SWSG										3
CREA							1			3
CREA DEV										11
TPW								1		2
REFW										1
TPW3									1	1
YELL										1
YELL SLIP										1
MISC			1	1						2

Table 3: Distribution of the pottery by phase and fabric. SC = Sherd count.

Con-text	Phase	Ware types	SC	ENV	WGT	Latest dated pottery		Context con-sidered date
206	11	ENGS,TPW3	2	2	395	1780	1900	L.19TH - E.20TH C

Con-text	Phase	Ware types	SC	ENV	WGT	Latest dated pottery		Context con-sidered date
208	UNP	SWSG,CREA DEV,CREA,YELL SLIP,YELL,TPW,REFW	19	8	196	1820	1900	1820 - 1850
224	UNP	TGW H	1	1	33	1680	1800	M/L.18TH C
243	UNP	CREA DEV	1	1	22	1760	1830	1760 - 1830
245	UNP	CHPO BW	2	1	5	1590	1900	1590 - 1900
260	9	PMFR,WEST,MPUR	3	3	40	1590	1900	1590 - 1750
265	9	CREA	1	1	42	1780	1790	1780 - 1790+
267	9	PMRE,PMR	2	2	54	1580	1900	1580 - 1700+
281	9	PMSRY,PMRE	3	2	31	1480	1650	1480 - 1600
285	8	PMRE	1	1	48	1480	1600	1480 - 1600
286	7	PMSRY	1	1	32	1480	1650	1480 - 1650
291	9	PMRE,PMSRY	2	2	40	1480	1650	1480 - 1600
294	9	LONS	1	1	250	1670	1926	1670 - 1800
305	7	PMFR,PMSRG,BORDY, PMBL	34	5	691	1580	1700	1580 - 1700
306	9	BRIM,PMSRG,PMFR	4	3	113	1580	1700	1580 - 1650
308	10	PMSRY,TGW,TPW,DUTR BICR,PMRE,PMSRG	7	7	149	1780	1900	M/L.19TH C
311	7	PMRE	1	1	61	1480	1600	1480 - 1600
313	7	PMRE,PMSRG,PMSRY	3	3	139	1480	1650	1480 - 1600
320	3	PMRE,PMFR	2	2	58	1580	1700	1580 - 1600
322	7	PMSRG,PMFR,RAER	3	3	132	1580	1700	1580 – 1610+
324	6	TGW	4	1	31	1570	1846	E/M.18TH C?
333	6	PMSRG,PMRE,PMFR,RBOR,PMSRY,BORDY,BORDG,DUTSL	28	25	571	1580	1700	1580 - 1600+
336	UNP	BORDG,LLON	2	2	93	1550	1700	1550 - 1600
346	7	PMRE	1	1	16	1480	1600	1480 - 1600
353	6	PMFR,BORDY,PMSRG,PMSRY	5	5	111	1580	1700	1580 - 1650
354	5	PMRE,PMSRG,HARM,PMSRY,BORDY	7	7	587	1550	1700	1550 - 1650
356	UNP	CBW,LMFX CH	4	2	40	1350	1600	15TH C?
361	6	BORDO,PMRE,BORDY,PMBL,LMFSX,PMSRY,PMSRG,MISC,MPUR,PMFR,PMSRG	31	25	1101	1580	1900	1580 - 1650
362	6	BORDY,PMSRG,DUTSL,LMCSX,PMSRY,CSTN,LMFSX,MO-RAN,RBOR,PMRE,RAER,EBORD	25	19	642	1550	1900	1550 - 1600
374	UNP	SAIN	1	1	3	1250	1650	1250 - 1650
381	5	PMFR,PMSRY	2	2	59	1580	1700	1580 - 1650
385	5	PMRE,FREC IN-SCR,PMSR,PMFRB,BORDY,PMSRG,PMSRY,SAIN,PMBL,BORDO,BORDG,RAER,LMFSX	167	63	5137	1580	1700	1580 - 1600

Context	Phase	Ware types	SC	ENV	WGT	Latest dated pottery		Context considered date
		CH,MPUR,PMFR,FREC,LMFSX,LMFX,DUTR						
386	5	BORDG,PMSRG,PMRE,BORDY	4	3	112	1550	1700	1550 - 1600
387	5	MPUR	1	1	24	1400	1750	1400 - 1750
389	5	PMRE,PMSRG,PMSRY,LMFSX	5	4	224	1480	1650	1480 - 1550
390	5	BORD,BORDG,PMRE,PMFRB,MISC,PMSRY,TGW,LMFSX,LMFSX CH,PMSR	30	21	1297	1580	1700	1580 - 1600
391	3	PMSRG,BORDG	4	2	78	1550	1700	1550 - 1600
393	5	PMFR	1	1	5	1580	1700	1580 - 1700
395	5	RAER,BORDG,PMRE,PMSRY, PMFR,TGW,BLACK,KOLFREC	31	24	1330	1580	1700	1600 - 1650
400	5	PMRE	2	2	271	1480	1600	1480 - 1600
401	5	BORDG,FREC,PMSRG,PMSRY, PMRE	19	11	732	1550	1700	1550 - 1650
407	4	DUTSL	2	1	37	1300	1650	1400 - 1650

Table 4: Distribution of the pottery by context including latest dated ware type and context considered date. UNP = Unphased. SC = Sherd count. ENV = Estimated number of vessels. WGT = Weight in grams.

Phase 3: Late 16th to early 17th century

Just 6 sherds, from 4 vessels, were recovered from Phase 3 alluvial and dump layers (Table 2). These comprise the rim of a Essex-type post-medieval fine redware (PMFR) drinking jug and a London-area early post-medieval redware (PMRE) horizontal handle from layer [320] and a London-area post-medieval slipped redware handled carinated bowl or dish with green glaze (PMSRG) and Surrey-Hampshire border whiteware body sherd with green glaze from dump deposit [391]. The pottery dates to the late 16th or possibly early 17th century.

Phase 4: Late 16th to early 17th century

Two sherds from the base of the same slip decorated bowl or dish were recovered from the construction backfill of drain [404] ([407]) of non-local origin, possibly from Holland (DUTSL). The vessel is decorated with a central debased floral (?) motif and probably dates to the 16th or 17th century.

Phase 5: Late 16th to early 17th century

Phase 5 features and layers produced the largest concentrations of pottery from site, accounting for over half of the material recovered (Table 2). A small proportion of this was recovered from pits [363],

[394] and [402] and construction cut backfills and foundations for Building 2 ([381]; [386]; [389]), but the majority was retrieved from dump layers [385], [387], [390] and [395].

The pottery is dominated by local coarsewares in the form of London-area post-medieval slipped redwares (PMSRY/G) and London-area early post-medieval redwares (PMRE). Amongst this group, bowls and dishes occur in large numbers, typically handled with a carinated body and flanged rim. There are also a smaller number of cauldrons, pipkins, colanders and jugs and a single chafing dish and handled jar. Regional wares represent the next largest group, the majority of which originate in Essex including Essex late medieval fine and fine sandy wares (LMFX; LMFSX; LMFSX CH) and Essex-type post-medieval black-glazed redware (PMBL) and Essex-type post-medieval fine redware (PMFR; PMFRB). Cauldron or pipkin forms are present within this group but there are more drink serving forms, including jugs and a drinking jug and mug. There is also a small number of Surrey-Hampshire border whitewares (BORDG; BORDO; BORDY), including two tripod pipkins, a carinated skillet and a bowl or dish. There are also three sherds of tin-glazed ware (TGW), from a plate and a small jar or ointment pot, two Midlands purple ware (MPUR) butter pots and a Blackware (BLACK) small rounded jug.

There are 10 imported vessels, comprising two Raeren stoneware (RAER) drinking jugs, five Frechen stoneware (FREC; FREC INSCR) jugs or drinking jugs, a Dutch redware (DUTR) cauldron/pipkin and a Saintonge ware (SAIN) openwork chafing dish. One of the Frechen jugs has an inscribed band with the surviving letters 'DRM—' and an acanthus leaf embellishment and the chafing dish has a standing knob with a moulded face to the upright and small triangular cut-outs to the body.

The combination of fabric types and some more precisely dated forms or decoration suggest much of the Phase 5 pottery dates to the late 16th century. There are, however, a couple of vessels, including the Blackware jug from layer [395], that post-date c.1600 and fabrics with a longer date range, suggesting some dumping continued into the early 17th century. It therefore follows that some of the pottery may have been old when deposited. Two sherds from an early 18th century tin-glazed ware plate from layer [395] are considered to be intrusive. The pottery recovered from the foundations and construction cut backfills of Building 2 is very similar in composition to the material from the underlying dump layers. At least some of this material is likely to have been picked up and redeposited during construction.

A single sherd of residual medieval Harlow sandy ware (HARM) was recovered from pit [363], from the base of a jug.

Phase 6 and 7: Mid/late 17th to mid-18th century

The pottery from the dump and demolition deposits ([333]; [353]; [361]; [362]) used as levelling within Rooms 1 and 2/3 of Building 2, as part of a phase of renovation, is markedly similar in composition to the material recovered from Phase 5. The same is also true of the Phase 7 demolition and levelling deposits to south of site ([305]; [311]; [322]; [346]) and the bedding ([313]) and surface ([286]) of a floor in Building 3.

The Phase 6 and 7 assemblage is smaller in size (136 sherds; Table 2) but in addition to the range of types observed in Phase 5 there is also a sherd of Cistercian ware (CSTN), Midlands orange ware (MORAN) and three Surrey-Hampshire border redware (RBOR) bowls. Fewer imports are evident, but again the majority is dated to late 16th century to early 17th century. The range of forms is also comparable, with a high number of PMSRG/Y carinated dishes or bowls recovered.

Four sherds from a tin-glazed ware plate with a painted floral or foliate design from Phase 6 charcoal rich layer [324] date to the early to mid-18th century.

Phase 8: Mid-18th century

A single residual London-area early post-medieval redware (PMRE) rim sherd was recovered from a Phase 8 levelling/ bedding layer for a yard surface associated with Building 4.

Phase 9: Late 18th to early 19th century

A small assemblage of 16 sherds were recovered from Phase 9 deposits, including the fills of pits ([260]; [265]; [281]), robber cuts, beamslots and surfaces ([267]; [291]; [306]), the majority of which are of 16th and 17th century date and likely to be re-deposited. A single vessel of late 18th century date was collected from pit [265] in the form of a large Creamware (CREA) plate made by Spode with a stamp to the reverse dated to c.1780 - 1790. Also residual in robber cut fill [306] is the thickened base of a small late medieval vessel with a fine pinkish-orange body and patchy green glaze, possibly originating from Brill/Boarstall in Buckinghamshire.

Phase 10 and 11: Late 19th to early 20th century

Just nine sherds were collected from Phase 10 and 11 deposits (robber cut fill [308] and made ground [206]). Six of the seven sherds from fill [308] are residual but there is also a refined whiteware with under-glaze transfer-printed plate with a mid-blue scroll and flower design dated to the mid or late 19th century. Two vessels were recovered from made ground [206], a refined whiteware with under-glaze black transfer-printed decoration (TPW3), in the form of a semi-complete Keiller's Marmalade jar, and an English stoneware ink bottle, dated to the late 19th or even early 20th century.

Unphased assemblage

The small assemblage of unphased pottery is comprised of a few sherds of medieval date, in the form of Coarse Surrey-Hampshire border ware (CBW) and Late London-type ware (LLON), and 18th and 19th century pottery including London tin-glazed ware with pale blue glaze and dark blue decoration (TGW H), white salt-glazed stoneware (SWSG), Creamware (CREA; CREA DEV), refined whiteware with under-glaze transfer-printed decoration (TPW), refined white earthenware (REFW) and Yellow wares (YELL; YELL SLIP).

Potential and recommendations for further work

The small residual medieval assemblage attests to low level background activity and probably originates from contemporary settlement in the Tottenham Hale vicinity, perhaps even associated with the mill recorded immediately to the south of site, built in 1254. The pottery shows the largest ceramic footprint dating to the 16th/17th century period. Much of the pottery as collected from levelling layers predating mill Building 2. It is possible some of this was dumped by the inhabitants of Building 1, but could also have been brought onto site as levelling material prior to the construction of Building 2. Indeed, the documentary evidence suggests that a large number of houses were being leased to Londoners as country retreats in the immediate area from the late 16th century. The range of pottery recovered is fairly typical of the period in the London region, although also includes a high proportion of Late medieval and early post-medieval Essex wares, no doubt a result of the site lying directly on the banks of the River Lea. Of note are the number of imported vessels, including a rare Saintonge chafing dish from western France.

A much reduced assemblage is associated with later activity on the site. The types encountered can all be well-paralleled in contemporary assemblages in the vicinity and broader region. Mill buildings continued to occupy the site until their demolition in the early 20th century, although Tottenham Hale evidently turned from a select residential area into a crowded, lower middle and working-class suburb during the course of the 19th century. Little can be concluded about the nature or status of activity in the vicinity from such a small group of pottery.

In addition to providing dating evidence for the features from which it was recovered, the primary significance of the assemblage is local, specifically arising from the information it can provide about the inhabitants of this part of Haringey in the early post-medieval period. The presence of a fairly high proportion of imports in such a small assemblage is notable and suggests that a household or establishment of some status was located nearby. The small size and unremarkable nature of the later post-medieval assemblage lend it little significance. Any future publication should include a brief summary of the pottery recovered. Approximately 5 illustrations will be required.

References

MPRG 1998. A Guide to the Classification of Medieval Ceramic Forms. Medieval Pottery Research Group, Occasional Paper No.1.

APPENDIX 4: GLASS ASSESSMENT

Chris Jarrett

Introduction

A small sized assemblage of glass was recovered from the site (half of one standard finds box). The glass solely dates to the post-medieval period. Most of the fragments show no or little evidence for abrasion and were probably deposited fairly rapidly after breakage. A notable quantity of the glass fragments do have natural weathering deposits resulting from burial conditions. Additionally a small number of fragments show evidence for being subjected to a high temperature and are warped. All of the glass was in a fragmentary state and no vessels are represented by items that are intact or with a complete profile. However, identifiable forms are recorded. The glass was quantified by the number of fragments and where possible the estimated number of vessels (ENV) and this was recovered from 16 contexts and individual deposits produced only small groups (fewer than 30 sherds).

All of the glass (38 fragments, 26 ENV, 336g, of which one fragment, 21g, was unstratified) was recorded in a database format, by type colour and form. The assemblage is discussed by period, the vessel shapes, etc. and its distribution.

The glass

The range of forms represented in the glass assemblage is limited. The forms, as quantified are as follows:

Cylindrical bottle: 3 fragments, 3 ENV, 55g

English wine bottle: 3 fragments, 3 ENV, 40g

English wine bottle, early cylindrical-type: 2 fragments, 1 ENV, 104g

English wine bottle, mallet-type: 2 fragments, 2 ENV, 42g

Vessel glass: 5 fragments, 5 ENV, 28g

Window pane: 23 fragments, 12 ENV, 67g

Cylindrical bottle

All of the cylindrical bottle fragments were made in soda glass and are dated to the 18th-19th century. A free-blown, clear glass example survives as a rounded shoulder and wall (deposit [203]), while a wall fragments in pale olive-green glass was noted in context [222] and its method of manufacture could not be determined. From deposit [361] was recovered the moulded base of a blue-tinted cylindrical bottle dated to after *c*. 1810.

English wine bottle

There are three fragments of soda glass English wine bottles that could not be assigned to a specific shape. An olive green wall fragment was noted in deposit [222]. Additionally, the unstratified base of an 18th or 19th century dated wine bottle is of note for being fire damaged and it is dichromic: the colour of the glass appears to be turquoise, although when held up to the light the vessel's actual colour is olive green. One rim of a wine bottle, possibly from an onion-type, is noted in this group and it has a string-finish dated *c*. 1680–1690 (Dumbrell 1993, 38) and this was found in context [201].

English wine bottle, mallet type, c. 1725–1760

This type of wine bottle was only identified by the wide bases characteristic of the shape, which occurred in deposits [279] (pale olive green soda glass) and [308] (olive green natural glass).

English wine bottle, cylindrical, early-type, c. 1740–1850

The slightly splayed base of a free-blown wine bottle of this type, made in dark olive green high-lime low-alkali (HLLA) glass was noted in deposit [201].

Vessel glass

A total of five fragments of vessel glass, made solely in clear soda glass, are recorded and broadly dated to the 18th-19th century. Four of the fragments of vessel glass are heat warped and damaged. Two of these were recovered from context [203] and the first fragment may have been derived from a fluted dish and has a small central boss. The broken edges of this vessel have become rounded through contact with a high temperature. The second fragment may have been derived from a bottle and it is represented by a neck and shoulder. The item is in a warped condition and has a small triangle of glass, possibly from another vessel, stuck to it. Additional burnt fragments of glass were noted in contexts [248], as a folded ribbon of glass with granular surfaces and [260], found as a slightly sinuous rod of melted glass. A third, small, fragment of vessel glass, which does not appear to have been heat damaged, was found in context [378] and it is dichromic with a noticeably blue tinted colour when not held up to the light.

Window glass

The greater part of the assemblage is comprised of window glass panes and only cylinder made items appear to be present where it was possible to determine the manufacturing process. The window glass fragments could only be broadly dated to the 18th - 19th century. All of this material was made of soda glass, some of which appears to be pale olive green in colour, although it all consists of clear glass when held up to the light. The fragments are mostly thin-walled in thickness (less than 1.5mm). The majority of the window glass does not justify commenting upon here and Table 1 shows where it was

found in the archaeological deposits. The largest piece of window pane was noted in deposit [246] and it is in a fragmentary state, although conjoining fragments are present. This window pane appears olive green in colour and is thin walled.

Distribution

Context	Phase	Size	No. Frags	ENV	Weight (g)	Forms	Spot date
0			1	1	21	English wine bottle	
201	10	S	3	2	118	English wine bottle, including early cylindrical-type	*c*. 1740–1850
203	Modern	S	3	3	24	Bottle, cylindrical, vessel glass	18th-19th century
208	-	S	1	1	1	Window pane	18th-19th century
222	10	S	3	3	39	Cylindrical bottle, English wine bottle, window pane	18th-19th century
246	8	S	9	3	29	Window pane	18th-19th century
246	8	S	1	1	1	Window pane	18th-19th century
248	-	S	1	1	7	Vessel glass (burnt)	18th-19th century
260	9.1	S	1	1	7	Vessel glass (burnt)	18th-19th century
279	9.2	S	1	1	20	English wine bottle, mallet-type,	*c*. 1725–1760
281	9.1	S	1	1	1	Window pane	18th-19th century
305	7	S	1	1	2	Window pane	18th-19th century
308	10	S	4	3	33	English wine bottle, mallet-type, window pane	*c*. 1725–1760
324	6	S	3	1	10	Window pane	18th–19th century
333	6	S	3	1	10	Window pane	18th–19th century
361	6	S	1	1	12	Cylindrical bottle	1810+
378	5.2	S	1	1	1	Vessel glass	18th - 19th century

Table 1. FRR17: Distribution of the glass showing what forms are present in each context. S: small, M: Medium, L: large (sized assemblages)

The glass assemblage was recovered from Phases 5.2–10 and its distribution is shown in Table 1.

Significance and Potential of the collection and recommendations for further work

The glass has some significance at a local level. The glass types and forms are typical for the post-medieval period in the London area. None of the glass can be related to activities specifically related to the mill and appear to be associated with domestic occupation at the site. Of interest are the fragments of burnt or heat-altered glass in contexts [248] and [260] which may relate to destructive fires at the mill,

though these are in mid 18th -century contexts and too early to be the result of the documented fires recorded as having taken place in 1788 and 1798 (Emery et al 2016). The potential of the glass is to date the features it occurs in. None of the glass merits illustrating. The contexts containing the burnt glass have the potential to be correlated with known documented fires at the mill. A short publication report is recommended on the glass.

Bibliography

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APPENDIX 5: CLAY TOBACCO PIPE ASSESMENT

Chris Jarrett

Introduction

A small sized assemblage of clay tobacco pipes was recovered from the site (half of a standard finds box). Most fragments are in a fairly good condition, indicating they had not been subjected to too much redeposition or were deposited soon after breakage. Clay tobacco pipes occur in nineteen contexts as small (under 30 fragments) sized groups.

All the clay tobacco pipes (42 fragments, of which two are unstratified) were recorded in a database format and classified by Atkinson and Oswald's (1969) typology and prefixed AO, while the 18th-century types are according to Oswald (1975) and prefixed OS. The pipes are further coded by decoration and quantified by fragment count. The tobacco pipes are discussed by their types and distribution.

The Clay Tobacco Pipes

The clay tobacco pipe assemblage from the site consists of 23 bowls, sixteen stems and three mouthparts. The clay tobacco pipe bowl types are dated from the early 17th century to *c*. 1800. The stems have been broadly dated according to their thickness and more so the size of the bores.

Early 17th century

A bowl, which could not be confidently assigned to a type, survives as mostly the heel and the stem. On the underside of the heel is a poorly impressed circular wheel stamp in relief and at least seven spokes are visible (SF 56). The stamp cannot be reliably assigned to the Museum of London Archaeology catalogue of Clay tobacco pipe maker's marks from (London http://webarchive.nationalarchives.gov.uk/20090418203932/http://www.museumoflondon.org.uk/claypipes/index.asp). Wheel stamps occur mostly on London bowl types dated *c*. 1610–1660 and more so before *c*. 1640. The bowl appears to be residual in context [305] and was found with a mouthpart dated to after *c*. 1730.

1680-1710

AO20: one tall heeled bowl with a rounded profile and a quarter milling of the rim, which appears more like an uneven scored line on the back of the bowl and the item has a poor burnish. Context [224]

AO21: one tall splayed heel bowl, more angled than the norm and with a rounded front and a straight back. The bowl shows no evidence of milling and has an average burnish and is partially covered in a mortar deposit. Contexts [286]

Non-local

A tall heeled bowl that is similar to the smaller London AO18 shape with straight sides, except the underside of the oval heel is noticeably angled. The bowl is absent of milling on the rim and has an average finish. Context [286]

1730–1780

OS12: seven upright heeled bowls with a rounded front and straight back and thin stems. Six of the bowls were recovered from deposit [246], of which one is fragmentary and survives mostly as a heel and a stem, while a single bowl was noted in deposit [279]. Six of the bowls have makers' marks on the sides of the heels:

Crowns on the side of the heels: One bowl (context [246], SF 42)

O .: one bowl with a circle on the left side of the heel and a dot on the right side, although these marks are not very clear: One bowl (context [246], SF 41)

R H: one bowl, although the R is not well defined and possibly could be a B (context [246], SF 46). There are no clay tobacco pipe makers currently documented with these initials who could have made this bowl

S W: one bowl in a fragmentary state (context [246], SF 43). A contemporaneous pipe maker who could have made this bowl is not yet documented

W W: two bowls (context [246], SF 44, context [249], SF 55). A possible maker for this bowl is William Wilder, 1717–63, Whitecross St., Islington (Oswald 1975, 149)

OS22: six spurred bowls with a rounded angular front and a straight back. Three examples were noted in context [246], two examples are recorded in deposit [285] and a single example was found in deposit [279]. These bowls tended to be in a fragmentary state and those from deposit [246] tended to have a rust-like deposit on the external surfaces and possibly resultant from a post-firing high temperature. Two of the bowls are maker marked:

W S: one bowl (context [279], SF 54). There are a few possible documented pipe makers for this bowl and they include William Smith, 1781, St. Andrew, Holborn and William Showell, Whitecross St., Islington (Oswald 1975, 146)

T W: one bowl (context [246], SF 53). Possible pipe makers for this bowl are Thomas Wood, 1763-*c.*1800, Whitecross St., Islington and Thomas Ward (? 2), died 1763, Shoreditch (Oswald 1975, 149).

1730–1800

AO26: two spurred bowls that are too damaged to assign to either the OS22 or OS23 shape. One bowl was recorded in [252] and the other example is maker marked:

W ?: one bowl where the family name is damaged (context [286], SF 45)

OS23: one spurred bowl with a rounded front and a straight back and this is in a damaged condition (context [285])

Unidentified bowls

There are three other bowls that are too fragmentary to assign to a type, although they have characteristics that are broadly datable. The earliest example survives as the lower part of a rounded bowl, a spur and a thick stem with a medium-wide bore and was either an AO15 or the successive AO19 shape, which are dated 1660–1680 and 1680–1710 respectively (context [311]). Deposits [246] and [260] each produced bowl rim fragments that are characteristic of 18th-century pipes.

The stems

All of the stems were plain and those that were usually thick and with a pertinent wider bore were broadly dated *c.*1580–1700 or to the 17th century. These types of stem were only present in contexts [268], [322] and [332]. Thick stems with finer bores were assigned an 18th-century date and were the latest datable items in deposits [267] and [362]. Thin stems with fine bores were given a general date of *c*. 1730–1910 and these were the latest datable items present in contexts [208], [222], [235], [243] and [285].

The mouth parts

The three mouthparts are all thin with fine bores and are dated to after *c*. 1730 (see Table 1). All of the mouth parts have a bevelled finish (context [91] and [285]), although the example from deposit [305] is only slightly bevelled.

Distribution

Context	Phase	Size	No. Frags	Context ED	Context LD	Part/bowl types (makers)	Spot date
78	-	S	1	1580	1910	Stem	1730–1910
91	-	S	1	1580	1910	Mouthpart	1730–1910
208		S	4	1580	1910	Stems	1730–1910
222	10	S	1	1580	1910	Stem	1730–1910
224		S	1	1680	1710	X1 bowl: AO20	1680–1710
235	9.2	S	1	1580	1910	Stem	1730–1910
243		S	2	1580	1910	Stems	1730–1910
246	8	S	9	1730	1780	x 9 bowls: x5 OS12 (x1O., SF 41; x1 with crowns on the heel, SF 42, x1 S W, SF 43, x1 W W, SF 44); x3 OS22 (x1 T W, SF 53); x 1 unidentified	1730–1780
252	8	S	1	1730	1800	x1 bowl: AO26	1730–1800
260	9.1	S	2	1730	1780	x2 bowls: x1 OS12 (R H,SF 46), x 1 unidentified	1730–1780
267	9.2	S	2	1580	1910	Stems	18th century
268	9.2	S	1	1580	1910	Stem	1580–1700
279	9.2	S	2	1730	1780	x2 bowls: OS12 (R H, SF 46, W W, SF 55); X1 OS22	1730–1780
285	8	S	5	1760	1800	x3 bowls: x2 OS22; x1 OS23, x1 stem, x1 mouthpart	1760–1780
286	7	S	3	1730	1800	x3 bowls: x1 AO21; x1 ao26 (? W, SF 45); x 1 unidentified (non-local tall AO18 type)	1730–1800
305	7	S	2	1580	1910	x1 bowl: unidentified (relief ?seven spoke wheel stamp, SF 56) x1 stem	1730–1910
311	7	S	1	1580	1910	x 1 bowl: unidentified (Ao15/AO19)	1660–1710
322	7	S	1	1580	1910	Stem	1580–1700

Context	Phase	Size	No. Frags	Context ED	Context LD	Part/bowl types (makers)	Spot date
332	9.2	S	1	1580	1910	Stem	1580–1730
362	6	S	1	1580	1910	Stem	18th century

Table 1. FRR17. Distribution of the clay tobacco pipes, showing which contexts contain clay tobacco pipes, the phase it occurs in, the size of the group, the number of fragments, the *terminus ante/post quem* (Context ED/LD) for the latest pipe and its suggested deposition.

Table 1 shows the distribution of the clay tobacco pipes, showing the phase, size of the group, number of fragments, the date range of the latest bowl, the types of bowls present, together with a spot date for each context the tobacco pipes occur in. The material was found in Phases 6–10 dated deposits. Where stems were the only clay tobacco pipe material found in a context then these were given a broad date range based upon the thickness of the item and the size of the bore.

Significance of the Collection

The clay tobacco pipe assemblage has some significance at a local level and the bowl forms present are generally typical for the London area. However, the non-local bowl (a tall variant AO18 shape) found in deposit [286] indicates a possible visitor from outside of London to the site. It is also interesting that a small number of mid 18th-century marked bowls cannot be assigned to possible local makers. It may be that these master pipe makers have not yet been documented or that the bowls represent non-local items and were possibly the possessions of visitors or workers to the mills. The River Lea, upon which the site was located, may have provided the transport route for the movement of the pipes and their owners. Other mid-late 18th-century marked pipes indicate that pipe makers working on Whitecross Street, Islington, may have been supplying the area with clay tobacco pipes. Of note is that a small number of bowls show evidence of being subjected to a high temperature, particularly those found in deposit [246] which may relate to documented fires that destroyed the mill. Archaeological clay tobacco pipe assemblages from the area of Haringey appear to be rare and therefore this assemblage adds to an understanding of clay tobacco pipe studies in the borough. None of the clay tobacco pipes show evidence for their manufacture on the site.

Potential

The clay tobacco pipes have the potential to date the contexts they were found in. The condition of some of the pipes may relate to destructive fires at the mill priory to the mid 18th century. The pipes also possibly demonstrate what was marketed to this area of Haringey and also visitors to the mill.

Recommendations for further work

A short publication report is required on the clay tobacco pipes and five bowls are recommended for illustration to supplement the text. Research should be undertaken in order to identify, firstly, the possible local pipe makers who may have made the OS12 R H and S W marked bowls and secondly, the possible source of the non-local bowl from context [286].

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APPENDIX 6: METAL AND SMALL FINDS ASSESSMENT

Märit Gaimster

In total, around 150 individual metal and small finds were recovered from the excavations; they are listed in the table below. Finds were recovered from all designated phases of site use and development, except Phase 3. They will be discussed by phase below.

Phase 5.1: 1580–1600

This phase produced eleven finds, all except one comprising iron nails or likely such. An incomplete iron fitting (SF 52), formed by a flat sheet tapering into an arm at the remaining edge, is possibly the remains of a rectangular-mouth spade iron. An almost identical fragment was recovered from Phase 5.2, below.

Phase 5.2: 1580–1600

Phase 5.2, associated with the construction of Building 2, produced the largest individual assemblage of metal and small finds, with thirty-four objects recorded. Virtually all these finds, however, were retrieved from dumped layers forming the levelling horizon for the building. Hence the finds are likely to be residual and possibly originate from areas outside the site. The assemblage is dominated by seventeen nails along with some heavily corroded possible iron fittings, but also includes some diagnostic objects. Notable are two copper-alloy buckles of a characteristic type (SF 34 and 37). The buckles are of double-loop form, with lobed knops at either end of the central strap bar; the loops are decorated with a single moulded rosette on the outer frame. Buckles of this type are frequently found in contexts dating from the period c. 1550–1650 (cf. Cunningham and Drury 1985, fig. 26 nos 11-12; Margeson 1993, fig. 17 no. 174; Whitehead 2003, 66 no. 407), although they may represent a particularly characteristic 16th-century type (cf. Egan 2005, fig. 17 no. 88). One of the buckles carries the remains of a now-black coating, originally a reddish-brown varnish that was fashionable on dress accessories at the time (Egan and Forsyth 1997, 217). Another characteristic dress accessory of the early modern period is represented by the remains of two heavily corroded copper-alloy lace-chapes (SF 39; cf. Egan 2005, 52–53; Margeson 1993, 22). These finds reflect well the development of the area as a fashionable retreat for Londoners, leasing large houses here from the end of the 16th century, reflecting the presence of well-to-do households (Emery et al. 2016, 15).

Besides dress accessories, some objects relate to buildings and households, notably a possible iron lock plate (SF 57) and three heavily corroded clench bolts (SF 58), likely from a door or other wooden structure. Household furnishings are represented by the rim fragment of a cast bronze vessel (SF38) and a circular domed rivet of copper-alloy (SF 35); this may be an upholstery pin. A thin and heavily

corroded copper-alloy disc may be a jeton, used to calculate sums on a chequer board or cloth (SF36). The use of jetons for this purpose appears to have declined by the mid-17th century as gradually Arabic numerals were introduced (Egan 2005, 172). There are also remains of a possible rectangular-mouth spade iron (SF 51; cf. SF 52, above) and a possible iron-working tool in the form of a sett or chisel (SF 66).

Phase 6: mid- to late 17th century

Thirteen metal and small finds came from Phase 6 contexts, dominated by iron structural fittings in the form of nails and an incomplete staple (SF 50). A single dress accessory is presented by a small solid-cast biconvex button of copper-alloy (SF 30). The surface shows traces of tinning, or possibly suggesting a gunmetal composition, and there are traces of a simple iron wire loop for fastening at the back. The button has parallels from mid-17th-century contexts (cf. cf. Egan 2005, fig. 33 no. 209). It was recovered from the area of Room 2, in the SW part of Building 2. A copper-alloy coin from the same context, a probable counterfeit halfpenny of George II or George III (c. 1760–1797), is intrusive (SF 31). However, a copper-alloy farthing token, residual in a Phase 10 context, dates from this period (SF 28). It was retrieved from a robber trench cut. In response to the shortage of official small change at the time, tens of thousands of private tokens like this were in circulation between c. 1648–1673 (Dickinson 1986, 4–15). The tokens, predominantly farthings, were minted for tradesmen and shopkeepers, above all keepers of inns, alehouses and taverns. The Hale Wharf issue shows the device of an angel holding a scroll and is inscribed THE ANGELL TAVERN (obverse) IN FANCHVRCH STREETE (reverse). It carries the initials W B, which likely represents the keeper of The Angel Tavern in Fenchurch Street. While this particular token does not carry a minting date, it does show design features characteristic of pre-Restoration token issues of David Ramage (d.1662); this would give it a date to the period 1648–c.1664 (M. Andrews pers comm).

Phase 7: mid- to late 17th century

Phase 7 produced twelve finds, consisting of mostly incomplete and heavily corroded iron nails and a strap fragment.

Phase 8: early 18th century

Sixteen finds came from this phase. Besides numerous iron nails and other fittings, dress accessories were also retrieved in the form of three livery or blazer buttons (SF 18–20). All three, recovered from drain [251], have a cone-shaped seating for the wire shank at the back, characteristic of 18th-century buttons (cf. Noël Hume 1969, fig. 23 type 8). A copper-alloy fitting, consisting of an oval-section pin body with thickened, moulded ends, now twisted out of its original shape, is likely a small drop handle

from a cabinet or chest of drawers (SF 25). This object came from the bedding layer for cobbled surface [288].

Phase 9.1: late 18th/early 19th centuries

Sixteen metal and small finds were associated with the construction of Building 5. Besides iron nails, further dress accessories came from this phase in the form of two incomplete blazer or livery buttons (SF 21 and 27); a third button may be represented by a heavily corroded copper-alloy disc (SF 10). There is also a small and narrow oval link or buckle of copper-alloy with a D-section frame (SF 15). A further possible spade iron with a rectangular mouth was also recovered from this phase (SF 59).

Phase 9.2: late 18th/early 19th centuries

Only ten finds came from this phase, almost all nails or undiagnostic iron fittings. During this phase Building 6 was constructed. A copper-alloy coin (SF 24), probably a late 18th/early 19th-century half-penny, was retrieved from bedding layer [279]; a copper-alloy cap, possibly from a composite button, came from floor [226].

Phase 10–11: mid-19th century to modern

Thirty-three finds were collected from contexts that represent the abandoning of the mill after a fire in 1860, and so may be largely residual. Alongside numerous nails and undiagnostic fittings are the remains of at least one door strap hinge (SF 61) and an iron lock plate (SF 60). Among finds from burnt layer [209], probably remainders of the fire, were a fragment of iron saw blade (SF 62) and the blackened fragments of a woollen rug or matting. Two copper-alloy coins were retrieved from demolition layer [202] (SF 13–14); both are likely counterfeit halfpennies of George II or George III (c. 1760–1797).

Significance and recommendations for further work

The metal and small finds from Hale Wharf provide some insight into the construction and use of mill buildings on the site in the late 16th to mid-19th centuries. Identifiable finds are chiefly in the form of small dress accessories, iron structural fittings and tools and implements such as possible spade irons, a metalwork sett or chisel and a saw blade. Of particular interest is a private farthing token, minted for an inn keeper in Fenchurch Street in the City and providing evidence of the use and circulation of small change in the mid- to late 17th century.

Metal and small finds potentially provide key elements of domestic material culture and activities related to the investigated site, and relevant objects should be included in any further publication of the site. For this purpose, some finds will require x-raying and further identification. These recommendations are included in the table of finds below. Following publication, iron nails and undiagnostic metal may be discarded.

PHASE	CONTEXT	SF	DESCRIPTION	POT DATE	NO. ITEMS	RECOMMENDATIONS
PH 05.1	354	bulk	Iron ?nail; heavily corroded; L 150mm	1550-1650	1	x-ray
PH 05.1	391	bulk	Iron nails; two incomplete and heavily corroded; one L 170mm+	1550-1650	2	discard
PH 05.1	391	52	Iron fitting; incomplete of slightly domed sheet/plate; curved and narrowed into arm at one end; W 25-35mm; L 105mm+; possibly remains of rectangular-mouth spade iron	1550-1650	1	x-ray
PH 05.1	393	bulk	Iron nails; three incomplete and heavily corroded	1580-1700	3	discard
PH 05.1	401	bulk	Iron nails; two heavily corroded; L 65mm	1550-1650	2	discard
PH 05.1	401	bulk	Iron ?nails; two heavily corroded pieces; L 55 and 65mm	1550-1650	2	x-ray
PH 05.2	385	bulk	Iron nails; six heavily corroded; two complete; L 62 and 80mm	1580-1600	6	discard
PH 05.2	385	bulk	Iron sheet; fragment only	1580-1600	1	x-ray
PH 05.2	385	bulk	Iron strap; incomplete and heavily corroded; W 10mm; L 60mm+	1580-1600	1	x-ray
PH 05.2	385	34	Copper-alloy double-loop buckle; complete with lobed knops at either end of strap bar, and moulded rosettes on the loops; W 20mm; L 45mm	1580-1600	1	x-ray
PH 05.2	385	35	Copper-alloy rivet of domed sheet; diam. 15mm; pin L 10mm+	1580-1600	1	x-ray
PH 05.2	385	36	Copper-alloy ?jeton; thin and very heavily corroded disc; diam. 24mm	1580-1600	1	x-ray
PH 05.2	385	38	Bronze vessel; fragment only, with straight thickened rim tapering inwards; W 40mm; L 45mm	1580-1600	1	x-ray

PHASE	CONTEXT	SF	DESCRIPTION	POT DATE	NO. ITEMS	RECOMMENDATIONS
PH 05.2	385	39	Copper-alloy ?lace-chapes; two heavily corroded; L 26mm	1580-1600	1	x-ray
PH 05.2	385	bulk	Copper-alloy ?sheet/vessel; fragment only; W 18mm; L 35mm	1580-1600	1	x-ray
PH 05.2	385	48	Copper-alloy ?ring/buckle; curved fragment only; gauge 3.9mm; L 20mm+	1580-1600	1	x-ray
PH 05.2	385	51	Iron fitting; incomplete of slightly domed sheet/plate; curved and narrowed into arm at one end; W 25-35mm; L 95mm+; possibly remains of rectangular-mouth spade iron	1580-1600	1	x-ray
PH 05.2	390	bulk	Iron nails; five incomplete and heavily corroded	1580-1600	5	discard
PH 05.2	390	57	Iron ?hasp- or lock plate; incomplete and heavily corroded; plate with remains of wood on back, and ?bolt on front; W 70mm+; L 150mm+	1580-1600	1	x-ray
PH 05.2	390	58	Iron clench bolts; three heavily corroded; two near-complete; L 40 and 55mm	1580-1600	3	x-ray
PH 05.2	390	bulk	Iron ?fitting; heavily corroded flat amorphous piece; W 30-50mm; L 125mm	1580-1600	1	x-ray
PH 05.2	395	bulk	Iron nails; six incomplete and heavily corroded	1600-1650	6	discard
PH 05.2	395	37	Copper-alloy double-loop buckle; complete with lobed knops at either end of strap bar, and moulded rosettes on the loops; W 25mm; L 50mm; remains of now-black coating	1600-1650	1	x-ray
PH 05.2	400	66	Iron ?sett/chisel; incomplete with tapering flat rectangular body and ?burred head; L 75mm+	1480-1600	1	x-ray
PH 06	333	bulk	Iron nails; four incomplete and heavily corroded	1580-1600+	4	discard
PH 06	333	bulk	Iron ?strap; two heavily corroded pieces; W 17mm; L 75 and 130mm	1580-1600+	1	x-ray
PH 06	361	bulk	Iron nail; corroded with slim shaft; L 70mm	1580-1650	1	discard

PHASE	CONTEXT	SF	DESCRIPTION	POT DATE	NO. ITEMS	RECOMMENDATIONS
PH 06	361	bulk	Iron ?strap; heavily corroded and tapering piece; W 30mm; L 120mm+	1580-1650	1	x-ray
PH 06	362	30	Copper-alloy button; highly corroded solid cast bi-convex form with traces of ?tinned surface; remains of ?iron wire loop at back ; diam. 12mm	1550-1600	1	x-ray
PH 06	362	31	Copper-alloy coin; highly corroded; diam. 26mm; George II-George III ?counterfeit halfpenny c. 1760-1797	1550-1600	1	x-ray
PH 06	362	32	Copper-alloy wire; short curving length only; gauge 2mm; L 40mm+	1550-1600	1	x-ray
PH 06	362	33	Copper-alloy ?fitting; thin shallow domed sheet disc with rectangular central opening; diam. 25mm	1550-1600	1	x-ray
PH 06	367	50	Iron staple; U-shaped but incomplete and heavily corroded ; W 40mm; L 55mm+		1	x-ray
PH 06	392	bulk	Iron nail; incomplete and heavily corroded		1	discard
PH 07	286	bulk	Iron nails; three incomplete and heavily corroded	1480-1650	3	discard
PH 07	311	bulk	Iron nails; two incomplete and heavily corroded	1480-1600	2	discard
PH 07	311	bulk	Iron strap; heavily corroded fragment only; W 25mm; L 65mm+	1480-1600	1	x-ray
PH 07	311	bulk	Iron ?nail; substantial and heavily corroded, gently curved and slightly twisted body; L 175mm	1480-1600	1	x-ray
PH 07	313	bulk	Iron nail; incomplete and heavily corroded	1480-1600	1	discard
PH 07	322	bulk	Iron nail; incomplete and heavily corroded	1580-1610+	1	discard
PH 07	322	bulk	Iron nail; incomplete and heavily corroded	1580-1610+	1	discard
PH 07	322	bulk	Iron ?nail; long tapering strap/shank; heavily corroded ; L 100mm+	1580-1610+	1	x-ray

PHASE	CONTEXT	SF	DESCRIPTION	POT DATE	NO. ITEMS	RECOMMENDATIONS
PH 07	322	bulk	Iron ?nail; long tapering strap/shank; heavily corroded ; L 100mm+	1580-1610+	1	x-ray
PH 08	246	bulk	Iron nails; five incomplete and heavily corroded		5	discard
PH 08	246	17	Copper-alloy ?buckle frame; curved and tapering flat-cast fragment only, with raised ribs along both edges; W 7-10mm; L 22mm+		1	x-ray
PH 08	246	18	Copper-alloy button; heavily corroded and incomplete disc; remains of cone for fastening on the back; diam. 18mm		1	x-ray
PH 08	246	19	Copper-alloy button; heavily corroded domed disc; remains of cone and loop for fastening on the back; diam. 15mm		1	x-ray
PH 08	246	20	Copper-alloy button; heavily corroded and incomplete domed disc; remains of cone and loop for fastening on the back; diam. 15mm		1	x-ray
PH 08	252	bulk	Iron plate; cast rectangular piece; heavily corroded; W 55mm; L 75mm		1	x-ray
PH 08	269	26	Iron fitting; knife-like cast long triangular body, extended along one edge into square-section pin/tang; W (top) 23mm; full L 165mm		1	x-ray
PH 08	285	bulk	Iron nails; four heavily corroded; two complete; L 63 and 80mm	1480-1600	4	discard
PH 08	285	25	Copper-alloy fitting; oval-section pin/wire body with thickened, moulded ends; now twisted out of original shape; gauge 3mm; L 100mm	1480-1600	1	x-ray
PH 09.1	200	10	Copper-alloy ?button; heavily corroded disc; diam. 23mm		1	x-ray

PHASE	CONTEXT	SF	DESCRIPTION	POT DATE	NO. ITEMS	RECOMMENDATIONS
PH 09.1	200	12	Copper-alloy ?disc; three heavily corroded pieces; diam. 22mm		1	x-ray
PH 09.1	200	15	Copper-alloy ?buckle; narrow oval D-section frame; W 32mm; L 18mm		1	x-ray
PH 09.1	253	23	Copper-alloy ?button; heavily corroded fragment only		1	x-ray
PH 09.1	260	21	Copper-alloy button; heavily corroded disc with remains of cone and loop for fixing at the back; diam. 18mm	1590-1750	1	x-ray
PH 09.1	260	bulk	Iron nail; incomplete and heavily corroded	1590-1750	1	discard
PH 09.1	265	bulk	Iron nails; three incomplete and heavily corroded	1780-1790+	3	discard
PH 09.1	274	bulk	Copper-alloy ?fitting; heavily corroded amorphous lump; W 15-30mm; L 95mm		1	x-ray
PH 09.1	292	27	Copper-alloy button; incomplete and corroded with raised cone for loop at the back; diam. 16mm		1	x-ray
PH 09.1	294	59	Possible spade iron; incomplete with part of rounded corner for rectangular mouth, and flat side arm; W 170mm+; mouth ht. 80mm+	1670-1800	1	x-ray
PH 09.1	306	bulk	Iron nails; four heavily corroded; two complete; L 110 and 165mm	1580-1650	4	discard
PH 09.2	226	bulk	Iron structural fitting; incomplete and heavily corroded; substantial square-section bar; undiagnostic; W 40mm; L 620mm+		1	discard
PH 09.2	226	26	Copper-alloy ?button/cap; disc with shallow vertical edge; diam. 17mm		1	x-ray
PH 09.2	250	bulk	Iron nail; incomplete and heavily corroded		1	discard

PHASE	CONTEXT	SF	DESCRIPTION	POT DATE	NO. ITEMS	RECOMMENDATIONS
PH 09.2	256	bulk	Iron ?fitting; incomplete and heavily corroded; slightly curved strap with solid ?round-section element at one end; strap W c 45mm; L 210mm+		1	x-ray
PH 09.2	268	bulk	Iron ?fitting; heavily corroded rectangular piece; W 45mm; L 65mm		1	x-ray
PH 09.2	279	bulk	Iron nails; two incomplete and heavily corroded		2	discard
PH 09.2	279	24	Copper-alloy coin; heavily corroded; diam. 27mm; late 18th/early 19th-century ?halfpenny		1	x-ray
PH 09.2	291	bulk	Iron nail; incomplete and heavily corroded	1480-1600	1	discard
PH 09.2	332	bulk	Iron ?fitting; heavily corroded flat piece, with angled end; W 20mm; L 95mm		1	x-ray
PH 10	202	bulk	Copper-alloy ?object; three amorphous lumps		1	x-ray
PH 10	202	bulk	Iron ?nail; substantial and heavily corroded, with blunt or cut end; one L 155mm		1	x-ray
PH 10	202	13	Copper-alloy coin; thin and heavily corroded; diam. 26mm; George II-George III ?counterfeit halfpenny c. 1760-1797		1	x-ray
PH 10	202	14	Copper-alloy coin; thin and heavily corroded; diam. 27mm; George II-George III ?counterfeit halfpenny c. 1760-1797		1	x-ray
PH 10	209	62	Iron saw blade; fragment only; W 22mm; L 50mm+		1	x-ray
PH 10	209	bulk	Rug or matting of woven wool on ?linoleum backing; three partly carbonised pieces		1	
PH 10	209	bulk	Iron nails; eight incomplete and heavily corroded; L 140mm+		8	discard
PH 10	222	bulk	Iron nails; three heavily corroded; two complete; L 145 and 215mm		3	discard

PHASE	CONTEXT	SF	DESCRIPTION	POT DATE	NO. ITEMS	RECOMMENDATIONS
PH 10	222	bulk	Iron fitting; incomplete; heavily corroded strap with ?circular finial; W 17mm; L 80mm+		1	x-ray
PH 10	222	61	Iron ?strap hinge; four heavily corroded tapering pieces, representing at least two separate items; one piece with looped terminal for pivot; W 35mm; L 130-250mm		2	x-ray
PH 10	222	60	Iron ?lock plate; heavily corroded; W 70mm; L 110mm		1	x-ray
PH 10	308	bulk	Iron nails; eleven heavily corroded; L 70-150mm+	mid-/late 19th cen-tury	11	discard
PH 10	308	28	Copper-alloy farthing token; obverse angel holding a scroll, with THE ANGELL TAVERN around; reverse the initials W B, with IN FANCHVRCH STREETE around; diam. 15mm; (M. Andrews pers comm) design features characteristic of the pre-Restoration token issues of David Ramage (d.1662), therefore securely as-signed to the period 1648–c.1664.	mid-/late 19th cen-tury	1	
PH 11	203	bulk	Iron strap; incomplete and heavily corroded; one end with central perforation for fixing; W 65mm; L 265mm+; hole diam. 10mm		1	further identify

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APPENDIX 7: BUILDING MATERIAL ASSESMENT

Amparo Valcarcel

Introduction and Aims

Eight crates of ceramic building material, mortar and stone were retained from the Hale Wharf, Ferry Lane, Tottenham (FRR17).

This medium sized assemblage (589 examples, 298.61 kg) was assessed in order to:

- Identify (under binocular microscope) the fabric and forms of the medieval and post-medieval ceramic building material recovered from FRR17.
- Identify the fabric and form of whole bricks and mortar used in the post-medieval structures from FRR17.
- Identified the different construction phases of the building
- Identify the fabric of the unworked and worked stone in order to determine what the material was made of and from where it was coming from.
- Make recommendations for further study.

Methodology

Two site visits were conducted to examine the date and form of some structures of post-medieval date. Two whole brick samples were taken from each structure in accordance with the Pre-Construct Archaeology Ltd building material sampling guidelines.

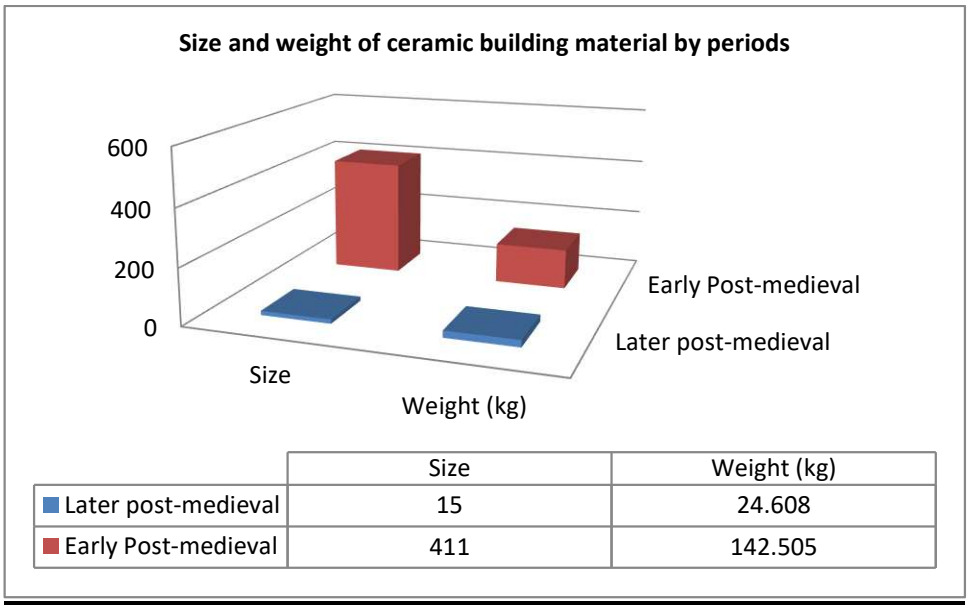
The application of a 1kg mason's hammer and sharp chisel to each example ensured that a small fresh fabric surface was exposed. The fabric was examined at x20 magnification using a long arm stereomicroscope or hand lens (Gowland x10). The appropriate Museum of London building material fabric code is then allocated to each item.

A limited number of masonry samples were also collected as well as the *in-situ* recording from selected groups of post-medieval structures. Most of the surviving masonry contexts were found in three phases of the site (phases 6, 9.1 and 9.2), however building material was also recovered from layers and dump deposits, mostly consisting of post-medieval roof tiles and brick fragments.

Ceramic Building Material[1] (426 examples, 167.16 kg)

More than 85% (by weight) of the assemblage consists of early post-medieval ceramic building material, with much smaller quantities of late post-medieval and modern (8.21%). (Fig. 01).

[1] Excluding stone and mortar



	Size	Weight (kg)
Later post-medieval	15	24.608
Early Post-medieval	411	142.505

Fig. 01 Size and weight (kg.) of Ceramic Building Material by periods excluding stone and mortar.

EARLY POST-MEDIEVAL (411 examples, 142.5 kg)

Condition and distribution

A large assemblage of brick was recovered from phases 4 and 8, all of which were found to be from local clays of the red sandy fabric (FFR01). The earliest bricks with any quantifiable dimensions came from 1500 to 1700. Some fabrics were still manufactured until the 19th century, so probably some of these fabrics are late post-medieval. Most of the early post-medieval building material is in a good condition, preserved by the remaining structures. There are contexts which have large quantities of early material throughout the site, mainly reused in late post-medieval structures. Their condition is generally good. There is an exceptionally high proportion of roofing tile (66.66%) and bricks (46.02%) with only two examples of floor tile and three fragments of wall tile.

Bricks (69 examples, 122.14 kg)

Local London sandy red fabrics [1450-1700]

FFR01; 43 examples, 9.37 kg.
3046; 11 examples, 14.22 kg.

3065; 3 examples, 8.34 kg.

Three different sandy red brick fabrics were identified; the very sandy red 3046 and fabric 3065 which contains burnt flint, very common at London City. Fabric FFR01 is a very fine sandy fabric with occasional fine quartz and moderate black iron oxide. This fabric was identified in several structures in the site, and it seems that could be a local production. The bricks made of FFR01 are hand-made, wider, sometimes with sunken margins and are always stratigraphically associated to the earliest phases of the mill. Tudor bricks (3046;3065) were irregular in size and shape. The largest proportion of bricks are shallow (51-59mm), wide (104-117mm) and unfrogged, and they have sunken margins which are a common characteristic of such bricks. They were by far the most common fabric in London from the mid 15th century to 1666. All were manufactured for use in the City use from local London brick clay. The early post-medieval structures were bonded with three different mortar types associated with different phases (T1, T2 and T3). Some of these bricks are reused and bonded with 18th and 19th century mortar.

3036, Flemish, cream-yellow hard bricks of uniform colour and texture (1600-1800), (12 examples, 5.79 kg.)

A cluster of these Flemish bricks were collected from different features. Normally this kind of brick was laid on edge in a herringbone pattern to form a hard-wearing surface.

Peg tiles (45 examples 5.51 kg)
2276 (1480-1900)

Peg tiles belonging to the sandy red fabric 2276, are very common post- medieval roofing tile (45% by size, 49.87% by weight). All the fragments were unglazed. Peg tiles were used sometimes for levelling the bricks on the walls as seen in the collapsed wall [305]. Overlapping, flat rectangular peg tiles attached to roofing by two nails (as represented by two nail holes, with both round and square holes) are the most common post-medieval roofing form found on this site.

Floor tile (2 examples, 3.06 kg)

"Flemish" silty Floor Tiles, 22 examples, 12.10 kg.

1977 (1450-1800), 1 example, 518 g.
2850 (1450-1800), 1 example, 2.54 kg.

A small number of unglazed Flemish silty floor tiles were recovered. Floor tile [354] with sharp arises and unglazed indicate a late date (1600-1800).

2279 Pan tiles (1630-1850), (239 examples, 11.74 kg.)

The assemblage is dominated by pan tiles (56.1%). This curved, nibbed roofing tile which came into use during the mid 17th century. The large number of peg tiles recovered from different features suggests a rebuilding of the roofing from 1630 onwards, possibly associated with one of the major fires or flooding damage that affected the mill.

LATE POST-MEDIEVAL (15 examples, 24.53 kg)

A smaller quantity of machine-made bricks, dated mid 19th and 20th century were preserved in some structures, especially post Great fire materials and late local sandy red bricks. These were bonded with a hard mortar. A cluster of tin-glazed wall tile dated between mid 17th and mid 18th century were found, including one portraying a biblical series.

Post Great Fire bricks (12 examples, 24.6 kg)

3032R-3034 (1666-1900) *Post Great Fire purple and yellow clinker rich fabric*

A small group of purple and yellow post great fire bricks were recovered from the site, especially from structures located in the northeast of the site and related to the last phase of building construction. The majority of bricks are narrow and unfrogged. Some have sharp arises suggesting possible machine manufacture. All the examples of deep frogged bricks are bonded with concrete, indicating a modern occupation.

Tin-glazed

3064W; Flemish/Local London wall tiles (3 examples, 75 g.)

There are distinct wall tile designs dated mid 17th to late 19th century. A Dutch fragment from [306] preserved a blue motif, probably from the biblical, landscape and figurative series (1670-1800). The other fragments from [203] and [205] are plain glazed.

MORTAR

A summary of mortar types and concrete as well as their period of use from the excavations at FRR17 are given below (Figure 02).

Mortar/Concrete Type	Description	Use at FRR17
T7	Hard crinkly yellow sandy mortar, concrete (1800-1900)	Used at fabric 3032 and on walls [410] and [4
T6	White hard lime mortar (1800-1900)	Related to fabric 3032 and structure [318]
T5	Hard yellowish lime mortar with small charcoal inclusions (1750-1850)	Bonding fabrics FRR01 and 3032. Found in floor [269]
T4	Mid brownish mortar (1600-1800)	Associated with fabric 3046
T3	Yellowish sandy soft mortar with chalk and sma gravels inclusions (1500-1700)	Used to bonded different fabrics FRR01and 3046 into the wall [312]
T2	Light yellow hard sandy mortar (1500-1700)	Used to bonded fabric FFR17 in structures [3 And [358]
T1	Hard light grey/white mortar (1500-1700)	Used for bonding early post medieval structu [344] [372] [376][378][386], fabrics FFR01, 3033, 1977 and 3065

Fig. 2 List of mortar types identified from the excavation WHM16

The mortar types identified from the excavations at FRR17 provide the basis a simple chronological sub-division of the structures. T6 and T7 mortars were used in the beginning of 19th and early 20th century, associated with frogged machine bricks. Essentially all the early post-medieval structures and fabrics use the same light grey mortar (T1).

STONE (163 examples 131.44 kg)

London and surrounding areas have no indigenous stone; it was an expensive material that would have been transported from various locations and reserved principally on important structures. The main stones used in London were ragstone, chalk and flint. The River Thames remained the principal means of access to the growing city for the transport of building stone up until the development of the railway network in the early 19th century.

A review of the main rock types (9), their geological character, source and probable function/ form are summarised below (Fig 03). A more detailed consideration as to their origin and use of this small assemblage are reviewed below.

MoL fabric code	Description	Geological Type and source	Quantity	Use at FRR17
3105	Fine hard dark grey sandy limestone	Kent ragstone, Lower Cretaceous, Lower Greensand Maidstone	7 examples 30.64 kg	Common construction rubble from context [301] [354] [361]; as ashlar from [361] [380] [400]

MoL fabric code	Description	Geological Type and source	Quantity	Use at FRR17
		District - Kent		
3107a	Fine grained lime low-densit glauconitic limestone	Reigate stone – Upper Greensand, Lower Cretaceous Reigate-Mertsham Surrey	7 examples 43.87 kg	Used as an ashlar [213] [380], Moulded stone [385] and rubble [369] [380] [400]
3112	Purbeck marble	Isle of Purbeck, Dorset Cretaceous	1 example 1.45 kg.	Used as an ashlar [385]
3115	Blue-Green hard fissile slate	Cornish Slate – Devonian Cornwall	2 examples 17 g.	Used as roofing or levelling [291] [395]
3120a	Freshwater shelly quartz	French Burr, Triassic Period, the Marne Valley in Northern France	13 examples, 44.67 kg	Used as a quern stone from [213 [220] [242] [353] [354] [373] [376 [386]
3120b	Black or brownish-black sedimentary rock	Coal, Carboniferous, different sources	131 example 158 g.	Used as fuel recovered in small fragments from [209] [268] [338
3120c	Conglomerate quartz, iron oxide inclusions, mudstones siltstones and thin limestones	Old Red Sandstone, Forest of Dean, Devonian	1 example, 10.34	Used as a saddle quern [220]
3122	Hard yellow-grey calcareous mudstone	Septarian Nodule London Clay Thames basin	1 example 323 g.	Used as rubble [362]

Fig. 3 Table summarising the character, source, quantity and probable function of the main stone types from FRR17

Summary

With at least 9 different lithotypes identified from the post-medieval sequence, the excavations at FRR17 give some idea of the draw on resources that a mill building had in it is construction. The Purbeck marble piece and some Reigate stone, including ashlars and a moulded fragment, appear to be architectural or furniture elements (such as [385]), and probably were reused from another prestigious building.

Kentish ragstone and septarian nodule probably were used in the foundations and in the walls, using a rubble core. The Kentish ragstone from the Maidstone area was transported by boat into London and was very common in medieval and post-medieval masonry construction.

It is probable that Reigate was being used in a medieval building, and was recycled into the mill, as the Purbeck ashlar. Reigate stone was not used for external architecture after the 15th century due to poor weathering properties.

Slate was found in very small fragments, and was probably used for levelling the courses of brick walls, given that all the roofing material recovered from the site was ceramic. Coal was found in small examples and burnt. The presence of coal used as fuel is very common in a mill, due to the needing of

energy for some machines, especially after the Industrial Revolution. Several small fragments were recovered from the fill [338] of hearth [352] in Building 2.

The most interesting pieces from the site are the imported French burr quern stones. This stone is a Triassic Period freshwater quartz and was quarried at the Marne Valley in Northern France. This type of quern was transported in small pieces, embedded in layers of clay and built up of pieces fixed together with heat shrunk iron bands, and cemented and bedded down with mortar, to prevent bursting when the millstones are in use. The stone is white burr and the densest of the type and was often used for the outer parts of the millstone, being more tolerant of the higher speeds in rotation. At some point the mill was using this very expensive stone and making a very high-quality product, probably a fine grade white flour. Around 1835 there was a pronounced change in production to millstones constructed from a number of stone blocks rather than them being of one piece.

A half quernstone, which has long lost any traces of its working function, is an Upper Old Read Sandstone from Forest of Dean. This was reused in the soakaway [220], associated with the last rebuilding phase of the mill. The use of the Forest of Dean stone would have produced a less high-quality flour of a browner colour.

PHASE SUMMARY

The fabric and form of the stone, ceramic building material (peg tile; floor tile; brick) and mortar retained from the Hale Wharf excavations (FRR17), forms the basis of a broad chronological subdivision.

The date ranges represented by the fabrics suggest 4 relatively distinct construct phases at Hale Wharf, beginning with a phase of construction between late 16th and early 17th century (phases 4, 5.1 and 5.2). The second phase of construction is noted at the mid/late of the 17th (phases 6 and 7); followed by the third phase in the early 18th century (phase 8), while other masonry contexts fall into the last phase of development – the late 18th century and the beginning 20th century (phases 9.1, 9.2, 10 and 11). Phase 10 preserved the highest amount of building material, though the stone is over represented by small fragments of coal.

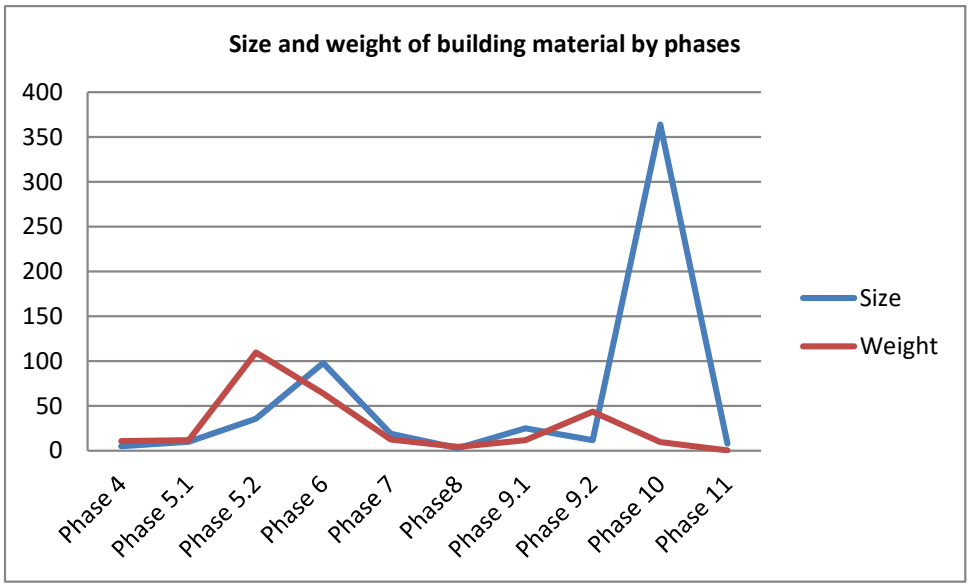


Fig. 4 Comparative between material recovered by phases (by size)

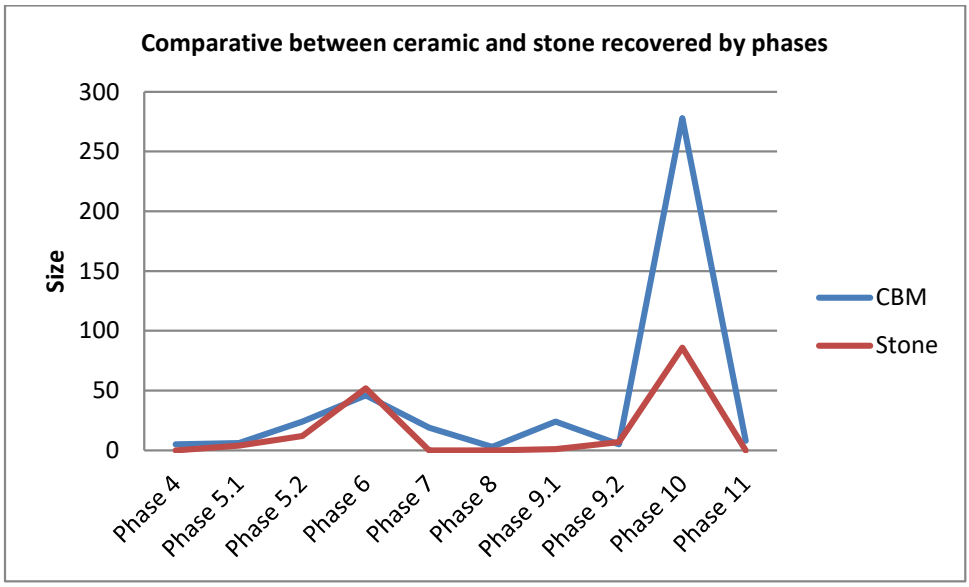


Fig. 5 Comparative between stone and ceramic building material collected from phases (by size)

Phase 1 Natural

No material present

Phase 2 Early Medieval

No material preserved

Phase 3 Late 16th –Early 17th

No material preserved

Phase 4 Late 16th-Early 17th century

A small size of ceramic building material from phase 4 was recovered from FRR17 (5 examples, 10.86 kg). All the material was collected from two structures: a bedding for a wall or foundation [403] related to Building 1 and from the remains of a drain [404]. No stone was recovered. The condition of the material is generally good. Forms noted in the assessed material, only included bricks made of local fabric FFR01. The bricks have sunken margins, are hand-made and their dimensions indicate an early post-medieval date. The structures preserved are the earliest associated with the construction of the mill, within the limits of the excavation depth.

Phase 5.1 Late 16th-Early 17th century

Phase 5.1 still preserved a small quantity of building ceramic (10 examples, 11.85 kg) and all the material came only from the fill [354] of a pit. Bricks are still the predominant form, made of local sandy fabric FFR1 and 3046 and with the presence of imported Flemish brick 3036, indicating at least an early 1600 date. An unglazed Flemish silty floor tile, dated 1300-1500, is the only different form recovered.

Phase 5.2 Late 16th-Early 17th century (36 examples, 109.86 kg)

Phase 5.2 is characterised by a big construction moment in the mill, where several walls were built for Building 2. A large room/space was formed by a L shaped wall [344], divided by internal walls [376] [380] [378] and [372], conforming at least three different spaces (Room, 1, 2, and 3). The homogeneity of the bricks and the mortar indicates that all walls were constructed in one phase. Bricks are the principal form and local fabric FRR01 is still the predominant fabric with the exception of two 3065 sandy red bricks. Flemish yellow bricks 3036, normally used in herringbone floors were collected from made ground [385]. A single unglazed Flemish floor tile is the only form recovered except from bricks.

The use of stone increases slightly from previous phases, and it is important to point out that the all the stone came from walls and foundations. Four examples of French burr quern stones were found reused in walls and foundations, indicating that the mill was active before phase 5. The presence of a moulded Reigate stone, some ashlar and in particular one made of Purbeck marble, demonstrate the reuse of material from a medieval building of 15th century or earlier date.

Phase 6 Mid-Late 17th century (98 fragments, 64.05 kg)

A large quantity of building material was recovered from this phase (98 fragments, 64.05 kg). The material was collected mainly from walls, and from a possibly floor, fill [338] of hearth [352] (B2), made ground and dump layers, associated with this construction phase.

The structures preserved from this phase are mainly brick walls, added to the remaining structures from phase 5.2 [344] and [376]. The internal walls from previous phase of B2 were demolished forming a second phase of Building 2, now consisting of one space, with small walls are added to the north and to the south, suggesting that the building is expanding. Local and London sandy red bricks (3046 and 3065) group are the predominant fabrics. The mortars used to bond these structures are Type 02 and 03. Peg tiles made of different fabrics are first represented in all the sequence and came from layers and dumped material.

A possible floor was found in the south east corner of the site, close to walls [343] and [352]. Flemish bricks 3036 were collected from different layers.

The amount of stone recorded in this phase increases but is over represented by the presence of small coal fragments from fill [338] of hearth. Fragments of French burr quern stones, and Reigate, Kentish and septarian rubble were recovered from dump and made ground layers. A few examples from Reigate were found from the bedding deposit of wall [343], same construction technique use in Phase 5.2.

Phase 7 Mid-Late 17th century (19 examples, 12.7 kg)

Phase 7 is characterised for the collapse of wall [344] represented by demolition layer [305] and the reorganization of the internal space of the mill, forming Building 3. The previous structures fell into disuse and the area was redeveloped. A new wall [312] was built in the southeast area of the site and a circular brick structure [287] associated with some mechanism/hoist.

The material recovered (19 examples, 12.7 kg.) decrease considerably from the previous phase, collected from a few contexts: the collapse wall, made ground layers and a wall. The only material recovered were bricks and roofing tiles. Wall [344] was collapsed internally probably caused by two different reasons: or the mill was in disuse for a long time or due to a flooding of the River Lea. The wall [312] was built using 3046 and FRR17 bricks bonded with a mortar T3.

Flemish fabric 3036 is still present in this phase, found in the collapsed wall [305] and from demolition and made ground layers. It is important to point out the presence of pan tiles for the first time in the assemblage [311], indicating a repair of the roofing at least after AD1630. No stone was recovered.

Phase 8 Early 18th century (3 examples, 4.32 kg.)

Only a patch of floor [269] and a fill of construction cut [247] provided common peg tiles and bricks made of FFR01 (3 examples, 4.32 kg.), forming Building 4. No stone was preserved.

Phase 9.1 Late 18th century-Early 19th century

The building material assemblage recovered from this phase (25 fragments, 11.83 kg), was collected from different structures including Building 5, backfill and fills from cuts. In phase 9.1 there is a major rebuilt on the mill on the northeast part of the site (Building 5). Bricks are again the predominant form, followed by roofing tiles (peg and pan tiles), including one tin-glazed example, belonging to a biblical, landscape and figurative design, very popular from 1670 to 1800. Local red sandy bricks fabrics (3046 and FFR01) are still present, though post- Great fire fabrics are introduced in this phase being the predominant fabric. Some bricks from [231] are overheated and almost vitrified, bonded with a soft yellowish lime mortar. Bricks from floor [278] are well done and have sharp arises, and the base it is bonded with a greyish lime mortar with flint, CBM, gravels and small slate inclusions. The only stone collected was a fragment of French Burr quern stone from [242].

Phase 9.2 Late 18th century-Early 19th century

The building material assemblage collected from this phase (12 fragments, 43.86 kg), decreases as most of the structures were dated *in situ*.

There is an increase in the quantity of stone, mostly reused to cover soakaways [213] and [220], and mostly from quern stones, especially French burr and a massive Old Red Sandstone. Flat peg and curved pan tiles are still the main roofing forms.

At the south of the site a new building was constructed (Building 6). Homogeneity in brick shape, fabric (3032) and mortar type (T6) selection show that the construction of the structures [210] [212] [219] [211] to be contemporary. Bricks are well made, with sharp arises and some are gently frogged indicating an early 19th century date.

Circular brick structure [287] associated with the old mill, is still in use with some additions [226]. It is important to point out that this structure is truncated by [210] [211] [212], indicating that this structure was in disused at the time the new space was configured.

The main structure of the buildings in the north side of the site is still preserved in this period, with small internal alterations as floors [221] and [256], and a reduction of the space by the construction of wall [219], conforming Building 7. To the south of the B5 a cluster of new structures associated with Building 6 were added. Floor [221] was built using mainly reused local sandy red bricks with occasional post Great fire bricks. Wall [219] is built using gently frogged post great fire bricks, bonded with a soft white lime mortar with chalk and charcoal (T8). Outside this room, on the west side, a soakaway was found, reusing quern stones.

Phase 10 Late 19th -Early 20th century

Phase 10 produced the largest amount of building material recovered from the site (364 examples, 9.95 kg.), though no structures were preserved. Roofing fragments, mainly pan tiles, are the only form

documented. Material was recovered from layers [202] and [209], and from fill [308] of a robber cut. Layer [209] recorded as a layer of ash/ charcoal covering the inside of the mill, represent more than the 90% of the examples. The large quantity of roofing material mixed with ash and coal suggests that the roof had collapsed as a result of the fire, documented as occurring in 1860, causing the abandonment and disuse of the building.

Phase 11 Late 19th century-Early 20th century

A small amount (8 examples, 0.55 kg) of material was found from a backfill [203] and a demolition layer [205], including pan tiles and two modern plain tin-glazed tiles

Summary/Recommendations

The very large quantity of ceramic building material recovered from this site reflects construction episodes associated with various phases of the Mill buildings and associated structures.

Obviously, bricks are the predominant form. Large quantities of early red post-medieval bricks were collected, and some of them are clearly reused with later mortars. These sandy red fabrics were still manufactured outside the City of London until late 19th century. Post great fire purple and yellow stock and bricks (some frogged) are less representative. Floor bricks and walls tiles are poorly represented.

The building material recovered from FRR17, associated with the first and successive phases of the mill, suggests that the building was principally constructed using brick, with a lesser quantity of stone, most of which is reused quernstone. The presence of small quantities of stone, and mainly present in foundations indicates that the stone was reused. Purbeck marble and moulded Reigate, together with examples of ashlar, probably suggests the existence of a high-status medieval building nearby which had been robbed for these quality building materials.

With the exception of the stones, no medieval ceramic building fabric was found, suggesting that the excavated mill was constructed at least in the early post-medieval period. The earliest structural remains from the excavated mill belong to phase 4, dating late 16th early 17th, probably the same depicted on Duke of Dorset's Survey maps (AD1619, Emery et al. 2016, fig 8).

Reused French burr stones from the foundations in phase 5.2 indicates that the mill existed prior to this construction phase, with successive internal rebuilding in phase 6.

A significant incident occurred between phases 6 and 7, where wall [344] was found collapsed, probably caused by the abandoning of the Building 2 or a flooding event caused by the River Lea. After this collapse the mill was rebuilt with a different spatial organization in phases 7 and 8, mainly at the south eastern side of the site.

Pan tiles are the main roofing form, these curved tiles were introduced into the south of England after AD1630. Some flat peg tiles were used as levelling courses in the walls.

The fact that Flemish bricks 3036 were only found in layers and pits suggest that possibly a herringbone floor was present in the mill and at some point was removed.

Later phases (Phase 9.1 onwards) see the construction of new structures on the north of the site, with the introduction of a 3032 fabric, dated post 1666, and the restructuring of the south area.

The mill was finally abandoned in phase 10, where a layer of charcoal and ashes was found mixed with a high amount of burnt pan tiles, indicating that the roofing had collapsed after a major fire, as shown by documentary evidence in 1860 (Protz 2010, 89). The Tottenham mills are not shown in OS mapping of 1930-36 and so presumed to have been demolished by this date.

The use of French burr, a good quality quernstone, imported from the Marne valley in France, indicates the high quality production of fine-grained flour, possibly from the 15th century onwards

Recommendations for Publication

A publication text is recommended in which further examination takes place on the types of construction materials (brick, mortar, roofing tile, floor tile) used in the various residential structures associated with the early and late post-medieval structures of the building. Various research questions might determine if the bricks being manufactured locally or were they are being supplied from further afield? Sources of stone production following a petrological report for the different rock types, table of rock types and map of geological would examine trade connection for the building stone. Further research is required in analysis regarding the French burr stone and when they were imported to England for the first time?

Distribution

Context	Fabric	Form	Size	Date range of material		Latest dated material		Spot date	Spot date with mortar
0	2276	Post-medieval peg tile	1	1480	1900	1480	1900	1480-1900	No mortar
78	3065;2276	Abraded post medieval sandy red brick and peg tile	2	1450	1900	1480	1900	1480-1900	No mortar
97	2276	Post medieval peg tiles	2	1480	1900	1480	1900	1480-1900	No mortar
202	2279	Post-medieval pan tiles	12	1630	1850	1630	1850	1630-1850	No mortar
203	2279;3064W	Post-medieval pan tiles; white plain tin-glazed	7	1630	1850	1630	1850	1780-1850	No mortar
205	3064W	Post-medieval tin-glazed	1	1620	1800	1620	1800	1620-1800	No mortar

Context	Fabric	Form	Size	Date range of material		Latest dated material		Spot date	Spot date with mortar
209	2276;2279;3101 PM	Post-medieval peg and pan tiles; T6 mortar	13	1480	1900	1480	1900	1630-1900	1630-1900
210	3032	Post Great fire bricks	2	1666	1900	1666	1900	1780-1850	1780-1850
211	3032	Post Great fire bricks	2	1666	1900	1666	1900	1780-1850	1780-1850
212	3032	Post Great fire bricks	2	1666	1900	1666	1900	1780-1850	1780-1850
218	3032;3034	Post Great fire bricks	2	1666	1900	1666	1900	1700-1850	1700-1850
219	3032	Post Great fire bricks	2	1666	1900	1666	1900	1780-1850	1780-1850
221	3032	Post-great fire bricks	2	1666	1900	1666	1900	1800-1900	1800-1900
226	3032R; FRR1;2850; 1977	Post Great fire bricks; local red sandy bricks; Flemish floor tiles	2	1450	1900	1666	1900	1700-1850	1700-1850
245	3032	Post-great fire bricks	1	1666	1900	1666	1900	1666-1900	No mortar
247	2276	Post-medieval peg tiles	1	1480	1900	1480	1900	1480-1900	No mortar
269	FFR01;3101PM	Post-medieval local sandy red bricks; T5 mortar	2	1450	1900	1450	1900	1750-1850	1780-1850
270	3032	Post-great fire bricks	2	1666	1900	1666	1900	1750-1850	No mortar
305	3100WP;2276;3036	White plaster; post-medieval peg tiles; Flemish brick	7	1480	1900	1480	1900	1600-1800	No mortar
306	2276;2279;3064W	Post-medieval peg and pan tiles; Dutch tin-glazed	15	1480	1900	1480	1900	1670-1850	No mortar
308	2279	Post-medieval pan tiles	19	1630	1850	1630	1850	1630-1850	No mortar
311	2279	Post-medieval pan tiles	6	1630	1850	1630	1850	1630-1850	No mortar
312	3046;FFR1; 3101PM	Post-medieval sandy red bricks; T3 mortar	3	1450	1900	1450	1900	1500-1700	1500-1700
316	3034;FFR1	Post-medieval local sandy and post-great fire bricks	2	1450	1900	1666	1900	1800-1900	No mortar
318	3032;3101PM	Post-great fire bricks; T6 mortar	2	1666	1900	1666	1900	1800-1900	1800-1900
325	3036	Flemish brick	1	1600	1800	1600	1800	1600-1800	No mortar
326	FFR1;3101PM	Post-medieval local sandy brick; T2 mortar	1	1450	1900	1450	1900	1500-1800	1500-1800
329	3065	Post-medieval sandy red brick	1	1450	1900	1450	1900	1500-1800	No mortar
332	2276;2279	Post-medieval peg and pan tiles	3	1480	1900	1480	1900	1630-1900	No mortar
333	2276;3036	Post-medieval peg tiles; Flemish brick	8	1480	1900	1480	1900	1600-1800	No mortar
334	FFR1	Post-medieval local sandy red brick	1	1450	1900	1450	1900	1500-1700	No mortar
343	FFR1	Post-medieval local sandy red bricks	2	1450	1900	1450	1900	1500-1700	No mortar
344	FFR1; 3101PM	Post-medieval local sandy red brick; T1 mortar	5	1450	1900	1450	1900	1500-1700	1500-1700
346	3036	Flemish bricks	2	1600	1800	1600	1800	1600-1800	No mortar
353	3046;2276; 3101PM	Post-medieval sandy red brick and peg tiles; T4 mortar	13	1450	1900	1480	1900	1600-1800	1600-1800
354	3046;FFR1; 2851;3036	Post-medieval sandy red bricks; Flemish paver and brick	6	1450	1900	1480	1900	1600-1800	No mortar
358	FFR1;3101PM	Post-medieval local sandy red brick; T2 mortar	3	1450	1900	1450	1900	1500-1700	1500-1700

Context	Fabric	Form	Size	Date range of material		Latest dated material		Spot date	Spot date with mortar
361	FFR1;2276	Post-medieval local sandy red brick and peg tiles							No mortar
362	3036	Flemish bricks	3	1600	1800	1600	1800	1600-1800	No mortar
371	FFR1;3101PM	Post-medieval local sandy red brick; T1 mortar	3	1450	1900	1450	1900	1500-1700	1500-1700
372	FFR1, 3065	Post-medieval sandy red brick	2	1450	1900	1450	1900	1500-1700	No mortar
376	FRR1;1977; 3101PM	Post-medieval local sandy red brick; Flemish paver; T1 mortar	2	1450	1900	1450	1900	1500-1700	1500-1700
378	FFR1;3101PM	Post-medieval local sandy red bricks; T1 mortar	2	1450	1900	1450	1900	1500-1700	1500-1700
380	FFR1	Post-medieval local sandy red brick	1	1450	1900	1450	1900	1500-1700	No mortar
385	3036	Flemish bricks	2	1600	1800	1600	1800	1600-1800	No mortar
386	FFR1;3065; 3101PM	Post-medieval sandy red bricks; T1 mortar	9	1450	1900	1450	1900	1500-1700	1500-1700
390	FFR1	Post-medieval local sandy red brick	1	1450	1900	1450	1900	1500-1700	No mortar
403	FFR1	Post-medieval local sandy red bricks	2	1450	1900	1450	1900	1500-1800	No mortar
404	FFR1	Post-medieval local sandy red bricks	3	1450	1900	1450	1900	1500-1700	No mortar
410	3032;3101PM	Post great fire frogged bricks; T7 mortar	2	1666	1900	1666	1900	1800-1900	1800-1900
411	3032;3101PM	Post great fire frogged bricks; T7 mortar	2	1666	1900	1666	1900	1800-1900	1800-1900

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APPENDIX 8: ANIMAL BONE ASSESSMENT

Kevin Rielly

Introduction

The site lies on an elongated bank within the River Lea truncated at its southern extremity by Ferry Lane and parallel just over the Lea to the east by the Paddock Community Nature Park. Open plan excavations followed an evaluation stage, these revealing evidence for a series of buildings dating from the 15th century. The history of this area demonstrates the construction of a mill in this part of Tottenham Hale dating back to the 13th century and thence, noted on 17th century maps, the presence of several other buildings on the 'island'. These and subsequent buildings were related to a diverse range of industries including corn milling and paper making. The mill complex was badly damaged by fire in the mid 19th century but the ruins survived well into the modern era. It was possible to phase the archaeological remains according to the construction and use of the various buildings, mainly covering the period from the late 16th through to the 19th century.

Animal bones were recovered, all by hand, from most of the post-medieval phase horizons with a particular concentration from those levels dating to the 16th/17th centuries.

Methodology

The bone was recorded to species/taxonomic category where possible and to size class in the case of unidentifiable bones such as ribs, fragments of longbone shaft and the majority of vertebra fragments. Recording follows the established techniques whereby details of the element, species, bone portion, state of fusion, wear of the dentition, anatomical measurements and taphonomic including natural and anthropogenic modifications to the bone were registered.

Description of faunal assemblage

The site provided a total of 137 bones by hand collection, the vast majority in a good state of preservation and without any obvious signs of heavy fragmentation (in general or from specific deposits). Dating evidence was available from all but a small number of the bone-bearing deposits and each of these, with one exception, has been phased. The chronological sequence includes (limited to those with animal bones): - Phases 5.1 and 5.2 – Early to mid post-medieval associated with Building 1 and 2 respectively; Phase 6 – mid Post-medieval, covering modifications to Building 2; Phase 7 - mid to late post-medieval, Building 3 and demolition debris; Phase 8, also mid to late post-medieval, Building

4; Phases 9.1 to 9.2, late Post-medieval, with Building 5 and then Buildings 6 and 7 by Phase 9.2; and Phase 10 – mid to late 19th century, associated with fire debris and robbing.

Phase 5 (Early to mid post-medieval)

Deposits have been divided into those from Phase 5.1 and 5.2 (see Tables 1 and 2), associated with Buildings 1 and 2 respectively. The former collection is entirely derived from pitfills, essentially from pits [394] and [402], and the latter from levelling/make-up layers. These overly the aforementioned pits and pre-date the construction of Building 2. Oddly, the dating evidence for the pitfills tend to produce a wider date range from 1550/80 to 1700, while the make-up levels are consistently earlier, 1550/80 to 1600. Both collections feature a general mix of major domesticates, though that from Phase 5.2 clearly demonstrates a predominance of cattle, highlighted by the similarly good representation of cattle-size fragments. The cattle component includes a wide array of skeletal parts principally derived from adult individuals.

Phase 6 (mid Post-medieval)

The Phase 6 collection is essentially taken from more make-up layers, apart from a single bone from pit [368]. These deposits were associated with Building 2, marking floor raising in Room 1 - (333) and (361), and otherwise overlying the remains of a wall, marking its disuse, in Room 2 – (262). Dating between 1580 and 1650 it's no surprise that the collection is rather similar to that taking from Phase 5.2, principally composed of cattle and cattle-size pieces, again featuring a mix of skeletal parts, all from adult animals. A subtle difference is the presence of equid and red deer, the former represented by a femur and a metacarpus from medium-sized ponies and the latter by an antler piece which with skull attached was clearly part of a culled animal rather than a 'dropped' specimen. This may conceivably be a trophy piece or even antler working waste, which may fit into the 'industrial' aspect of the various Mill works. Alternatively it could be food waste and therefore suggestive of detritus from a 'special' meal, potentially with a local derivation.

Phases 7 and 8 (mid to late Post-medieval)

These are rather smaller collections taken from a greater variety of feature types, the former mainly from levelling/dump layers and the latter divided between drain [251] and more make-up layers. The dating of these deposits essentially follows the range given for Phase 6. Cattle continues to be the best represented species, at least in Phase 7, this collection also providing two further equid bones, a scapula and a metatarsus, also from medium-sized ponies. Of interest amongst the rather small collection dated to Phase 8 is the presence of fallow deer, comprising two left humerii from drain [251], both from adult individuals. These clearly represent food waste, undoubtedly either from a wealthy household or at least from an inn serving choice meats.

Phase 9 (late post-medieval)

This phase has been subdivided into 9.1 and 9.2, encompassing the construction and use of Buildings 5, 6 and 7, here encroaching into the 19th century, although the dating evidence amongst the bone-bearing deposits doesn't exceed 1750. Bones were found in pits [261] and [282] (Phase 9.1) and then from various surface, make-up layers and beam slot fill (291) dating to Phase 9.2. Cattle is most abundant, a continuing trend, with again a general mix of skeletal parts. Chicken makes its first appearance, a radius from an adult bird. Of interest was the recovery of a cattle second phalange from a notably large animal, this perhaps representing 'improved' stock and therefore most likely dating to at least the latter part of the 18th century (after Rixson 2000, 216).

Phase 10 (mid to late 19th century)

A few bones were taken from a robber trench [314], featuring the usual mix of major domesticates.

Conclusion and recommendations for further work

This assemblage is in good condition and generally well dated. It is notable that a large proportion was taken from make-up deposits, which may therefore represent dumps of a redeposited nature. However, this is not shown by the pottery or indeed by the bones. Yet the quantity of faunal material is rather small, particularly considering the duration of occupation. It can be supposed that this may relate to the nature of the site, principally for working/industrial purposes rather than domestic. Clearly, the bone detritus does represent preparation and general food waste, suggestive of some meal preparation/food consumption on site as well as perhaps opportunistic refuse disposal from the wider community.

The bone evidence suggests the principal usage of the major domesticates, with a predominance of cattle amongst the larger collections. Numerous post-medieval collections have been studied from London sites, which often show a greater proportion of sheep compared to cattle or at least a cattle and sheep parity by the 16th/17th centuries (see for example Rielly 2017, 162). However, certain sites, as here, have shown a continuation of the medieval cattle-rich abundance pattern, as for example at Fulham High Street (Rielly 2018). Perhaps more surprising is the occurrence of deer bones, with the clear indication of a high status derivation. As stated, these may simply represent opportunistic refuse disposal from elsewhere – perhaps from a high status household or a well provisioned inn.

The general absence of animal bone collections from contemporary sites within this part of London highlights the importance of this site from a faunal point of view. Yet there are clear limiting factors concerning the potential value of this collection, and in particular the small size of the individual phase assemblages. For this reason it is recommended that no further work should be carried out. However,

to complete the archive record the animal bones from sample <5> should be added to the site archive record.

Finally, relevant aspects of the information contained within this report should be included with any forthcoming publication document.

References

Rielly, K, 2017 The animal bone assemblage, in R, Haslam and V, Ridgeway, Excavations at the British Museum: An Archaeological and Social History of Bloomsbury, The British Museum Research Publication 210, 160-179

Rielly, K, 2018 Assessment of animal bone recovered from 84-90B Fulham High Street, London Borough of Hammersmith and Fulham, London SW6 3LF (FHS15), PCA unpublished report

Rixson, D, 2000 The History of Meat Trading, Nottingham University Press

Phase:	**5.1**	**5.2**	**6**	**7**	**8**	**9**	**9.2**	**10**	**Void**	**Total**
Feature type:										
Pit	8		1			3				12
Drain					4					4
Beam slot							13			13
Robbing						1		7		8
Levelling		52	12	15	2		4			85
Demo			21							21
Dump	2	1		7						10
Surface				2			2			4
Void									5	5
Grand Total	**10**	**53**	**34**	**24**	**6**	**4**	**19**	**7**	**5**	**162**

Table 1. Distribution of hand recovered bones by feature type and phase where UP is unphased.

Phase:	**5.1**	**5.2**	**6**	**7**	**8**	**9**	**9.2**	**10**	**UP**
Species									
Cattle	4	20	11	8	2	3	6	3	3
Equid			2	2					1
Cattle-size	1	25	15	9		1	7	1	1
Sheep/Goat	2	5	1	2	1		3		
Pig	2	3	4				1	1	
Sheep-size	1			3	1		1	2	
Red deer			1						
Fallow deer					2				
Chicken							1		
Grand Total	**10**	**53**	**34**	**24**	**6**	**4**	**19**	**7**	**5**

Table 2. Distribution of hand collected animal bones by phase and species

APPENDIX 9: ASSESSMENT OF THE HAND COLLECTED MARINE SHELL

Kate Turner

Introduction

An assemblage of whole and fragmented marine shell was recovered during the excavation of land at Hale Wharf, Tottenham. The aim of this assessment was to: (1) determine the degree of fragmentation and preservation of the oyster shell assemblage; (2) quantify the number of oyster shells, and (3) record any other shells that were present in this assemblage.

Methodology

The shells from Hale Wharf were collected via handpicking by on-site archaeologists, from selected contexts.

The first stage of recording the oyster shell involved separating left and right valves specimens, in order to determine the minimum number of individuals in the assemblage (MNI). There were no statistically significant (containing over 100 left and right valves) oyster assemblages within the sampled contexts, so shells were quantified and no further recording was carried out. A note was also made of any other shell that was collected (table 1).

Results

Oyster shell was collected from nine contexts dating from the late 16th to the late 17th century. Recovery of shell within these contexts was limited, with no greater than eleven semi-complete to complete valves recorded in any one deposit. The condition of the shell was largely poor, with moderate levels of fragmentation and surface wear. Around ninety percent of specimens retaining a complete hinge however. The two specimens found in (393) appeared to have been burnt. The dominant species throughout the assemblage was *Ostrea edulis* L., the Common European Flat Oyster, which is a species native to the British Isles. Fourteen left and twenty-four right valves were recovered in total from this assemblage, along with a small number of fragments (<10) were identified in contexts (385), (390) and (392), resulting in an overall MNI (minimum number of individuals) of twenty-four (table 1). None of the areas assessed contained a statistically significant oyster shell assemblage (>100 complete valves).

Conclusions

The oyster shell that was recovered from Hale Wharf is likely to indicate that oyster was a part of the diet on this site during the 16th and 17th centuries, though concentrations of shell are minimal and cannot be interpreted to suggest a significant dietary influence.

There are not enough complete specimens of oyster in any of the areas assessed to provide a statistically significant sample set, so further analysis at the publication stage is not recommended.

Table 1: Quantification of Shell from Hale Wharf, Tottenham (FRR17)

Context number	Feature type	Phase	Dating and Notes	Oyster (LV)	Oyster (RV)	Oyster (UMLV)	Oyster (UMRV)	Fragments	Total Number of Left and Right Valves	Oyster MNI
324	Layer	6	Mid to Late 17th Century			1			1	1
354	Pit	5.1	Late 16th to Early 17th C		1				1	1
362	Made ground	6	Mid to Late 17th Century	3	1				4	3
385	Made ground	5.2	Late 16th to Early 17th C	3	5	1		+	9	5
390	Made ground	5.2	Late 16th to Early 17th C	2	8	1		+	11	8
392	Made ground	6	Mid to Late 17th Century	1	3			+	4	3
393	Pit	5.1	Late 16th to Early 17th C, BURNT	1	1				2	1
395	Made ground	5.2	Late 16th to Early 17th C		1	1	1		3	2
401	Pit	5.1	Late 16th to Early 17th C	1	1				2	1
TOTALS				**11**	**21**	**3**	**1**	**0**	**36**	**24**

Absolute values. ***Key:*** *RV = right valve. LV = left valve. UM = un-measurable. MNI = maximum number of individuals)*

References

Winder, J. 2011 *Oyster Shells from Archaeological Sites: A Brief Guide to Basic Processing* Online at: http://oystersetcetera.files.wordpress.com/2011 /03/oystershellmethodsmanualversion11.pdf

APPENDIX 10: ENVIROMENTAL ARCHAEOLOGICAL ASSESSMENT REPORT

Kate Turner

INTRODUCTION

This report summarises the findings of the rapid assessment of the environmental remains in two bulk samples taken during the excavation at Hale Wharf, Tottenham. These samples were taken from a layer of ash covering the inside of the mill structure (Building 6), and the fill of a hearth [352] (Building 2), the context information for which is given in Table 1.

The aim of this assessment is to:

1. Give an overview of the contents of the assessed samples;
2. Determine the environmental potential of these samples;
3. Establish whether any further analysis is necessary.

Table 1: Context information for environmental samples, FRR17

Context No.	Cut	Context type	Context category	Trench number	Phase	Period	Interpretation
209	209	Layer	Charcoal layer	6	10	Late 19th/Early 20th Century	Layer of ash/ charcoal covering the inside of the mill.
338	352	Fill	Hearth	6	6	Mid/Late 17th Century	Fill of hearth [352]

METHODOLOGY

Two environmental bulk samples, of ten and twenty-four litres in volume, were processed using the flotation method; material was collected using a 300 µm mesh for the light fraction and a 1 mm mesh for the heavy residue. The heavy residue was then dried, sieved at 1, 2 and 4 mm and sorted to extract artefacts and ecofacts. The abundance of each category of material was recorded using a non-linear scale where '1' indicates occasional occurrence (1-10 items), '2' indicates occurrence is fairly frequent (11-30 items), '3' indicates presence is frequent (31-100 items) and '4' indicates an abundance of material (>100 items).

The light residue (>300 µm), once dried, was scanned under a low-power binocular microscope to quantify the level of environmental material, such as seeds, chaff, charred grains, molluscs and charcoal. Abundance was recorded as above. A note was also made of any other significant inclusions, for example roots and modern plant material.

RESULTS

For the purposes of this report, samples will be discussed individually in order to assess environmental potential. Cultural material collected from the heavy residues has been catalogued and passed to the relevant specialists for further assessment. A full account of the sample contents is given in table 2. Animal bone will be discussed elsewhere.

Sample 4 – Phase 10, Late 19th to Early 20th Century

Sample <4> was taken from a layer of ash and charcoal covering the inside surface of the mill structure (Building 6). Preservation of environmental remains in this feature was excellent; wood charcoal was reported in abundance, with over one-hundred pieces recovered from the sample, including a substantial assemblage of material of a size suitable for species identification (>4 mm in length/width). As well as charcoal a significant amount of charred bread wheat (Triticum aestivum/durum) was found, along with a low frequency of charred grasses (Poaceae sp.) and peas (Fabaceae sp.).

In terms of cultural material, small to moderate amounts of mortar, pottery, iron and glass were recorded, as well as a large amount of clinker and industrial waste.

Sample 5 – Phase 6, Mid to Late 17th Century

Sample <5> was collected from the fill of a mid to late 17th century hearth feature, [352] (Building 2). In comparison to sample <4>, archaeobotanical material was relatively scarce in this deposit; only a small amount of unidentifiable wood charcoal was recovered from the flot, and a single carbonised grass seed from the heavy fraction. Large animal, small animal and fish bone was observed, along with fragmented oyster shell, however no more than fifteen specimens of each were reported.

Industrial by-products in the form of clinker, coal and vitrified material were abundant in both fractions.

Table 2: Assessment of environmental residues, FRR17

Sample No.		**4**	**5**
Context No.		**209**	**338**
Feature No.		**209**	**352**
Volume of bulk (litres)		24	10
Volume of flot (millilitres)		110	145
Method of processing		F	F
HEAVY RESIDUE			
Charcoal			
Charcoal >4 mm		4	
Charcoal 2-4 mm		4	
Charcoal <2 mm		4	
Cereals			
Triticum durum/aestivum	bread/pasta wheat	4	
Poaceae sp. - medium	grasses		1
Molluscs			

Sample No.		**4**	**5**
Context No.		**209**	**338**
Feature No.		**209**	**352**
Ostrea edulis - fragments	Colchester native oyster		2
Bone			
Large animal bone			1
Small animal bone			1
Fish bone			1
Fragments			1
Building Material			
Mortar		3	1
Finds			
Pottery		3	1
Iron		2	
Glass		1	
Industrial Residue			
Clinker		4	4
Flot Residue			
Charcoal			
Charcoal >4 mm			
Charcoal 2 - 4 mm		2	1
Charcoal <2 mm		4	
Frags. of ID size		X	
Fragmented wood			
Wood >4 mm			
Wood 2 - 4 mm		1	
Wood <2 mm			
Burnt seeds			
Fabaceae sp. - indeterminate	peas	1	
Poaceae sp. (medium)	grasses	1	
Cereals			
Triticum sp. - indeterminate	wheat	1	
Other plant macrofossils			
Fragmented plant matter		3	
Other remains			
Vitreous material		4	4
Slate			3
Coal			4

Key: 1- Occasional, 2- fairly frequent, 3- frequent, 4- abundant

DISCUSSION

A rapid assessment of samples <4> and <5> has shown that <4> is more promising in terms of diagnostic potential; sample <5> contained a limited amount of environmental material, all of which was present in very low quantities and therefore of limited value in terms of understanding the local environment.

The cereal caryopses, which were recovered in abundance from sample <4>, are all from free-threshing varieties of wheat, namely the bread or pasta variety (*Triticum aestivum/durum*), which was found in both spherical and oval forms. These varieties are easily separated from the complete ear during threshing and produce chaff material that may be used to distinguish between the different varieties; in this case however, the grains were completely clean, and no rachis was identified in either the flot or the residue of the sample. The absence of threshing and winnowing waste may indicate that grains were being cleaned before being brought to the mill site to be turned into flour. In general, the preservation of this material was very good, and there was little surface damage, suggesting the grains may have been burnt at a relatively low temperature. This assemblage could have been created due to accidental combustion, or perhaps the deliberate burning of spoiled grains.

The substantial amount of wood charcoal reported in this sample is likely to be waste from industrial activity at the mill, in which wood could have been used as a fuel source. The fragmented plant matter found in this sample is also likely to be the remains of un-burnt wood, as some of the larger specimens were only partially charred, largely on the external surfaces.

RECOMMENDATIONS FOR FURTHER WORK

Preservation of environmental remains in the Hale Wharf assemblage was mixed across the sample set. The recommendations for additional work are outlined below. A summary of this assessment should be included in any future publications.

Plant Macrofossils

The size of the grain assemblage identified in the mill structure (Building 6, phase 10) was significant, and therefore a full specialist quantification of this material should be undertaken prior to publication. Additional analysis may help to shed light on the kinds of wheat that were being milled, and thus help us to better understand diet and subsistence in the local area.

Wood Charcoal

This wood charcoal assemblage was also of a significant size, with over one-hundred identifiable pieces begin recovered from sample <4> (Building 2, phase 6). Additional specialist analysis of this material is suggested, as it may shed light on the types of wood that were being selected for industrial purposes during this period, and for what purpose.

REFERENCES

Cappers, R.T., Bekker, R.M. and Jans, J.E., 2012. Digitale Zadenatlas van Nederland/Digital seed atlas of the Netherlands (Vol. 4). *Barkhuis*.

Jacomet, S., 2006. Identification of cereal remains from archaeological sites. *Basel University, Basel*.

Kerney, M.P. 1999. Atlas of the Land and Freshwater Molluscs of Britain and Ireland. *Colchester. Harley.*

APPENDIX 11: OASIS FORM

OASIS ID: preconst1-330109

Project details

Project name	Hale Wharf, Ferry Lane, Tottenham N17 9NE
Short description of the project	An excavation (mitigation phase) took place between January and March 2018 as a result of a watching brief which identified the remains of the mill in the south-east of the site. The site is bounded by the Lea Navigation Channel to the west, the River Lea Flood Relief Channel to the east and Ferry Lane (A503) to the south. A single open area trench was located in the southern part of the site bounded by Ferry Lane to the south and the River Lee Flood Relief Channel to the east. Seven phases of post-medieval building were identified in the excavation, dating from the late 16th/early17th century through to 19th century. Finds assemblages suggested the presence of an earlier high-status residence, possible manor house /country retreat for London residents. Assemblages of reused quern stones used in the various phases of mill buildings on the site also indicate that milling took place prior to the buildings found on site.
Project dates	Start: 04-01-2018 End: 28-03-2018
Previous/future work	Yes / No
Any associated project reference codes	FRR17 - Sitecode
Type of project	Recording project
Site status	Local Authority Designated Archaeological Area
Current Land use	Industry and Commerce 4 - Storage and warehousing
Monument type	LEAT Post Medieval
Significant Finds	POTTERY Post Medieval
Significant Finds	BONE Post Medieval
Significant Finds	STONE Post Medieval
Significant Finds	CTP Post Medieval
Significant Finds	CBM Post Medieval
Significant Finds	METALWORK Post Medieval

Project location

Country	England

Site location	GREATER LONDON HARINGEY TOTTENHAM Hale Wharf, Ferry Lane, Tottenham
Postcode	N17 9NE
Study area	2 Hectares
Site coordinates	TQ 34782 89475 51.587496825355 -0.054252102198 51 35 14 N 000 03 15 W Point
Height OD / Depth	Min: 9.23m Max: 9.38m

Project creators

Name of Organisation	Pre-Construct Archaeology Limited
Project brief originator	Ramboll
Project design originator	Helen Hawkins
Project director/manager	Helen Hawkins
Project supervisor	Ellen Green
Type of sponsor/funding body	Developer
Name of sponsor/funding body	Muse Developments and the Canal and River Trust

Project archives

Physical Archive recipient	LAARC
Physical Archive ID	FRR17
Physical Contents	"Animal Bones","Ceramics","Environmental","Glass","Metal"
Digital Archive recipient	LAARC
Digital Archive ID	FRR17
Digital Media available	"Database","GIS","Images raster / digital photography","Text"
Paper Archive recipient	LAARC
Paper Archive ID	FRR17

Paper Media available	"Context sheet","Drawing","Matrices","Plan","Report","Section"
Entered by	Lucy Whittingham (lwhittingham@pre-construct.com)
Entered on	4 October 2018

P C A

PCA CAMBRIDGE
THE GRANARY, RECTORY FARM
BREWERY ROAD, PAMPISFORD
CAMBRIDGESHIRE CB22 3EN
t: 01223 845 522
e: cambridge@pre-construct.com

PCA DURHAM
UNIT 19A, TURSDALE BUSINESS PARK
TURSDALE
DURHAM DH6 5PG
t: 0191 377 1111
e: durham@pre-construct.com

PCA LONDON
UNIT 54, BROCKLEY CROSS BUSINESS CENTRE
96 ENDWELL ROAD, BROCKLEY
LONDON SE4 2PD
t: 020 7732 3925
e: london@pre-construct.com

PCA NEWARK
OFFICE 8, ROEWOOD COURTYARD
WINKBURN, NEWARK
NOTTINGHAMSHIRE NG22 8PG
t: 01636 370410
e: newark@pre-construct.com

PCA NORWICH
QUARRY WORKS, DEREHAM ROAD
HONINGHAM
NORWICH NR9 5AP
T: 01223 845522
e: cambridge@pre-construct.com

PCA WARWICK
UNIT 9, THE MILL, MILL LANE
LITTLE SHREWLEY, WARWICK
WARWICKSHIRE CV35 7HN
t: 01926 485490
e: warwick@pre-construct.com

PCA WINCHESTER
5 RED DEER COURT, ELM ROAD
WINCHESTER
HAMPSHIRE SO22 5LX
t: 01962 849 549
e: winchester@pre-construct.com

REGISTERED ORGANISATION CIfA