

21 Wapping Lane, London Borough of Tower Hamlets An Archaeological Watching Brief and Archaeological Evaluation Report

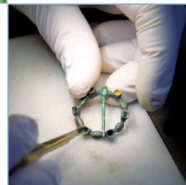
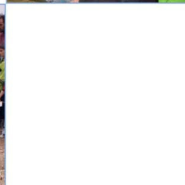
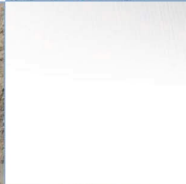
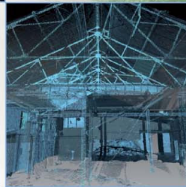
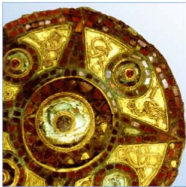
Planning Application: PA/06/01787

National Grid Reference Number: TQ 3490 8049

AOC Project No: 30788

Site Code: WPZ 10

Date: April 2011



ARCHAEOLOGY

HERITAGE

CONSERVATION

21 Wapping Lane, London Borough of Tower Hamlets: An Archaeological Watching Brief and Evaluation Report

On Behalf of: **Ballymore**
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National Grid Reference (NGR): TQ 3490 8049

AOC Project No: 30788

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Contents

	Page
List of Illustrations	ii
List of Plates	ii
1. Introduction.....	1
2. Planning Background	1
3. Geology and Topography	1
4. Archaeological and Historical Background	2
5. Aims of the Investigation	3
6. Methodology	4
7. Results of the Archaeological Watching Brief	5
8. Finds and Environmental.....	12
9. Conclusions and Interpretation.....	12
10. Further Work and Publication	13
11. Archive Deposition	13
12. Bibliography.....	14
Appendix A: Context Register	27
Appendix B: Environmental Assessment	30
Appendix C: Finds Assessment	42
Appendix D: OASIS Form	44

List of Illustrations

- Figure 1: Site Location
- Figure 2: Detailed Site Location, Showing Structures, Principal Watching Brief Areas and Trenches.
- Figure 3: Sample Sections of Evaluation Trench 1 and Area 1 Showing Alluvial Horizons
- Figure 4: Area 1 Plan
- Figure 5: Area 1: Fragment of 18th Century Building
- Figure 6: Area 1. Sections
- Figure 7: Dock Wall; Section
- Figure 8: Area 3; Plan
- Figure 9: Bridge Mechanism: Housing Plan & Profile
- Figure 10: Area 3 Dock Wall Section
- Figure 11: Sections

List of Plates

- Plate 1: Trench 1 Section
- Plate 2: Building Foundations
- Plate 3: Cut through Dock Wall
- Plate 4: Part of Swingbridge Mechanism
- Plate 5: Floor of No.10 Warehouse

Non-Technical Summary

An archaeological investigations consisted of observing ground reduction at the site, which revealed a sequence of soil horizons including peat of Middle Bronze Age date and made ground of post-medieval date. Structural remains comprised the truncated walls and floors of a late 18th century house, wall of the London Dock and the substantial footings of the 1872 No10 Warehouse. Widespread destruction from the Second World War and later building episodes was apparent across much of the site.

No further on site or analysis work is recommended. Copies of the report will be issued to Kim Stabler, the SMR, the local museum and the Local Studies Library on the understanding that it will become a public document after an appropriate period of time. A short summary of the results of the fieldwork will be published with a short summary submitted to the local fieldwork roundup, and grey literature added to the online ADS OASIS project. The archive will be prepared in accordance the Museum of London. It is envisaged that the archive will be deposited within six months of the approval of the report.

1. Introduction

- 1.1 This document presents the results of an archaeological watching brief and evaluation trenching following demolition of a warehouse and ensuing ground reduction in advance of redevelopment at 21 Wapping lane. A historic building record (HBR) was carried out on the warehouse prior to the groundwork and is detailed in a separate report (AOC 2010a).
- 1.2 The site is centred on National Grid Reference (NGR) TQ 3490 8049 and is located on the east side of Wapping Lane (Figure 1). The site is bounded by Wapping Lane to the west, Raine Street to the south, land adjacent to Rennie Street to the east and to the north by a short remnant of a canal that formerly linked the Eastern and Western Docks of the London Docks, with Tobacco Dock in between (Figure 2).

2. Planning Background

- 2.1 The development (Planning Application Ref No: PA/06/01787) comprises the construction of a new mixed residential and retail development comprising four new residential blocks and an ancillary/retail block. This new development will comprise of multi-storey apartment buildings, varying between four and 21 storeys built over a semi basement.
- 2.2 The local planning authority is the London Borough of Tower Hamlets. Archaeological advice to the borough is provided by Kim Stabler of the Greater London Archaeological Advisory Service (GLAAS), part of English Heritage. Previous work on the site has included an assessment of the archaeological potential (MoLAS 2004) and a field evaluation and geotechnical watching brief (PCA 2007).
- 2.3 An archaeological condition was attached to planning consent (Planning Ref. PA/06/01787) in order that the archaeological implications of the development could be fully considered.
- 2.4 The next stage in the planning process was the creation of a written scheme of investigation, detailing the methodology for the HBR, watching brief and evaluation (AOC 2010b). This methodology was approved by Kim Stabler prior to the start of any site work. The WSI conformed to the requirements of Planning Policy Statement 5: Planning for the Historic Environment (PPS 5) issued by the Department for Communities and Local Government (DCLG 2010).

3. Geology and Topography

- 3.1 The British Geological Survey mapping (BGS Sheet 256) of this area indicates that the solid geology underlying the site and surrounding area is the London Clay formation. This is an Eocene marine deposit, laid down c. 55 million years ago. This is overlain by a superficial geology of Kempton Park Gravel comprising sand and gravels formed in the Devensian period (c.110,000 - 25,000 years Before Present (BP)). The Kempton Park Gravel is in turn overlain by alluvium. Geotechnical boreholes have been undertaken across the site and these indicate that the surface of the Kempton Park Gravel lies at -1.90 m to -2.90 m OD with London Clay being encountered between -8.00 m and 8.98 m OD. The surface of the overlying alluvium was encountered at +0.34 to -0.24 m OD; a thin band of peat was encountered within this overlying alluvium in the northern part of the site. This peat layer was encountered at +0.56 m OD. (PCA 2007).
- 3.2 The site is located approximately 300m from the current northern bank of the River Thames, a focus of human activity from prehistory onwards, attested by numerous artefacts discovered from the River and its flood plains (e.g. MoLAS 2000).

4. Archaeological and Historical Background

- 4.1 The following background is drawn from the Written Scheme of Investigation and other sources as listed (AOC 2010b).

The Prehistoric Period (c. 500,000 BP – AD 43)

- 4.2 The site lies within 300m of the northern bank of the river Thames in an area that has been reclaimed from former riverside marshland and channel deposits. A submerged Bronze Age forest has been identified from excavations at the former Shadwell Basin c. 300 m to the east of the site but no definitive proof that this extended to within the site was noted during the evaluation (PCA 2007). A thin peat horizon was identified at +0.56m OD from a single borehole in the northern section of the site but this has not been dated. Worked flints have also been identified within the alluvium during excavations at 130–160 Wapping Highway.
- 4.3 No prehistoric evidence was recorded during the previous evaluations undertaken on the site.

The Roman Period (AD 43 – 410)

- 4.4 Roman settlement has been identified in Wapping. This Roman activity is focussed on the line of Wapping Highway, which appears to have formerly been the line of a Roman Road. A number of relatively significant Roman buildings have been identified in the Wapping area including a masonry tower identified in 1976 at the junction of Wapping Lane with Wapping High Street. Further Roman buildings including a bathhouse were identified on excavations on the site of the former Babe Ruth restaurant 172–176 Wapping Highway; the Babe Ruth excavations also identified a Roman ditch.
- 4.5 Excavations at 130–162 Wapping Highway also recorded evidence for Roman settlement, including two large ditches on an east west alignment (possibly associated with a timber palisade) and finds suggesting near by domestic activity. This occupation appears to have ended abruptly in the early 5th century AD.
- 4.6 A Roman cremation and evidence for Roman occupation are also recorded c. 100 m north of the site; these are the nearest Roman finds to the site.
- 4.7 No Roman evidence was noted during the previous evaluations undertaken on the site.

The Early Medieval (AD 410 – 1066) and Medieval (AD 1066 – AD 1540) Periods

- 4.8 There is a record of a Saxon spearhead being found in Wapping and it is known that Wapping was a Saxon village, although its exact location and extent remain unknown. The place name may derive from the Saxon for '*Waepa's people*' or '*Marshy Place*'. Wapping was largely marshland through the medieval period, south of the old Roman Road now the Highway. The Marsh was drained by Cornelius Vanderdelft in the early 16th century, but there are likely to have been areas of higher ground potentially pasture and woodland during the early medieval and medieval periods (PCA 2007).
- 4.9 No evidence for early medieval or medieval activity on the site was noted during the previous evaluations of the site.

The Post-Medieval and Modern Periods (AD 1540 – Present)

- 4.10 The earliest recorded evidence for post-medieval occupation on the site comes from Rocque's map of 1746, which shows what appear to be houses on the western edge of the site fronting Old Gravel Lane, now Wapping Lane, and on the southern edge fronting onto Charles Street, renamed Raine Street by 1896. The land behind is depicted as orchards and gardens. Horwood's map of 1799

depicts terraces of houses on the southern and western boundaries of the site with defined gardens and a large warehouse, which encroaches into the northeastern corner of the site, later removed by excavation of the London Docks.

- 4.11 Between 1824 and 1828, the Eastern Dock was excavated out; this extended into the northern and eastern portion of the site and will have truncated earlier deposits within its footprint. All of the buildings on the site that pre-date 1848 appear to have been demolished by 1872 when the No. 10 Warehouse was constructed. No. 10 Warehouse originally had two ranges, one to the north and one to the south, although they may not have been built concurrently.
- 4.12 A major change to No.10 Warehouse occurred during the Second World War, when the northern range was badly damaged and abandoned as a result of the Blitz. By 1957, this damaged northern section had been rebuilt in its current form. By the 1970s, the southern range had been demolished. The Eastern Dock had become abandoned and was backfilled during the 1980s.
- 4.13 The warehouse was more recently used by Group 4 Security in the late 1990s, followed by use as a theatre for promenade performance, and more latterly for 'raves'.

5. Aims of the Investigation

5.1 The aims of the Watching Brief were defined as follows:

- To establish the presence/absence of archaeological remains within the site.
- To determine the extent, condition, nature, character, quality and date of any archaeological remains encountered.
- To record and sample excavate any archaeological remains encountered.
- To assess the ecofactual and environmental potential of any archaeological features and deposits.
- To determine the extent of previous truncations of the archaeological deposits.
- To enable the archaeology advisor to the London Borough of Tower Hamlets to make an informed decision on the status of the condition, and any possible requirement for further work in order to satisfy that condition.
- To make available to interested parties the results of the investigation.

5.2 The specific aims of the archaeological watching brief were defined as follows:

- To determine the presence of any Romano-British activity on site. Does this evidence indicate the presence of settlement at this time?
- To determine the presence of any early medieval/medieval activity on site? Is there any evidence for settlement at this time?
- To assess the potential of the site to inform on the post-medieval development and chronology of London.
- Record the former dock walling associated with the Eastern Dock, where it is encountered during groundworks.
- Assess the degree and extent of truncation of earlier deposits by late post-medieval and modern buildings on the site.
- Provide a stratigraphic sequence for the alluvium which overlies the gravels on the site and to provide samples of the alluvium for dating and environmental analysis.

6. Methodology

- 6.1 Site procedures were defined in the WSI (AOC 2010b).
- 6.2 A unique site code was supplied by the Museum of London (WPZ 10) and was used as the site identifier for all records produced.
- 6.3 The programme of watching brief was focused on the location of the dock wall and the floor of the factory at the south end of site.
- 6.4 Following reduction of the ground level, an evaluation trench was excavated in order to assess the underlying deposits, thought to predate the construction of the factory and the dock.
- 6.5 The excavation, recording and reporting conformed with current best archaeological practice and local and national standards and guidelines:
- English Heritage – Management of Archaeological Projects (EH 1991).
 - English Heritage – Archaeological Guidance Paper 3: Standards and Practices in Archaeological Fieldwork (EH 1998a).
 - English Heritage – Environmental Archaeology: A guide to the theory and practice of methods, from sampling and recovery to post-excavation (EH 2002).
 - Institute for Archaeologists – Standards and Guidance and Guidelines for Finds Work (IfA 2008).
 - Institute for Archaeologists – Standard and Guidance for Archaeological Field Evaluations (IfA 2008).
 - Institute for Archaeologists – Code of Conduct (IfA 2010).
 - Museum of London – Archaeological Site Manual (MoLAS 1994)
 - RESCUE & ICON – First Aid for Finds (RESCUE & ICON 2001).
 - United Kingdom Institute for Conservation – Conservation Guidelines No.2 (UKIC 1983).
 - United Kingdom Institute for Conservation – Guidance for Archaeological Conservation Practice (UKIC 1990).
- 6.6 The works were monitored by Kim Stabler, on behalf of the London Borough of Tower Hamlets, and by Alan Ford for AOC Archaeology.

7. Results of the Archaeological Watching Brief

7.1 Evaluation trench: Trench 1

7.1.1 An evaluation trench in the centre of site (Figure 2) was excavated following demolition of the former warehouse buildings and removal of basement slabs. Excavation was hampered by the presence of previous piles and high groundwater.

Context No	Depth	Height of Deposit (mOD)	Description/Interpretation
1101	2.50-3.60m	4.20	Made ground
1108	1.16m	3.50	Modern mixed soils of ground reduction works
1109	0.22m	2.44	Brick demolition horizon
1107	0.20-0.46m	+0.06	Alluvial layer
1102	0.30m	-0.20	Organic clays-old marsh deposits?
1103	0.60m	-0.90	Alluvial clay
1104	0.30m	-1.52	Peat horizon
1105	0.80m	-1.80	Alluvial clay
1106	0.50m+	-2.60	Natural gravels

7.1.2 The lowest deposit encountered was a 0.50m thick deposit of well-rounded small and medium gravel in a pale yellow sand matrix (1106), its surface lay at -2.6mOD. The gravel was sealed by a 0.80m thick layer of pale greenish grey clayey silt (1105) of alluvial origin.

7.1.3 The alluvium, in turn was sealed by a layer of fibrous brownish black peat with high organic content (1104), up to 0.30m deep, and lensing out eastwards. The top of the peat horizon lay at -1.50mOD. The peat has been AMS radiocarbon (Appendix B) to 1630-1490 BC (Middle Bronze Age cultural period). This was deposit over a period of between ca. 100 and 500 years, and that it is chronologically consistent with other Middle Bronze Age peat horizons identified in the Lower Thames Valley (e.g. Batchelor *et al.*, 2010; Branch *et al.*, 2000). Analysis of the sample reveals an environment of wetland with alder, sedges and reeds, with an understorey of other plants including fat hen and campion or stitchwort (Appendix B). The upper levels of the peat, revealed that the environment gradually became drier, with bramble and black elder colonising the landscape. Rare insect remains in the sample are consistent with damp habitats with standing water. None of the samples contained bone, Ostracoda, Foraminifera, charcoal or charred seeds.

7.1.4 The peat was sealed by a 0.60m thick further layer of greenish grey alluvium (1103). Its deposition truncated the peat horizon through scouring or similar fluvial action. This was sealed by a layer of very dark brown organic sandy clay silt (1102), which was not peat, but may represent a marshy environment. The surface of this deposit lay at -0.4mOD.

7.1.5 This marshy deposit was sealed by another alluvial deposit (1107), also bluish grey alluvium, which was cut into by the construction cut for the basements of the late phase warehouse formerly on the site. Potential later stratigraphy had been removed to a level of +0.10mOD: above this horizon were layers of modern demolition material: a mixed deposit (1101), a layer of demolition rubble (1109), and a layer of redeposited upcast from piling (1108). None of the alluvial layers or organic deposits

contained finds, indicating little or no anthropogenic occupation of the site when these layers were deposited.



Plate 1: Trench 1 Section

7.2 Watching Brief

Post-Medieval Deposits

7.2.1 The early sequence of alluvial deposition was also witnessed in the south of the site, in Area 1, where the foundations of the No.10 warehouse were removed (Figure 3). The lowest deposit was (213) a 0.20m thick pale blue clay silt alluvium. This was overlain by a 0.5m thick dark brown silty clay which was in turn overlain by a 0.10m organic silty clay (211). Overlying this was a 1.1m thick grey/blue silty alluvium (210/120) which may equate to (1107) in Trench 1. This was sealed by a deposit of soft dark brown silt (119/209), its surface at +0.46mOD; this also resembled buried topsoil a marsh-type layer. An organic rich layer (114/208) above this was up to 0.20m deep and contained pottery and clay tobacco pipe indicating a late 17th to 18th century date. The organic character of the deposit and general household pottery may indicate that this represents an episode of dumping.

7.2.2 This dumped deposit was sealed by further layers of made ground: a layer of dark brown soil contained gravel and brick fragments (207) and was 0.20m thick, and may represent a local building or demolition event. Above this was a layer of very dark brown silty sandy clay with frequent finds representing household waste (206), with a second layer above, less sandy (205), but also typified by its finds content. The top of this deposit lay at +2.26mOD. All structural remains on the site cut this horizon, including a late 18th century building with brick foundations, the cut for the Eastern Dock and construction trenches for the 1872 warehouse foundations. All finds from layers (205) and (206) date to no later than 1770, including English pottery and clay tobacco pipe bowls.

18th Century Building

7.2.3 The truncated remains of a building with brick foundations were recorded in the south of the site in Area 1 (Figures 4 and 5). Several rooms were indicated. One part of the building was represented by a brick foundation 0.38m wide in English bond bonded with coarse lime mortar [127], surviving for five courses. This enclosed a space measuring 2.3m north-south; the room's width was truncated by

foundations of the later warehouse. Within the room was a thin patch of compact sandy mortar (126) that was probably the bedding material for a stone or tiled floor. This lay at +2.01mOD.



Plate 2: Building Foundations

- 7.2.4 Directly east of this was a wall foundation [129] that represented the western wall of three rooms, later modified to two. The southern of the two rooms measured 1.80m north-south, and greater than 1.40m east-west, although the eastern wall was lost to truncation. Part of the floor surface survived: this was a stone floor (128) with a sand bedding layer beneath. The hard-wearing surface may indicate an external yard or internal area such as a kitchen. To the north of this, a narrow room with a brick floor was present [131], the room was only 1.10m wide. The northern wall of the room had been removed during the building's use, and a new floor surface of compact sandy mortar laid (130).
- 7.2.5 To the north of the first room, a later part of the building was represented by a short length of wall foundation [132]. This cut into the main wall of the structure, but is built of the same size and colour brick, so may be a modification or extension. The wall foundations were sealed by made ground associated with the No.10 warehouse.

Dock Wall and Associated Structures

- 7.2.6 The truncated top of the wall of the Eastern Dock lies at around +6.38mOD, over a metre below the ground level in 2010. This was contemporary with the last phase of the warehouse which lay at +7.45mOD level of the warehouse. This was examined in Area 2 (Figure 7). Of note is the height of the dock above the surrounding topography as it drops towards the south: the surviving top of the dock is over 3m above the level of Raine Street, at 3.00mOD.



Plate 3: Cut through Dock Wall

- 7.2.7 The dock wall (229) was constructed of a mix of red and yellow bricks, with occasional grey, overfired yellows built in English Bond. The full 1.80m width of the wall was coursed, with no rubble infill used. These typically measured 230mm by 110mm by 65mm (9" x 4 $\frac{3}{8}$ " x 2 $\frac{1}{2}$ "), and were bonded with hard lime mortar. Two courses of limestone blocks on the inner face of the dock wall lay at +3.50mOD, and these had slumped, possibly during construction. A final skin of English Bonded red and yellow brick formed the inner face of the wall. Both the inner and outer face were pointed with flush pointing.
- 7.2.8 The ground outside of the dock was made up after construction with a series of layers of made and redeposited ground. Within the dock, the lowest layer (232) was a layer of dark grey clayey silt at 3.05mOD, probably accumulated during the working life of the site. The silt was sealed by a thick deposit of mottled brown sandy clay silt with some gravel and brick rubble inclusions (231). This was up to 1.75m thick, and although probably laid in a series of compacted layers, appeared to be a single action. This dumped material was sealed by a second layer, of similar composition, but generally a shade darker (230). Above this was a layer of brick rubble, of both red and yellow bricks, that was 0.20m thick (228). This may represent a demolition and abandonment horizon for the dock. It was sealed by a layer of hardcore (227) that was bedding for the recent concrete slab forming the yard surface around the warehouse.
- 7.2.9 The watching brief included observations and recording during groundworks at the entrance to the Eastern Dock from the west (Area 3) (Figures 8, 9 and 10). This revealed the dock wall and mechanism for a swingbridge. The mechanism was housed to one side of a protruding buttress 10m wide, which may be an addition or rebuild of the original form. The buttress has rounded corners. The lower part of the wall was built of red and yellow bricks [311], to a height of 3.95m OD. Above this level, the structure was clad in a layer of concrete render (307), obscuring most details of its construction. At 5.25m OD was a layer of granite blocks each 0.40m thick and 1.15m long [306].

Beyond the buttress, the row of granite blocks continued, forming the edge of the entrance. Above the row of blocks, the buttress was clad in concrete (305) to its surface at 6.51mOD, which was also concrete. A hollow behind the frontage shows the scars left by concrete poured into a timber formwork (313).

- 7.2.10 The eastern curve of the buttress was clad in wooden planking (310), the planks 0.20m wide and 0.075m (3 inches) thick. These are not seen elsewhere in the dock. Two ladders rose up the face of the dock buttress. One was set into the masonry, formed of cast iron (308), forming a flat surface with semi-circular footholes at 0.36m intervals. The second ladder was of more usual construction, with rounded rungs and straight sides. It only survived for 0.70m depth from the surface of the dock.



Plate 4: Part of Swingbridge Mechanism

- 7.2.11 To the west of the buttress was a brick base [312] set at 45° to the dock, set at the level of the granite blocks and capped by an iron casing to an electric motor which powered the swing bridge mechanism (Plate 4). The drive shaft from the motor had a cog that interacted with a second cog on a separate spindle, with a 0.27m length of screw thread. It seems likely that the screw thread lifted the bridge from its setting, so it could swing to allow traffic in and out of the dock (Figure 9). The mechanism itself was in poor condition and in several pieces. The use of an electric motor and the concrete buttress indicates that the bridge mechanism was not an original fixture.
- 7.2.12 A new wall [301] that forms the current channel lying north of this dock wall is a modern modification of the entrance following the closure and infilling of the dock. The dock entrance appears to have been filled before the channel was defined. The lowest fill was bluish grey silt with high brick content (304), over 1m deep (Figure 3). This was sealed by dark grey sandy clay with high rubble content (303) that was up to 2m deep, with a third layer of backfill above (302). This upper layer was looser than the others were, and included a discarded and broken safe. The upper fill was cut by the construction cut for the new channel [301]. The entire structure was sealed by hardcore and the latest concrete yard surface (101).

No 10 Warehouse Structure

- 7.2.13 The walls that surrounded the site and part of the warehouse were all that remained above ground of the fabric and structure of the warehouse that stood on the site from 1872 until bomb damage and

post-war demolition razed it. The northern part of the structure was a modern rebuild, and the footings and basements appear to have removed all earlier evidence for the footprint shown on the first edition Ordnance Survey map. The southern building was established at a lower level, in keeping with the local topography, which sees the ground level dropping from 6.53mOD at the northern side to 3.2m OD on Raine Street.

- 7.2.14 The southern part of the warehouse foundations in Area 1 were recorded in more detail than the northern part (Figures 4 and 6). They were of brick over concrete. Long trenches oriented north-south were excavated to -1.54mOD, a depth of 3.80m [118]. These trenches were 2.06m wide with flat bases, regularly spaced at intervals of 3m. They were backfilled with mass concrete [117] to +0.06mOD, a thickness of 1.60m. Yellow brick footings were built atop the concrete [116], stepping in to 1.20m width. At intervals of 3.5m were granite blocks 1.20m square, principal pier or column supports for the warehouse building [111]. Within one of the blocks was a 0.46m diameter by 300mm thick lead [112] shallow recess which is thought to be related to a circular column.
- 7.2.15 Between the blocks were inverted brick arches, oriented north-south, providing support without using solid walls. Oriented east west between the foundations were a series of brick structures with semi-circular profiles [226]. These did not seem to be drains, since no silt was present within. The function is unclear, but may be reducing the load on the foundations by spreading the weight of the made ground across the site.
- 7.2.16 The sands, clay and silts upcast from the excavations was redeposited around the foundations (115/203/202). Finds within the assemblage include a small bone tool of unclear function (RF7). Above this was a layer of yellowish brown gravel (113/201), 0.30m thick, which was the bedding for a floor of the warehouse. The floor was formed of stone slabs laid in regular rows (109). The slabs varied from 1.63m length to 0.80m length, and were 0.96m wide and 0.08m thick. This surface lay at +3.06mOD, similar to the road level outside on Raine Street. The regularly-spaced piers, 3.5m apart did not appear to have any connecting walls, so indicate an open-plan building, on this ground floor level, at least. The level of the floor, in comparison to the north end of the site, may make this more of a lower ground level or basement.
- 7.2.17 At one location, next to a blocked opening in the exterior wall [121] some 8.5m wide, the piers were more substantial [110], enclosing an area 8.5m by 6.5m (Figure 4). This corresponds with a rectangular area marked on the first edition Ordnance Survey map, and may represent an external wall around a loading bay that would have had hoists on the walls above. The exterior wall included areas of post-World War II repair [123] following presumed blast damage (122). Its foundations [225] lay in a cut [133] as deep as the internal warehouse foundations, and are contemporary. The cut was backfilled with mixed brown clay (134).
- 7.2.18 The floor surface features several repairs, including one area backfilled with loose grey gravel (124) with concrete (125) above, which may represent the removal of a structural or functional element. Patches of tarmac (108) over the slabs may also represent repairs to worn parts of the floor.



Plate 5: Floor of No.10 Warehouse

- 7.2.19 One wall footing bound an area with a floor laid around one metre higher than the stone slabs, in the north of the southern warehouse. The wall was oriented east-west, and was 0.80m wide, constructed of red and yellow bricks [220]. On the wall's northern side was a wide area of red brick rubble which did not appear to be structural, and may be made ground (221) (Figure 9, Section 11). This was cut into by a trench [217] 0.80m deep, with a circular brick culvert built within it, of red and yellow brick [216] that was traced for a length of 35m. The culvert may drain from the northern levels of the warehouse. Its brickwork was sealed by 0.75m depth of dark brown clayey silt and brick rubble (218). Above this was a flat layer of pale or bluish grey concrete (219) which was quite patchy and irregular, and did not appear to form a surface: more of a consolidation layer. This was sealed by a layer of brownish yellow sand (215) which was a bedding floor for a cobbled floor surface (214) running for 35m and seen for a width of 2m at 4.05mOD. The presence of cobbles rather than paving may suggest a yard or surface for traffic rather than warehouse space. The wall that bounds the southern side of the cobbles aligns with a change in the external wall that represents a phase of blocking or rebuilding.
- 7.2.20 A second brick culvert was identified, running east-west 10m north of the first, and probably represents drainage associated with the northern warehouse building (Figure 9, Section 10). This culvert [223] had a circular profile with an internal diameter of 0.40m and was protected by a row of stone slabs above.
- 7.2.21 The perimeter wall of the site was also the outside wall of the warehouse, and was formed of yellow stock bricks with a string course of gritstone. The south perimeter wall also has drainpipes, no longer in use, running from the top of the wall. These indicate that the wall had formerly been higher: possibly this wall formed part of the southern warehouse as well as the boundary of the site, and the drains served roofline guttering. Next to the blocked entrance was a sub-rectangular blemish on the wall that may be a remnant of a 'urinal' marked on the first edition Ordnance Survey map
- 7.2.22 At the eastern end of the south wall were a set of gates leading into a yard area with a cobbled surface (137), bedded on a layer of sand (138). This surface lay outside of the No.10 warehouse land, the high perimeter wall overlooking it with windows that were blocked following the post-war demolition and additional elements of the perimeter wall. The gateway to this yard is flanked by brick piers with blue bull-nosed engineering bricks.

- 7.2.23 The post-demolition events to the southern parts of the warehouse comprise a series of layers of rubble and concrete layers. The concrete does not form surfaces, rather it seems the result of occasional layers being used to provide as solid a base as possible for the yard surface which formed the latest horizon of the site in 2010 at 6.75mOD, over 3.5m above the 19th century yard surface. These layers comprise a deposit of burnt debris (107) up to 0.80m deep, a layer of concrete 0.20m deep (106), a layer of loose debris and rubble (105), a second layer of concrete (104), further rubble (103), a third slab (102), and the sequence is finally topped by hardcore and the concrete slab forming the latest yard surface (101) at +6.7mOD. The site was attended in the case of unexploded ordnance. Three war-time items were recovered: two American bullets and the fragmentary remains of a parachute.
- 7.2.24 The foundations of the latest building on the site [226] represent the recently demolished northern part of the warehouse, of post war date with a girder frame and deep basements intruding on the potential stratigraphy of the site. These were not recorded during the Watching brief.

8. Finds and Environmental

- 8.1 The finds retrieved from the site are largely representative of household waste dumped on the site during the 18th century (Appendix C). This may be the result of urban clearance and dumping rather than objects used on the site, which appears to have been low-lying marshland prior to development in the 18th century. No further work is recommended.
- 8.2 The environmental evidence relates to the character of the site when peat, identified at 4.5m below current street level at the south of the site, was formed (Appendix B). This represents the site during the end of the Middle Bronze Age, when alder and sedge carr formed before later alluvial flood events raised the ground level. No further work is warranted.

9. Conclusions and Interpretation

- 9.1 The programme of revealing and recording buried archaeological features and horizons successfully characterised a sequence of alluvial deposition, peat formation, flooding, made ground and structural events. The natural Kempton Park gravels were seen at -2.6mOD, and were sealed by alluvium up to 0.80m thick, with peat above. Radiocarbon dating of the peat shows it to have been formed over a period of some 500 years, between 1630-1450 BC at its base, to 1390-1130 BC at the surface, consistent with results elsewhere from the Isle of Dogs. The environmental evidence shows the earlier horizon to have been generally damper than the later, with alder and sedge giving way to bramble and elder.
- 9.2 The Bronze Age peat was inundated with alluvium, and an undated horizon of marshy silt at +0.40m represents the surface of the site prior to widespread dumping of household waste during the late 17th and 18th century. This raised the ground level to around +2.00m OD, and it was upon this horizon that the first structure was built, represented by the heavily truncated floor sand wall of a building which may have had a cobbled yard.
- 9.3 The principal structural remains, however are the extensive and tall walls of the dock, built of massed brickwork and accessed through a channel from the west with a swingbridge over its entrance canal. Much of the dock wall remains beyond the site, in parkland to the east. The width of the walls is considerable, as required by a structure that was raised in line with the natural slope in the topography, the top of the dock at around 6.50m, over 4.4m above the ground surface at the southern end of the site. The basin of the dock appears to have been refaced with brick, while part of the entrance channel was formed of concrete poured into shuttering. The mechanism for operating

the swingbridge remained; the bridge itself lost after the Second World War, which also saw the backfilling of the dock. The swing bridge mechanism had a series of gears powered by an electric motor, and was clearly not original.

- 9.4 The foundations for the No. 10 warehouse, erected in 1872, were massive, probably the result of soft ground as well as the weight of the structure itself. With no girders to provide a lightweight construction, mass concrete footings and redbrick piers at intervals of 3.5m formed the supports for the structure, using inverted relieving arches. Around half the southern end of the site was removed in the 1870s when the southern part of the warehouse was built. It had a stone floor at the southern end and an opening to the street, probably with a loading bay. There appears to have been a cobbled access from the west, off Old Gravel Lane, now Wapping Lane.
- 9.5 The northern half of the warehouse may be considered now an entirely different building. It was known to have been bombed and demolished during the Second World War. Its basements and foundations appear to have removed all evidence for the building that was bombed. The demolition of the southern part of the warehouse is also a post-war event, and was characterised by a thick series of rubble layers consolidated by concrete, raising the ground level by 3m.

10. Further Work and Publication

- 10.1 No further on site or analysis work is recommended. Copies of the report will be issued to Kim Stabler, the SMR, the local museum and the Local Studies Library on the understanding that it will become a public document after an appropriate period of time.
- 10.2 A short summary of the results of the fieldwork will be published with a short summary submitted to the local fieldwork roundup, and grey literature added to the online ADS OASIS project (Appendix D).

11. Archive Deposition

- 11.1 The archive will be prepared in accordance with local and national guidance (UKIC 1990, Brown & AAF 2007). On completion of the project, the Developer/Landowner will discuss arrangements for the archive to be deposited with the Museum of London. It is envisaged that the archive will be deposited within six months of the approval of the report.

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21 WAPPING LANE, LONDON BOROUGH OF TOWER HAMLETS: AN ARCHAEOLOGICAL WATCHING BRIEF AND EVALUATION REPORT

Site Location Within London

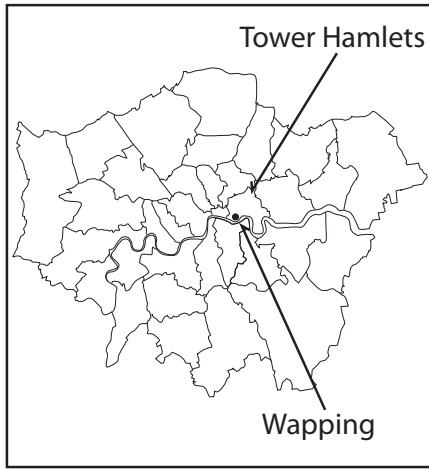
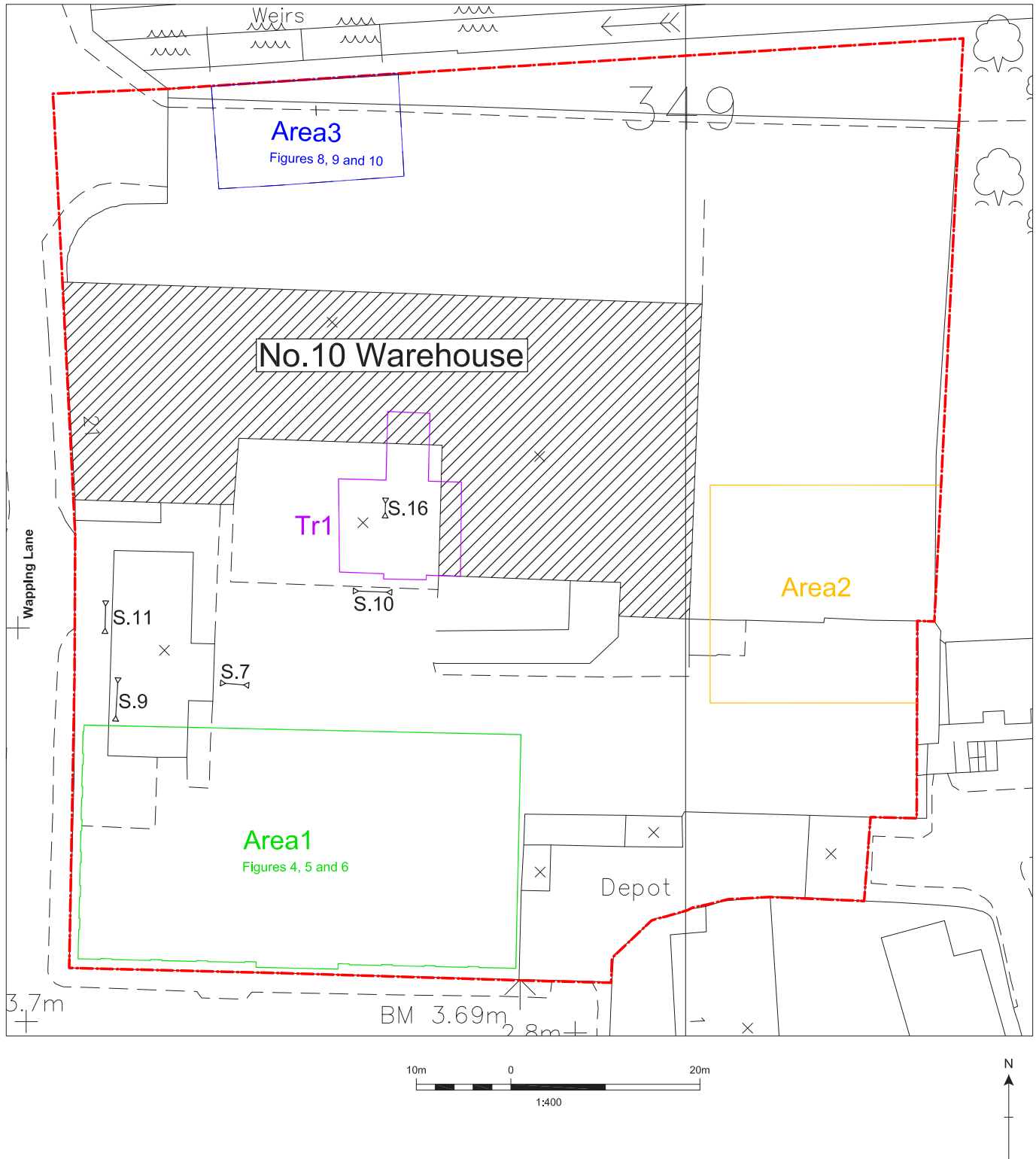


Figure 1: Site Location



▨ Warehouse

Based on the Ordnance Survey's 1:1250 Superplan Digital Data of 2004 with the permission of the Controller of Her Majesty's Stationary Office © Crown Copyright. Licence No. AL 100023757

Figure 2: Detailed Site Location, Showing Structures, Principle Watching Brief Areas and Trenches

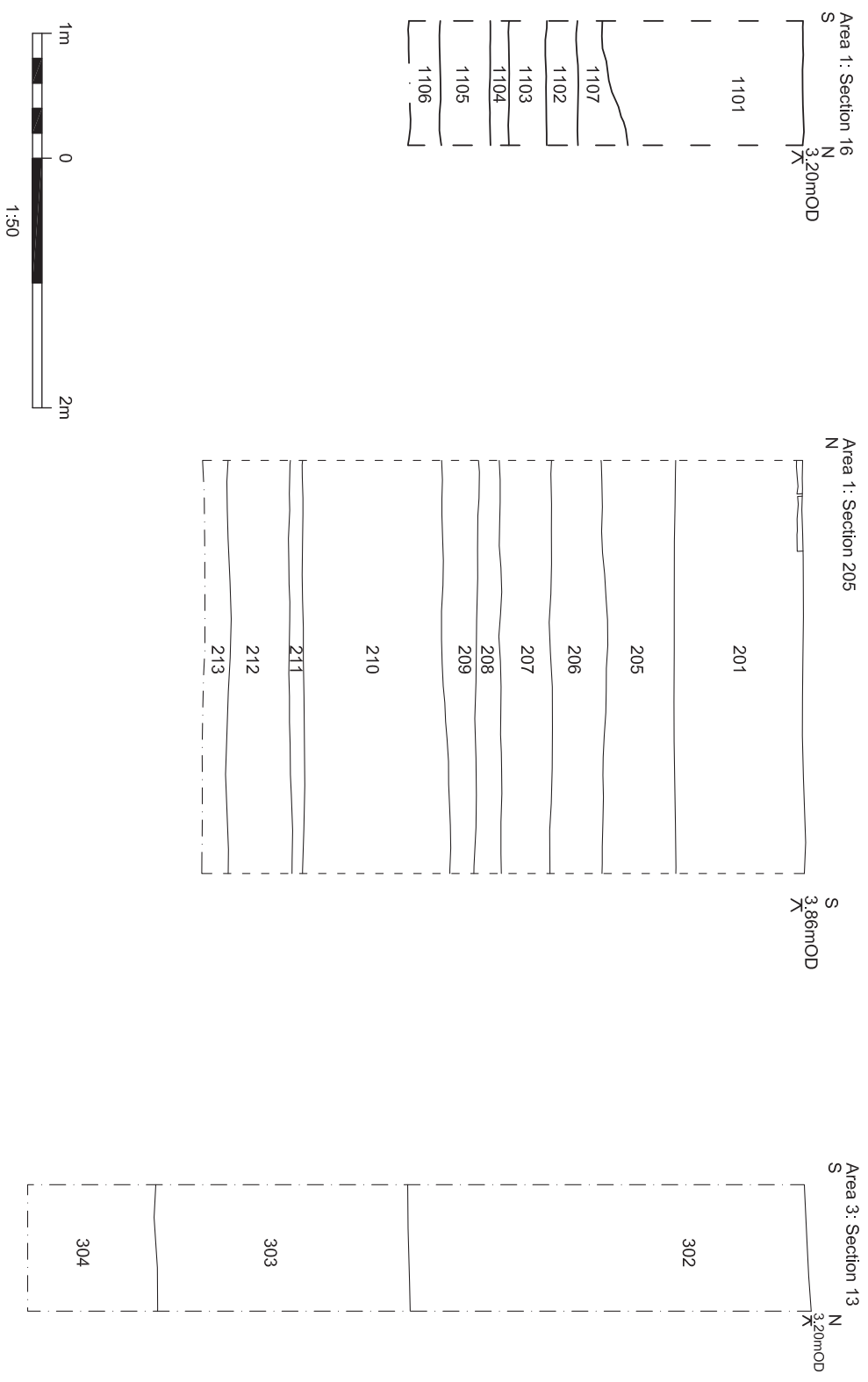


Figure 3: Sample Sections of Evaluation Trench 1, Area 1 and Area 3: Alluvial Horizons

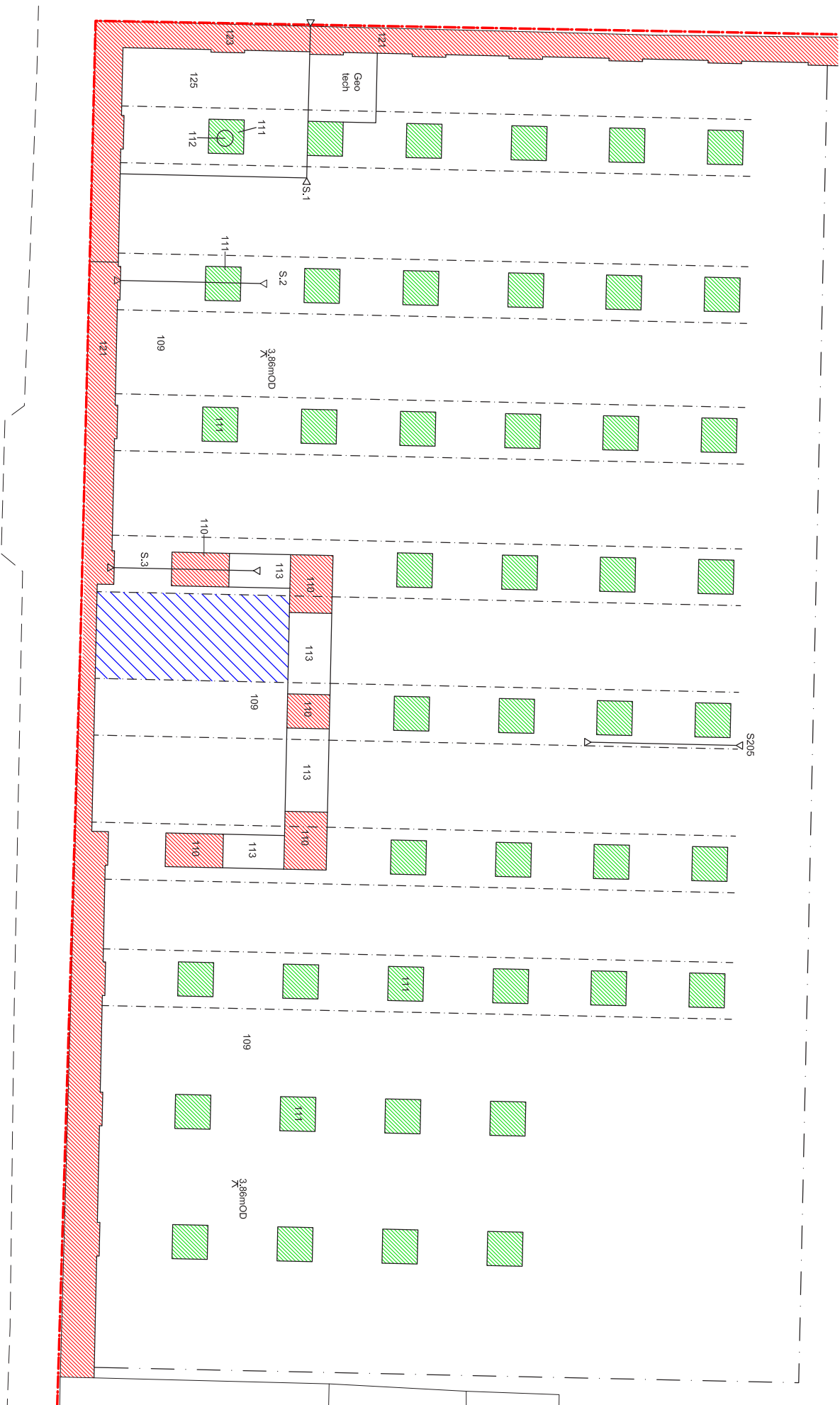
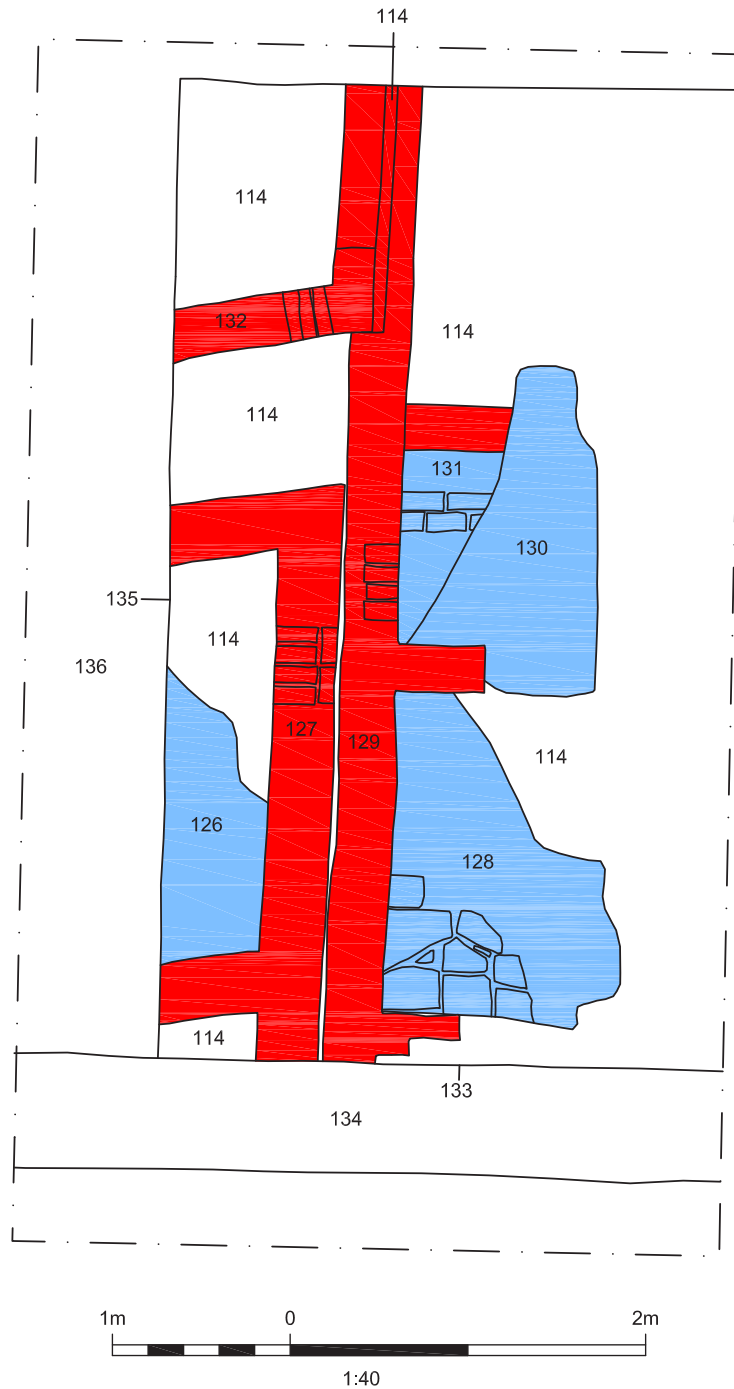


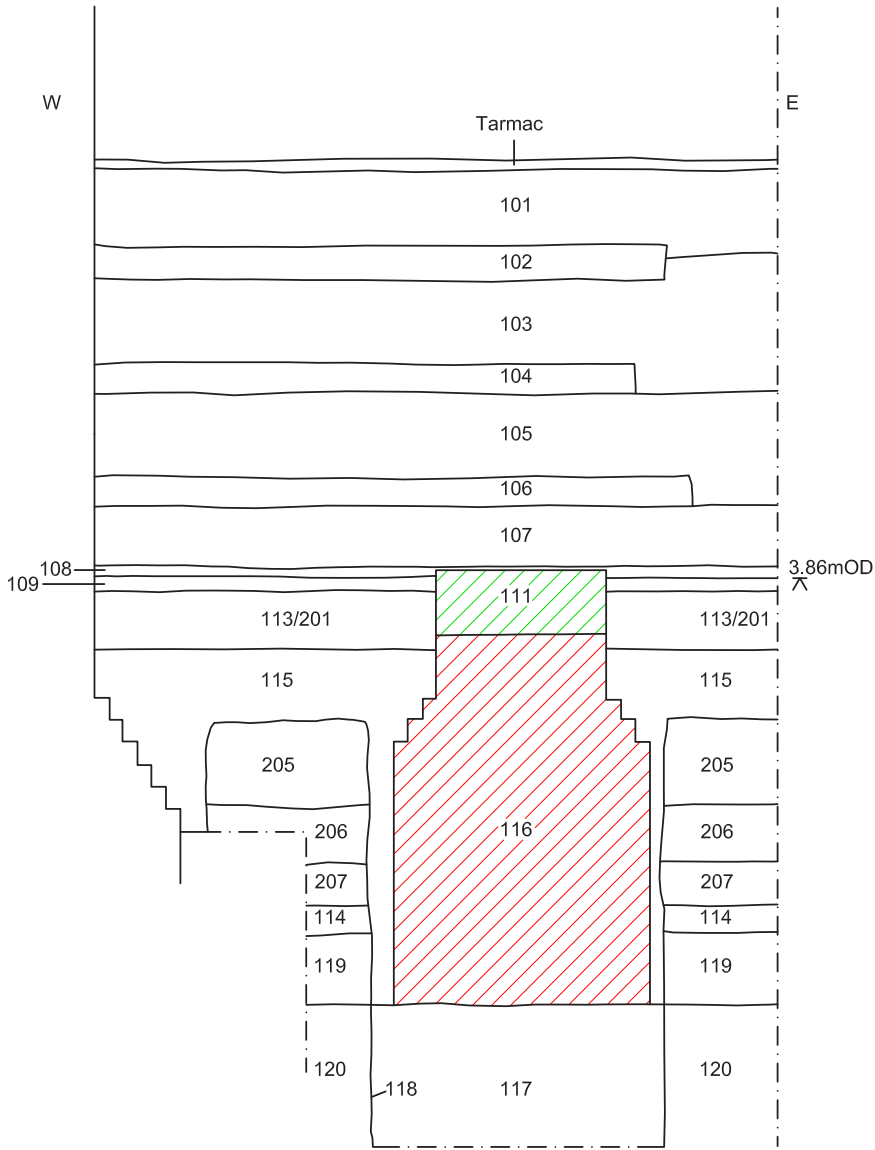
Figure 4: Area 1: Plan



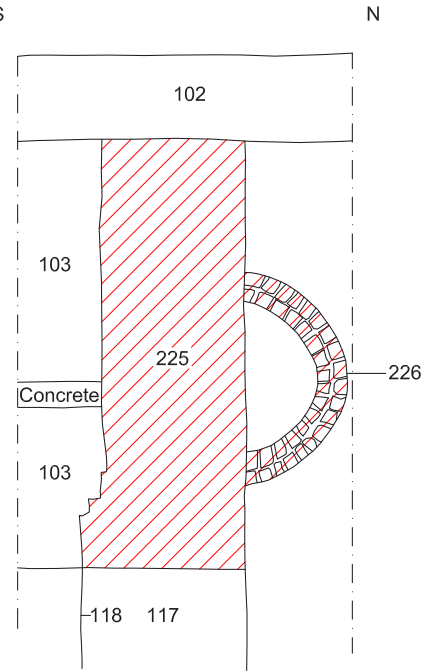
■ Brick Walls ■ Floors

Figure 5: Area 1: Fragment of 18th Century Building

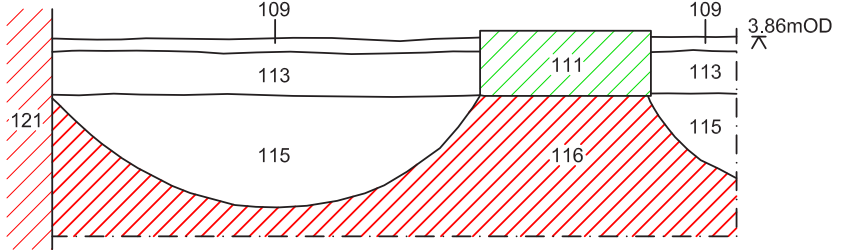
Section 1



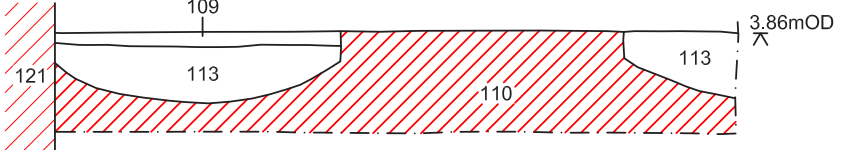
Section 11



Section 2

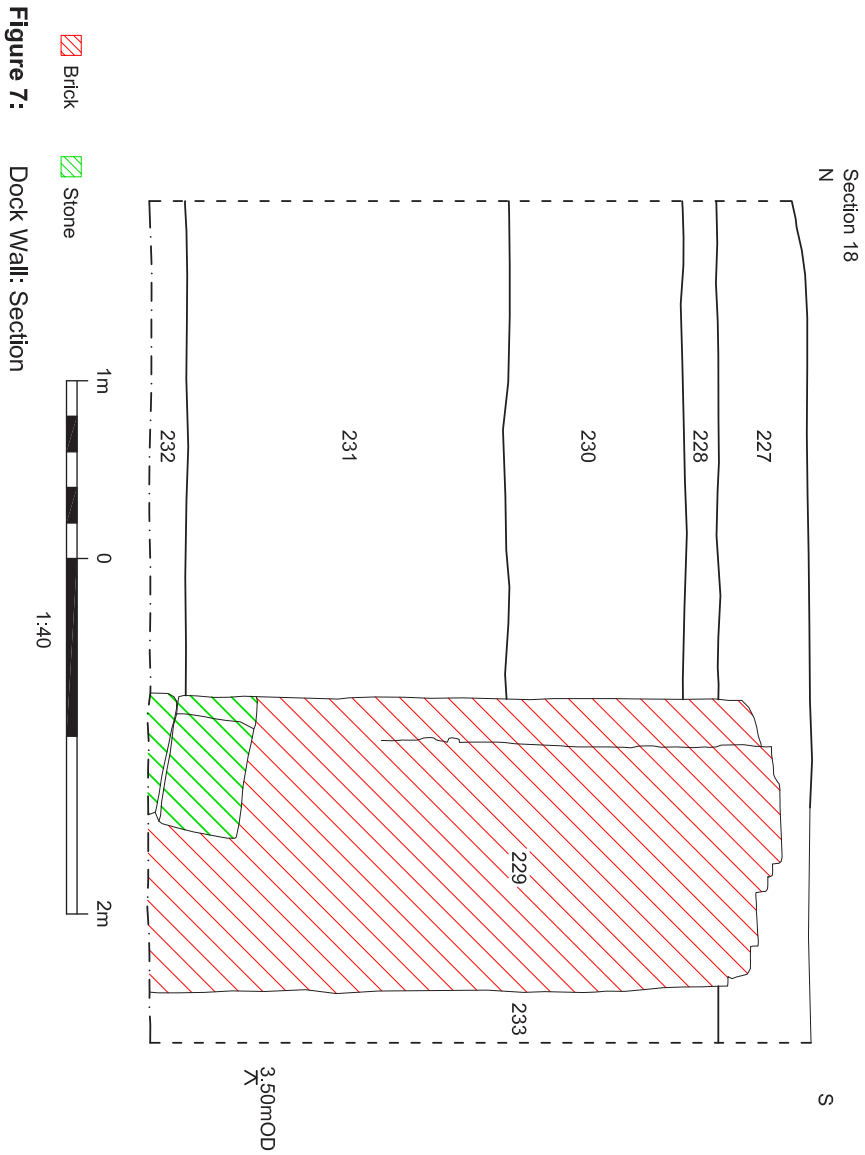


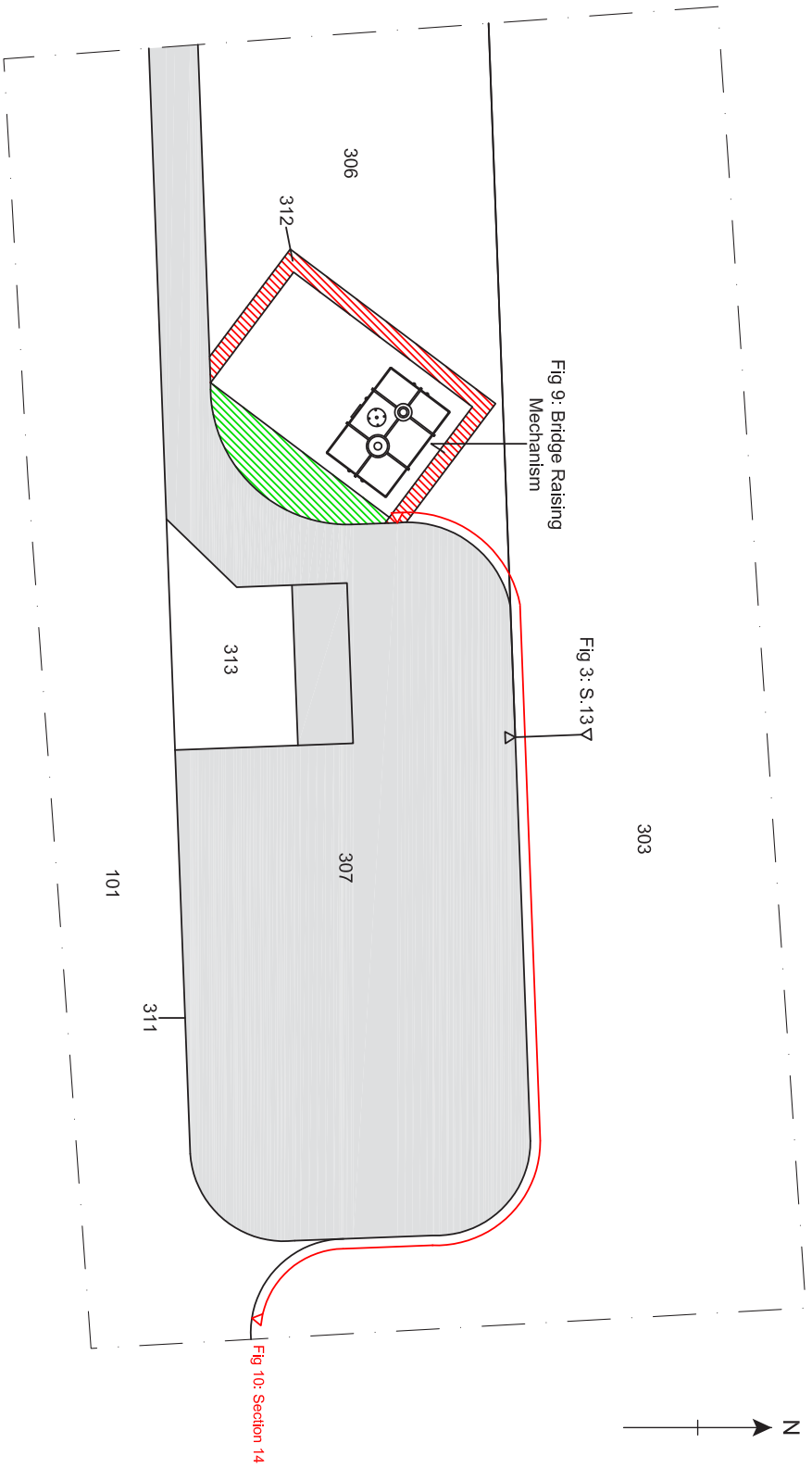
Section 3



Brick Stone

Figure 6: Area 1: Sections



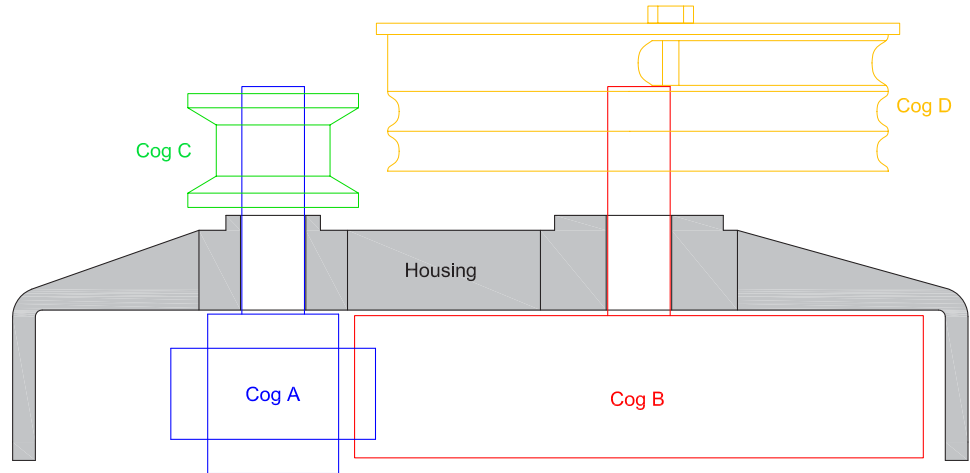


Brick Stone Concrete

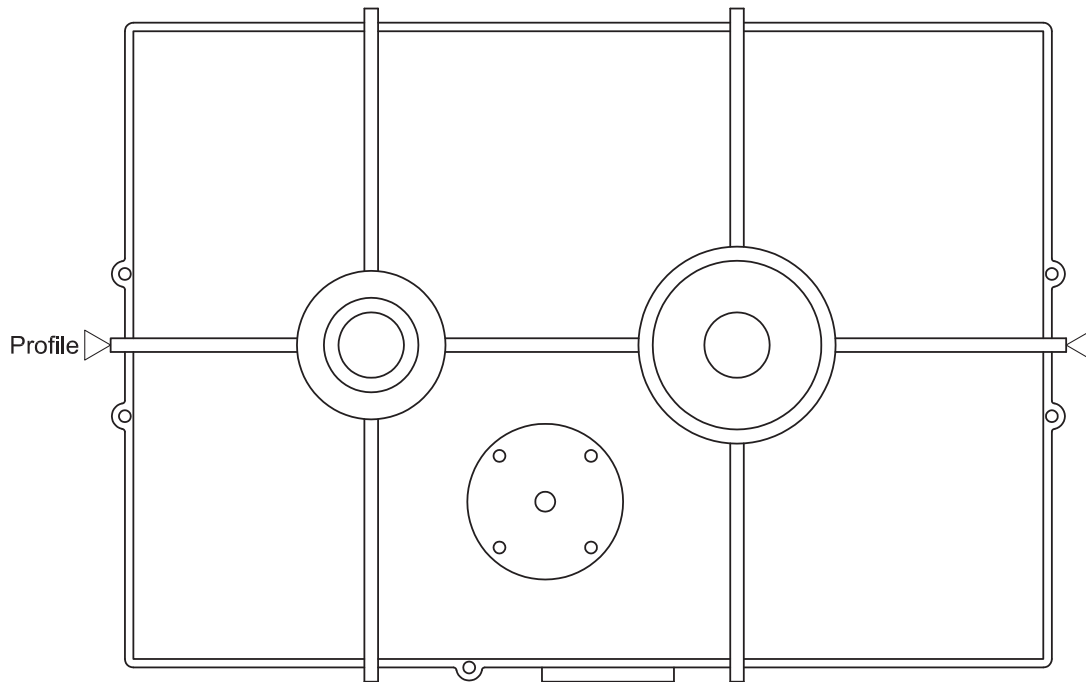
Figure 8: Area 3: Plan



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Conjectured Profile Through the Bridge Raising Mechanism



Plan of Bridge Raising Mechanism Housing (Cogs not Represented)



Figure 9: Bridge Mechanism: Housing Plan & Profile

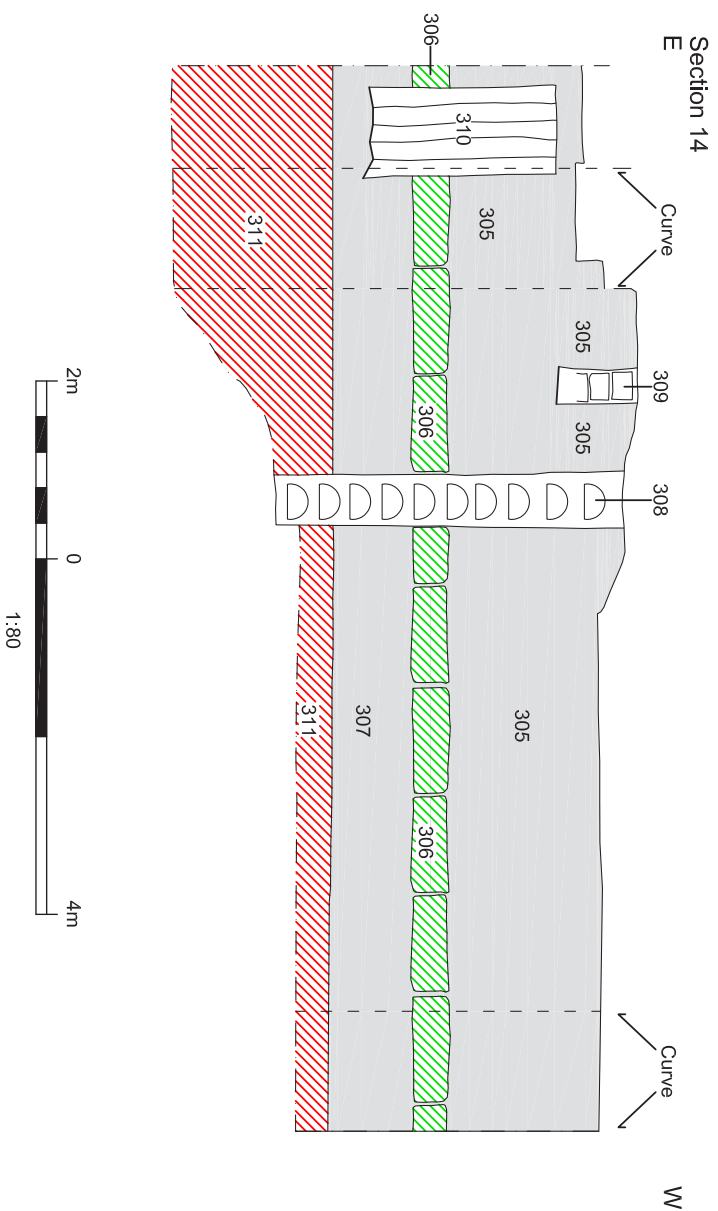


Figure 10: Area 3: Dock Wall Section

Brick Stone Concrete

21 WAPPING LANE, LONDON BOROUGH OF TOWER HAMLETS: AN ARCHAEOLOGICAL WATCHING BRIEF AND EVALUATION REPORT

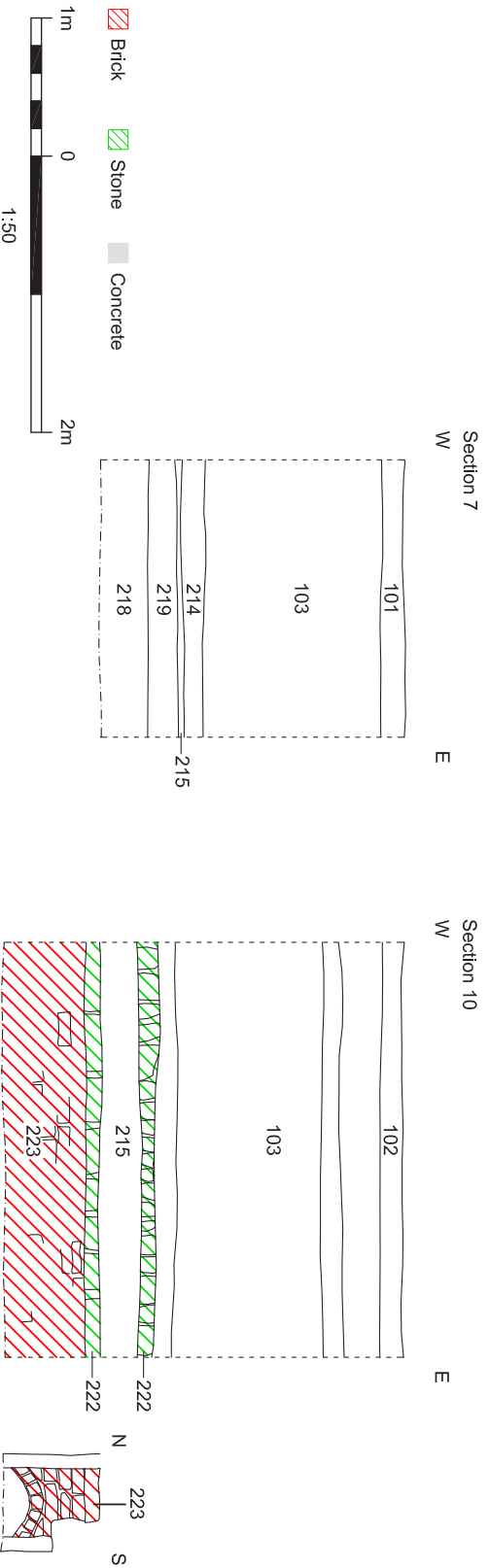
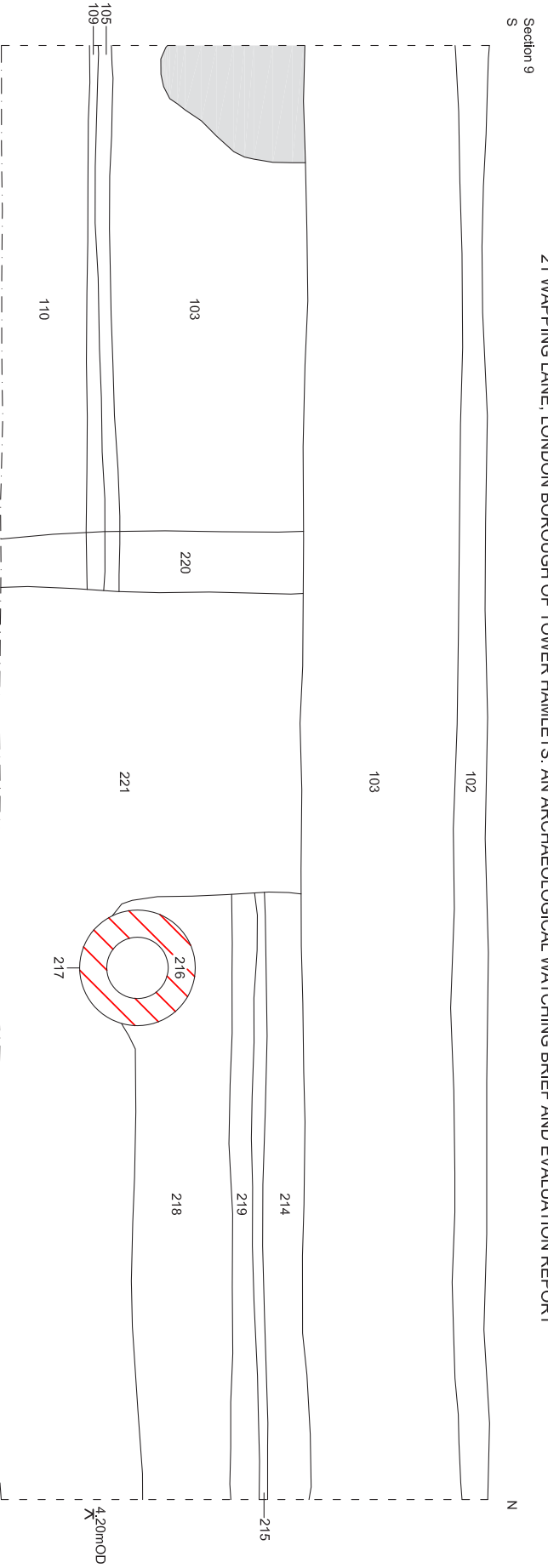


Figure 11: Sections

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Appendices

Appendix A: Context Register

Context	Description	Length	Width	Depth
101	Modern surface of tarmac and ash	ca 50.00m	>20.00m	0.6m
102	Reinforced concrete slab	20m	4.5m	0.2m
103	Demolition deposit	ca 50.00m	>20.00m	0.8m
104	Secondary slab	20m	4.5m	0.2m
105	Demolition deposit	ca 50.00m	>20.00m	0.7m
106	Lower slab	20m	4.5m	0.20m
107	Demolition deposit	ca 50.00m	>20.00m	0.8m
108	Tarmac surface	ca 50.00m	>20.00m	0.1m
109	Slab floor of warehouse	ca 50.00m	>20.00m	0.1m
110	C19 th foundations	>20m	1.80m	3.5m
111	Stanchion base	1.20m	1.20m	0.45m
112	Lead-lined feature	0.46m	0.46m	0.03m
113	Formation deposit	ca 50.00m	>20.00m	0.3m
114	Post-medieval made ground	ca 50.00m	>20.00m	2.45m
115	Post-medieval made ground	ca 50.00m	>20.00m	0.80m
116	C19 th foundation	>20.00m	1.80m	2.5m
117	Concrete Foundation	20m	2.1m	3.4m
118	Cut for 117	20m	2.1m	1.6m
119	Marsh	ca 50.00m	>20.00m	0.5m
120	Alluvial Clay	ca 50.00m	>20.00m	>1.00m
121	External wall, warehouse	Site outline	Site outline	7m
122	Repair intrusion	6.5m	4.5m	>1.00m
123	Red brick wall footing	NFE	1.5m	1.00m
124	Fill associated with 123	6.5m	4.5m	1.00m
125	Replacement floor	6.5m	4.5m	0.15m
126	Mortar surface	1.64m	0.60m	0.05m
127	Wall foundation	3.2m	1.00m	0.40m
128	Stone yard surface	1.8m	1.3m	0.05m
129	Wall foundation	5.20m	0.8m	0.32m
130	Same as 126	1.80m	1.10m	0.08m
131	Brick floor, internal	1.10m	0.55m	0.10m
132	Wall foundation	1.10m	1.10m	0.22m
133	Construction cut for 121	Ca 50m	0.60m	1.00m
134	Fill of 133	Ca 50m	0.10m	1.00m
135	Construction cut for 110	>20m	1.80m	3.5m
136	Fill of 135	>20m	0.10m	3.5m
137	Cobbles in yard area	10m	5m	0.12m
138	Bedding for 137	10m	5m	0.10m
201	Rubble-rich layer	16.00m	2.00m	0.8m
202	Organic silty deposit	16.00m	2.00m	0.70m

21 WAPPING LANE, LONDON BOROUGH OF TOWER HAMLETS:
AN ARCHAEOLOGICAL WATCHING BRIEF AND EVALUATION REPORT

Context	Description	Length	Width	Depth
203	Loose leveling deposit	16.00m	2.00m	0.20m
204	Firm blue alluvium	16.00m	2.00m	>2.50m
205	Dark brown dumped deposit	20.00m	3.00m	0.50m
206	Dark greyish brown dumped deposit	20.00m	3.00m	0.30m
207	Greyish brown made ground	20.00m	3.00m	0.40m
208	Organic layer	20.00m	3.00m	0.20m
209	Dark brown brick-rich layer	20.00m	3.00m	0.30m
210	Greyish blue silty clay	20.00m	3.00m	1.10m
211	Blackish brown organic deposit	20.00m	3.00m	0.10m
212	Dark brown organic deposit	20.00m	3.00m	0.50m
213	Pale blue silty clay	20.00m	3.00m	0.2m
214	Cobbled surface	35m	2m	0.14m
215	Levelling layer	35m	2m	0.05m
216	Victorian Culvert	5m	0.80m	0.80m
217	Cut for 216	5m	0.80m	0.80m
218	Made ground	35m	5m	0.20m
219	Concrete	35m	4.5m	0.20m
220	Brick foundation	5m	0.8m	4.5m
221	Brick rubble	8m	5m	3m
222	Stone slabs	0.4m	NFE	0.10m
223	Brick culvert	3m	0.6m	0.6m
224	Wall foundation, cuts through 216	NFE	0.40m	1.00m
225	Warehouse foundation on concrete	NFE	1.00m	3.00m
226	Brick culvert	NFE	0.70m	1.40m
227	Modern hardcore	10.00m	3.6m	0.55m
228	Demolition horizon	10.00m	3.6m	0.20m
229	Dock wall	10.00m	1.64m	>4.2m
230	Made Ground	10.00m	3.6m	0.98m
231	Made Ground	10.00m	3.6m	1.75m
232	Alluvium	10.00m	3.6m	0.20m
300	Modern fill	13.00m	1.50m	4.40m
301	Cut for canal	13.00m	1.50m	4.40m
302	Infill of Dock	13.00m	10.00m	3.20m
303	Backfill of Dock	13.00m	10.00m	2.00m
304	Alluvium in Dock	13.00m	10.00m	1.00m
305	Top of Dock wall	13.00m	NFE	1.30m
306	Stones of Dock wall	6.00m	NFE	0.35m
307	Dock Wall	13.00m	7.00m	2.40m
308	Dock Ladder	0.30m	0.10m	0.70m
309	Dock Ladder	0.30m	0.10m	1.40m
310	Timber revetment	0.20m	0.10m	3.00m
311	Brick wall	NFE	0.5m	2.00m

Context	Description	Length	Width	Depth
312	Brick base	4.00m	2.50m	1.25m
313	Concrete-lined void	2.80m	2.50m	>2.00m
1101	Made ground	20.00m	8.00m	2.6m
1102	Organic deposit	16m	2m	0.30m
1103	Alluvial deposit	10m	2m	0.60m
1104	Peat	10m	2m	0.30m
1105	Alluvium	12m	2m	0.80m
1106	Natural gravel	12m	2m	>0.50m
1107	Late phase alluvium	18m	2m	>0.80m
1108	Recent mixed deposit	20m	8m	1.10m
1109	Pile mat seen in section	5m	2m	0.20m

Appendix B: Environmental Assessment

ENVIRONMENTAL ARCHAEOLOGICAL ASSESSMENT

D.S. Young, P.J. Austin and S.A. Elias

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INTRODUCTION

This report summarises the findings arising out of the environmental archaeological assessment undertaken by Quaternary Scientific (QUEST) in connection with the proposed development at 21 Wapping Lane, London Borough of Tower Hamlets (Site Code: WPZ10; National Grid Reference: TQ 3490 8049; Figure 1). Excavations at the site by AOC Archaeology Ltd. revealed a sequence of alluvial and peat deposits that overlie natural gravels. An environmental archaeological assessment was carried out in order to evaluate the potential of the sedimentary sequences for reconstructing the environmental history of the site and its environs. In order to achieve this aim, the environmental archaeological assessment consisted of the following techniques:

1. Recording the lithostratigraphy of the column samples to provide a preliminary reconstruction of the sedimentary history of the site
2. Assessment of the preservation and concentration of pollen grains and spores of selected sequences to provide a preliminary reconstruction of the vegetation history, and to detect evidence for human activities e.g. woodland clearance and cultivation
3. Assessment of the preservation and concentration of diatom frustules in selected sequences to provide a preliminary reconstruction of the hydrological history e.g. water quality and depth
4. Assessment of the preservation and concentration of macroscopic plant, insect and Mollusca remains from the bulk samples to provide a preliminary reconstruction of the vegetation history and general environmental context of the site
5. Radiocarbon dating of the organic horizon in order to provide a chronological framework for the environmental archaeological assessment.

METHODS

Lithostratigraphic descriptions

The lithostratigraphy of the column samples was described in the laboratory using standard procedures for recording unconsolidated sediment and organic sediments, noting the physical properties (colour), composition (gravel, sand, clay, silt and organic matter) and inclusions (e.g. artefacts). The procedure involved: (1) cleaning the samples with a spatula or scalpel blade and distilled water to remove surface contaminants; (2) recording the physical properties, most notably colour using a Munsell Soil Colour Chart; (3) recording the composition; gravel, fine sand, silt, clay and organic material; (4) recording the degree of peat humification and (5) recording the unit boundaries e.g. sharp or diffuse.

Radiocarbon dating

Two sub-samples of wood bark were extracted for radiocarbon dating from the top and base of the bulk sample sequence that sampled the organic horizon. Both samples were submitted for AMS

radiocarbon dating to the SUERC Radiocarbon Dating Laboratory, East Kilbride, Scotland. The results have been calibrated using OxCal v3.10 Bronk Ramsey (1995; 2001; 2007) and the IntCal04 atmospheric curve (Reimer *et al.*, 2009). The results are displayed in Table 1.

Macrofossil assessment

Six bulk samples, each 5cm deep and forming a continuous sequence through the organic horizon were processed for the recovery of macrofossil remains including waterlogged plant macrofossils, waterlogged wood, insects and Mollusca. The extraction process involved the following procedures: (1) measuring the sample volume by water displacement and (2) processing the sample by wet sieving using 300µm and 1mm mesh sizes. Each sample was scanned under a stereozoom microscope at x7-45 magnifications, and sorted into the different macrofossil classes. The concentration and preservation of remains was estimated for each class of macrofossil (Table 2).

Preliminary identifications of the archaeobotanical remains (waterlogged plant macrofossils and wood), have been made using modern comparative material and reference atlases (Cappers *et al.* 2006; Hather, 2000; Schweingruber, 1990; Schoch *et al.* 2004). Nomenclature used follows Stace (2005). The quantities of waterlogged seeds and wood were recorded for each sample, with identifications of the main taxa (Tables 3 to 4). Preliminary identifications of the insect remains were made under a low powered stereo-microscope, and the concentration, state of preservation and main taxa noted (Table 5). Identification and interpretation was based on modern comparative material and reference atlases (e.g. Kloet and Hincks, 1964-77; Duff, 2008).

RESULTS AND INTERPRETATION OF THE LITHOSTRATIGRAPHIC DESCRIPTIONS

Due to difficulties encountered during the excavation of the archaeological trenches at the site, the bulk samples from the continuous bulk sample sequence collected between -1.40 and -1.70m OD are considered to be the most suitable of the samples for environmental archaeological assessment. The lithostratigraphic description of column <C> has identified three units, all dark grey fine sand/silt with some gravel in the lowest unit. These descriptions are consistent with the field description of context (1105). None of the units react with hydrochloric acid (indicating an absence of calcareous material). Column is a single undifferentiated unit of greenish grey silty clay. It reacts strongly with hydrochloric acid and contains an inclusion with brick and mortar particles. This is unlike anything described in column <C>. These findings are not consistent with these two columns overlapping.

Column <A> is shown in the section drawing as mainly within context (1103), described in the Context Record Sheet as a 'pale blue-grey clay'. The column is shown as extending down into context (1104), described in the Context Record Sheet as 'rich dark brown organic material- peat'. However, no part of column <A> can be described as 'pale blue-grey clay', and the column has been divided into two units- the upper unit is similar to the material forming Column , and includes a piece of clinker; the lower unit of which 22cm were recovered in the column, is a gritty sandy silty clay with oyster shell (some burnt) and clinker. It is clear from the lithostratigraphic descriptions that this is not the peat which has been recovered in the bulk samples.

The bulk samples from 21 Wapping Lane form a continuous sequence of 5cm deep samples through the organic horizon identified at the site between -1.40 and -1.70m OD. The environmental archaeological assessment thus focuses on the bulk samples collected from this organic horizon, and consisted of the assessment of macroscopic remains only; no assessment of microscopic remains (diatoms or pollen grains and spores) was carried out.

RESULTS AND INTERPRETATION OF THE RADIOCARBON DATING

The results of the radiocarbon dating of the organic horizon are displayed in Table 1. Wood bark from the top (sample -1.40 to -1.45m OD) of the organic horizon has been radiocarbon dated to 3340 to 3080 cal yr BP. Wood bark from the base of the organic horizon (-1.65 to -1.70m OD) has been dated to 3580 to 3400 cal yr BP.

The $\delta^{13}\text{C}$ (‰) values are consistent with that expected for peat sediment, and there is no evidence for mineral or biogenic carbonate contamination. The dates indicate that the organic horizon accumulated during the Middle Bronze Age cultural period over a period of between ca. 100 and 500 years, and that it is chronologically consistent with other Middle Bronze Age peat horizons identified in the Lower Thames Valley (e.g. Batchelor *et al.*, 2010; Branch *et al.*, 2000).

Table 1: Results of the radiocarbon dating, 21 Wapping Lane, London Borough of Tower Hamlets

Laboratory code / Method	Material and location	Sample (m OD)	Uncalibrated radiocarbon years before present (yr BP)	Calibrated BC/AD (BP) (2-sigma, 95.4% probability)	$\delta^{13}C$ (‰)
SUERC-33656 (GU-23823) AMS	Wood bark, top of peat	-1.40 to -1.45	3020 ± 30	1390-1130 cal BC (3340-3080 cal BP)	-28.7
SUERC-33657 (GU-23824) AMS	Wood bark, base of peat	-1.65 to -1.70	3270 ± 30	1630-1450 cal BC (3580-3400 cal BP)	-27.3

RESULTS AND INTERPRETATION OF THE MACROFOSSIL ASSESSMENT

Six bulk samples, each 5cm deep and forming a continuous sequence were processed for the recovery of macrofossil remains including waterlogged plant macrofossils, waterlogged wood, insects and Mollusca (Table 2).

The results of an initial assessment indicated that none of the samples contained bone, Ostracoda, Foraminifera, charcoal or charred seeds. Insects were identified in low quantities in all six samples, while low quantities of Mollusca were present in two samples (-1.40 to -1.45 and -1.50 to -1.55m OD). Waterlogged seeds were present in low to moderate quantities in all six samples, with waterlogged wood present in moderate to high quantities in all six samples.

Table 2: Results of the macrofossil assessment of bulk samples from Trench 1, 21 Wapping Lane, London Borough of Tower Hamlets

Depth (m OD)	Context number	Volume sampled (l)	Volume processed (l)	Volume remaining	Fraction (e.g. float, residue, >300µm)	Charred						Waterlogged		Mollusca			Bone			Insects	Foraminifera								
						Charcoal (>4mm)	Charcoal (2-4mm)	Charcoal (<2mm)	Seeds	Chaff	Wood	Seeds	Whole	Fragments	Large	Small	Fragments	Large	Small			Fragments							
-1.40 to -1.45	(1140)	1.0	1.0	0.0	>1mm	-	-	-	-	-	3	1	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-
-1.45 to -1.50	(1140)	1.0	1.0	0.0	>300µm	-	-	-	-	-	-	1	1	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	1
-1.50 to -1.55	(1140)	1.0	1.0	0.0	>1mm	-	-	-	-	-	4	2	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-
-1.55 to -1.60	(1140)	1.0	1.0	0.0	>300µm	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
-1.60 to -1.65	(1140)	1.0	1.0	0.0	>1mm	-	-	-	-	-	2	2	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-
-1.65 to -1.70	(1140)	1.0	1.0	0.0	>300µm	-	-	-	-	-	5	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
					>1mm	-	-	-	-	-	4	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
					>300µm	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1

Key: 0 = Estimated Minimum Number of Specimens (MNS) = 0; 1 = 1 to 25; 2 = 26 to 50; 3 = 51 to 75; 4 = 76 to 100; 5 = 101+

RESULTS OF THE WATERLOGGED PLANT MACROFOSSIL ASSESSMENT (SEEDS AND WOOD)

The results of the macrofossil rapid assessment indicated that waterlogged plant macrofossils (seeds) were present in all six samples (Table 3), and thus these underwent a more detailed assessment. The results of the waterlogged plant macrofossil (seeds) assessment are displayed in Table 3. The assemblage in the sequence is dominated from -1.70 to -1.45m OD by herbaceous taxa including *Carex* sp. (sedge), *Chenopodium* sp. (e.g. fat hen), *Silene/Stellaria* sp. (campion/stitchwort) and the aquatic taxon *Sparganium erectum* (bur-reed). This assemblage is indicative of a wet environment dominated by sedges and reeds, with herbaceous taxa growing on the wetland margins. The assemblage in the uppermost sample (-1.40 to -1.45m OD) is dominated by shrub taxa including *Rubus* sp. (e.g. bramble) and *Sambucus nigra* (black elder). The herbaceous genus *Carex* (sedge) was also present. This assemblage is indicative of a drier environment than is suggested by the samples below -1.45m OD, and may indicate shrubland dominated by bramble and elder bush or elderberry.

Table 3: Results of the waterlogged macrofossil (seeds) assessment, 21 Wapping Lane, London Borough of Tower Hamlets

Depth (m OD)	Context number	Main taxa	Common name	Number
-1.40 to -1.45	(1140)	<i>Rubus</i> sp.	e.g. bramble	3
		<i>Sambucus nigra</i>	black elder	2
		cf. <i>Carex</i> sp.	cf. sedge	1
-1.45 to -1.50	(1140)	<i>Carex</i> sp.	sedge	2
		<i>Sparganium erectum</i>	bur reed	1
-1.50 to -1.55	(1140)	<i>Carex</i> sp.	sedge	6
		<i>Silene/Stellaria</i> sp.	campion/stitchwort	1
		<i>Chenopodium</i> sp.	e.g. fat hen	1
		<i>Rubus</i> sp.	e.g. bramble	1
-1.55 to -1.60	(1140)	<i>Sparganium erectum</i>	bur reed	4
		<i>Rubus</i> sp.	e.g. bramble	1
		<i>Carex</i> sp.	sedge	1
-1.60 to -1.65	(1140)	<i>Sparganium erectum</i>	bur reed	2
		<i>Sambucus nigra</i>	black elder	1
		<i>Chenopodium</i> sp.	e.g. fat hen	1
		<i>Carex</i> sp.	sedge	2
		Unidentified	-	2
-1.65 to -1.70	(1140)	<i>Sparganium erectum</i>	bur reed	1

The results of the macrofossil rapid assessment indicated that waterlogged wood was present in all six samples (Table 2), and thus these underwent a more detailed assessment. The results of the waterlogged plant macrofossil (seeds) assessment are displayed in Table 4. All the material provided was well preserved. However most elements were heavily compressed and thus appeared much flattened, rather than round, in transverse section. This was more evident in smaller roundwood elements than the larger elements. Only one taxon- *Alnus glutinosa* (alder)- was identified in each of the samples. No other taxon was present. Bark was present in all 6 samples (albeit only identified

microscopically in 3 samples). The material studied is highly suggestive of coarse woody debris from a wetland environment (for example, alder carr). Given that no other taxa were identified in this assessment, this suggests that alder was the dominate wood- other taxa may have been present but in small quantities.

Table 4: Results of the waterlogged wood assessment, 21 Wapping Lane, London Borough of Tower Hamlets

Sample depth (m OD)	ID (Quantity)	Comments
-1.40 to -1.45	<i>Alnus glutinosa</i> (4) Indeterminate- bark (1)	Small roundwood/twigwood. Heavily compressed. -
-1.45 to -1.50	<i>Alnus glutinosa</i> (4) Indeterminate- bark (1)	Roundwood. Heavily compressed. -
-1.50 to -1.55	<i>Alnus glutinosa</i> (4) Indeterminate- bark (1)	Roundwood/twigwood. Heavily compressed. -
-1.55 to -1.60	<i>Alnus glutinosa</i> (5)	Small roundwood/twigwood. Heavily compressed.
-1.60 to -1.65	<i>Alnus glutinosa</i> (5)	Small roundwood/twigwood. Heavily compressed.
-1.65 to -1.70	<i>Alnus glutinosa</i> (5)	Small roundwood/twigwood. Heavily compressed.

RESULTS AND INTERPRETATION OF THE INSECT ASSESSMENT

The results of the macrofossil rapid assessment indicated that insects were recorded in low quantities in all six samples, and thus these samples underwent a more detailed assessment, the results of which are displayed in Table 5. The samples yielded only a few insect remains, representing nine taxa of beetles (Coleoptera) and flies (Diptera). The following very limited paleoenvironmental reconstruction can be inferred for these assemblages:

Sample -1.40 to -1.45m OD

This sample yielded only one individual head capsule from the rove beetle genus *Lathrobium*. The species in this genus tend to be found in damp habitats, such as leaf litter and mosses.

Sample -1.45 to -1.50m OD

This sample contained four taxa. The ground beetle genus *Pterostichus* contains species generally indicative of mesic (medium moisture) habitats. The water scavenger beetle *Hydraena testacea* lives in fresh standing water, such as shallow woodland pools. The water scavenger beetle genus *Cercyon* typically also lives in this kind of habitat, although some species are terrestrial, and are found in rotting vegetation or animal dung. Finally, the furniture beetle *Anobium punctatum* lives in dead or dying wood.

Sample -1.50 to -1.55m OD

This sample contained only a fragment of elytron of the aquatic leaf beetle *Plateumaris*. These beetles live in reed swamps, where they feed on reeds and sedges that are rooted in shallow standing water.

Sample -1.55 to -1.60m OD

This sample yielded only the head capsule of the ground beetle genus *Pterostichus*, generally indicative of mesic (medium moisture) habitats.

Sample -1.60 to -1.65m OD

The sample contained the remains of the rove beetle *Arpedium quadrum*. This species lives in damp habitats, such as swamps, and in piles of damp leaf litter.

Sample -1.65 to -1.70m OD

This sample contained the remains of *Hydraena testacea* and *Arpedium quadrum*, and it thus indicative of a swamp habitat with shallow standing water.

Table 5: Results of the insect assessment, 21 Wapping Lane, London Borough of Tower Hamlets

Taxon	Sample depth (m OD)					
	-1.40 to -1.45	-1.45 to -1.50	-1.50 to -1.55	-1.55 to -1.60	-1.60 to -1.65	-1.65 to -1.70
COLEOPTERA						
Carabidae						
<i>Pterostichus</i> sp.		1		1		
Hydraenidae						
<i>Hydraena testacea</i> Curtis		1				1
Hydrophilidae						
<i>Cercyon</i> sp.		1				
Staphylinidae						

<i>Lathrobium sp.</i>	1					
<i>Arpedium quadrum</i> (Grav.)						1
<i>Olophrum sp.</i>					1	
Anobiidae						
<i>Anobium punctatum</i> (DeG.)		1				
Chrysomelidae						
<i>Platerumaris sp.</i>			1			
DIPTERA						
Puparium					1	

DISCUSSION AND CONCLUSIONS

The aim of the environmental archaeological assessment was to evaluate the potential of the sedimentary sequences for reconstructing the environmental history of the site and its environs, and specifically to: (1) identify evidence of change or continuity through time and (2) to detect evidence of human activity. An assessment of three column samples and six bulk samples was carried out.

The results of the lithostratigraphic descriptions indicated that the organic horizon identified at the site was best represented by the sequence of six bulk samples taken from -1.40 to -1.70m OD. The organic horizon was not identified in the column samples due to difficulties during the excavation of the archaeological trenches; the environmental archaeological assessment thus focussed on the sequence of bulk samples, and consisted of the assessment of macroscopic remains only. The results of the radiocarbon dating of the top and base of the bulk sample sequence indicated that it formed during the Middle Bronze Age cultural period over a period of between ca. 100 and 500 years, and that it is chronologically consistent with other Bronze Age peat horizons identified in the Lower Thames Valley (e.g. Batchelor *et al.*, 2010; Branch *et al.*, 2000).

The results of an initial assessment of the bulk samples indicated that none of the samples contained bone, Ostracoda, Foraminifera, charcoal or charred seeds. Insects were identified in low quantities in all six samples, while low quantities of Mollusca were present in two samples (-1.40 to -1.45 and -1.50 to -1.55m OD). Waterlogged seeds were present in low to moderate quantities in all six samples, while waterlogged wood was present in moderate to high quantities in all six samples.

The assemblage in the sequence from -1.70 to -1.45m OD is indicative of a wet alder carr environment dominated by alder with sedges and reeds, with an understorey of other herbaceous taxa including fat hen and campion or stitchwort. The plant macrofossil assemblage in the uppermost sample (-1.40 to -1.45m OD) was dominated by alder and shrub taxa including bramble and black elder, indicating an alder carr that may have been slightly drier than that indicated in the samples below -1.45m OD. The insect assemblages were limited throughout the sequence, but are indicative of damp habitats and some shallow standing water, consistent with the interpretation from the plant macrofossil record of a wet alder carr environment.

RECOMMENDATIONS

More extensive analysis of the wood from Wapping lane could determine if other taxa were present or not; however, the results of the assessment suggest that further work on the samples is unlikely to provide any further significant information and may indeed simply confirm that *alder* is the dominate wood throughout the sequence. Similarly further analysis of the waterlogged seeds and insects is unlikely to reveal any further information, since the combined results of the archaeobotanical (wood and seeds) and zooarchaeological (insects) assessments are consistent throughout the organic horizon.

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Appendix C: Finds Assessment

Paul Fitz

The Post-Medieval Pottery

A total of 52 sherds of pottery were retrieved from seven contexts. Most of the pottery dates from the 17th to early 19th century. A brief spot date summary for each context is listed below.

The bedding layer for the stone floor of the No.10 Warehouse (113) had only a limescale-encrusted single neck and handle piece of possible London stoneware, though this may be a Raeren ware from the 17th century. A dumped layer (114) has a blue and white transfer printed ware (1785-1900) and a small piece of fine porcelain. The backfill of the No.10 warehouse foundations (115) has seven sherds of red wares, borderwares, hand painted china, a tin glazed ware and a neck of a candle holder which looks to be Frechen stoneware though could possibly be a Lambeth (London) stoneware type. The likely date for this context is between 1670 and 1800. The deposit probably derives from mixing of the underlying stratigraphy. The bedding layer for an 18th century floor (130) has a porcelain hand painted oriental scene decorated bowl piece, which, if assuming is imported would be 1580-1900 -though rare before 1650. Also present is a single, pale blue tin glazed delftware (1630-1800) sherd.

Two sherds of pottery were retrieved from made ground (202) below the warehouse floor; a post-medieval red ware (1580-1900) with orange-brown glaze and a small unidentified overfired olive green glazed piece. Nineteen sherds were retrieved from (205) including transfer printed and cream ware plates (1740-1880), two sherds from hand painted and glazed china plates (uncertain imported?). Red wares, tin glazes, banded creamware and borderwares were also present. Although manufactured up to the mid 19th century, the presence of earlier wares suggests deposition of this dumped deposit to the 18th century. Context (206) also has 19 sherds, including course red wares, tin glazed wares, Staffordshire combed slipware (1720-1770) and green glazed borderwares. The Staffordshire combed ware is a good indicator of the date range of this context, and was probably dumped immediately prior to the ensuing development of the site.

Animal Bone

A small assemblage of nine pieces of animal bone was recovered from three contexts. One piece has been worked as a tool and is registered (Context 115, <7>). The bone is a pig tibia, and has been bored to take a thin rope or strung. Wear patterns on one end suggest it carried a weight. There are also fine, cut groove marks. Context (115) also contained two jaw pieces whilst context (202) had four pieces and context (206) two pieces. All are small/medium mammal bone and display no obvious signs of butchery.

Brick Samples

Three bricks were retained as samples to help date structures [127], [129] and [132] and are described below.

[127] is a coarse made purple/yellow coloured brick with a slight bow in it. The dimensions are 100mm x 225mm x 60mm (4" x 8⁷/₈" x 2³/₈").

[129] is a coarse made purple/yellow coloured brick also with a slight bow in it. The dimensions are 99mm x 226mm x 63mm (3⁷/₈" x 9" x 2¹/₂").

[132] is a yellow-pink coloured brick that looks slightly over fired. The dimensions are 100mm x 225mm x 63mm (4" x 8⁷/₈" x 2¹/₂").

The slight bow in bricks [127] and [129] is thought to be unintentional and occurred during the firing. Both bricks are almost certainly from the same batch, and [132] is likely to be the same manufacturer. Whilst the

thickness of the bricks may be a bit shorter than expected the lengths suggest they are all late 18th or early 19th century, consistent with the site stratigraphy.

Clay Tobacco Pipe

A total of 37 pieces of clay tobacco pipe were retrieved from six contexts of which 21 are stems. Seven of the bowl and spur pieces have initials and have been registered. The bowls all appear to be of the DUA Type 25 (1700-1770) and some DUA Type 22 (1680-1710) in with the Type 25.

Context	Stems	Bowls	Registered Number	Initials	Comments
114	6				
115	5				
115		1	1	W D	William Doubtfire?
115		1	2	S ?	
115		1	3	I W	James Webb?
115		1	4	A G	
130	1				
202	1				
205	8	11			
205			5	P P	Phillip Pinkard?
205			6	W? T?	
205			8	R ?	
206		1			

Discussion/Recommendations

The finds assemblage is small in size and has little significance on a local, regional or national level. The pot, tobacco pipe and brick will help spot date the contexts. The initialled tobacco bowls and the unknown worked bone piece have been registered. No further analysis work is recommended.

Unless further examination is felt necessary it is recommended the brick is discarded rather than be archived. It is recommended that the retained finds are packed and submitted with the archive to the museum of London LAARC guidelines for deposition.

Appendix D: OASIS Form

OASIS ID: aocarcha1-99764

Project details

Project name 21 Wapping Lane, watching brief and evaluation

Short description of the project Following on from building recording at the warehouse in 2010 (aocarcha1-80605) ,limited evaluation trenching and watching brief was conducted ,consisting of observing ground reduction at the site. This revealed a sequence of soil horizons including peat that of Early Bronze Age and made ground of post-medieval date. Structural remains comprised the truncated walls and floors of a late 18th century house, wall of London Dock, the substantial footings of the 1872 No10 Warehouse. Widespread destruction from the Second World War and later building episodes was apparent across much of the site.

Project dates Start: 29-10-2010 End: 01-02-2011

Previous/future work Yes / No

Any project codes associated reference WPZ10 - Sitecode

Any project codes associated reference 30788 - Contracting Unit No.

Any project codes associated reference aocarcha1-80605 - OASIS form ID

Type of project Recording project

Site status Local Authority Designated Archaeological Area

Current Land use Vacant Land 1 - Vacant land previously developed

Monument type	DOCK Post Medieval
Monument type	HOUSE Post Medieval
Monument type	PEAT HORIZON Bronze Age
Significant Finds	TOBACCO PIPE Post Medieval
Significant Finds	BONE TOOL Post Medieval
Significant Finds	POTTERY Post Medieval
Investigation type	'Watching Brief'
Prompt	Direction from Local Planning Authority - PPS

Project location

Country	England
Site location	GREATER LONDON TOWER HAMLETS TOWER HAMLETS 21 Wapping Lane,Poplar
Postcode	E1W
Study area	3000.00 Square metres
Site coordinates	TQ 3490 8049 51.5067182767 -0.05599534833310 51 30 24 N 000 03 21 W Point

Project creators

Name of AOC Archaeology Group

Organisation

Project originator brief AOC Archaeology Group

Project originator design EH-GLAAS

Project director/manager Melissa Melikian

Project supervisor Les Capon

Type of sponsor/funding body Developer

Name of sponsor/funding body Ballymore

Project archives

Physical Archive recipient Museum of London-LAARC

Physical Archive ID WPZ10

Physical Contents 'Animal Bones',' Ceramics',' Worked bone'

Physical notes Archive pottery, tobacco pipe , animal bone (including one worked piece) brick discarded

Digital Archive recipient Museum of London-LAARC

Digital Archive ID	WPZ10
Digital Contents	'Stratigraphic',' Survey'
Digital available	Media 'Images raster / digital photography',' Images vector', 'Spreadsheets',' Text'
Digital Archive notes	HBR and fieldwork records that require LAARC archive digital data + images
Paper recipient	Archive Museum of London-LAARC
Paper Archive ID	WPZ10
Paper Contents	'Animal Bones','Ceramics','Stratigraphic','Survey'
Paper available	Media 'Context sheet','Microfilm','Notebook - Excavation',' Research',' General Notes','Photograph','Plan','Unpublished Text'
Paper Archive notes	HBR and fieldwork watching brief records will be submitted as one archive

Project bibliography 1

Publication type	Grey literature (unpublished document/manuscript)
Title	21 Wapping Lane,london Borough of Tower Hamlets: a historic building record
Author(s)/Editor(s)	Capon,L.
Date	2010
Issuer or publisher	AOC Archaeology group

Place of issue or publication AOC London

Description A4 sized colour report with image plates,location maps and elevation and floor plans

Project bibliography 2

Publication type Grey literature (unpublished document/manuscript)

Title 21 Wapping Lane,London borough of Tower Hamlets: an archaeological watching brief and evaluation report

Author(s)/Editor(s) Capon,L.

Date 2011

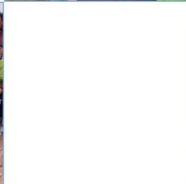
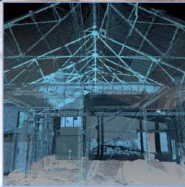
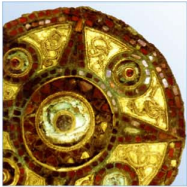
Issuer or publisher AOC Archaeology Group

Place of issue or publication AOC London

Description A4 sized ,full colour stratigraphic results with illustrations,image plates,finds and environmental assessments

Entered by fitz (paul.fitz@aocarchaeology.com)

Entered on 20 April 2011



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