



# CENTRAL SECTION PROJECT

## Fieldwork Report

### Archaeological Watching Brief on Combined Utilities Diversions at Moorgate Shaft (XSP10)

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## Non technical summary

*This report presents the results of an archaeological watching brief carried out by the Museum of London Archaeology (MOLA) on the site of the combined utilities diversions (Phases 1 to 5 for the future Crossrail Moorgate shaft, London EC2, in the City of London. This report was commissioned from MOLA by Crossrail Ltd. This work is being undertaken as part of a wider programme of assessment to mitigate the archaeological implications of railway development proposals along the Crossrail route.*

*The utilities diversions for the Moorgate Shaft site (part of Crossrail contract C257 Archaeology Central) consists of utilities diversions centred around the junction of London Wall and Moorgate, running north to Ropemaker Street, as well as two access shafts and a connecting tunnel, and various other shallow excavations situated in the vicinity of Moor House.*

*Archaeologically significant horizons were exposed in the eastern access shaft located on London Wall. Natural geology was not reached, but a series of horizontal deposits, dated by ceramics and tobacco pipes to the 16th–17th centuries, was exposed in section, and are possibly part of the City Ditch, which is known historically to have been located in this area and was in use until at least the 16th-century. In the western access shaft a late 19th-century brick wall survived, although modern truncation linked to post-World War II land clearance and the construction of an underground car park (2005) to the south had caused significant damage.*

*Two trial pits were also monitored in the basements of 8 Moorfields and 87 Moorgate. Late Victorian foundations had truncated to the natural geology in both basements.*

*A variety of utilities diversions in and around the Moorgate worksite were only excavated to 1.2m beneath ground level, consequently no significant archaeology was uncovered. Around the junction of Ropemaker Street and Moorgate these were excavated slightly deeper, respecting an existing water pipe.*

*A mini raking pile in 91 Moorgate was also monitored post-demolition, this revealed a selection of animal bone as well as leather, and 2 sherds of 14th-century medieval pottery, probably residual. These have been interpreted as fills of a rubbish pit.*

*The fieldwork has demonstrated that little archaeology remains within the shallow excavated utilities diversions trenches; this is unsurprising given the amount of street alterations and previous utility work undertaken in the area in and around Moorgate. The surviving post-medieval deposits recorded in the mini raking pile are of limited significance, although they do imply that stratigraphy survives in an area previously believed to be truncated by Victorian foundations. The London Wall access shafts identified stratigraphy between the existing foundations of Moor House that may have been formed by the backfilling of the City Ditch in the 17th century. The latest survival in the western access shaft is representative of the extensive street alterations and levelling undertaken following World War II.*

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## **1 Introduction**

Crossrail is a new cross London rail link project which will provide transport routes in the south east and across London. The line will provide a range of both new and improved rail journeys across London and its immediate surroundings. The proposed development will include the construction of seven stations within central London which will have interchange with other public transport modes including the London Underground, National Rail and the London Bus service; the development will also include the renewal and/or upgrade of existing stations outside central London. The route itself will link Maidenhead and Heathrow in the west with Shenfield in the north-east and Abbey Wood in the south-east.

As part of these works a new station is required running from Moorgate to Liverpool Street, of which the western end consists of a shaft at Moorgate/Moorfields from ground level to the tunnels. Utilities diversion are required around this site, and this report covers Phases 1 to 6 of the combined utilities diversions (groundworks undertaken under Crossrail contract C216).

The Crossrail mitigation response to archaeology is described in the Crossrail Generic WSI (Crossrail 2009) and the detailed desk based assessment (DDBA; Crossrail 2008), and can be summarised as follows:

- In the event that intact and important archaeological remains are identified at Crossrail worksites through this process, it may be preferable, where practicable, to preserve these where they are found (ie preservation in situ).
- However, because of the nature of major works projects such as Crossrail, experience of other similar projects suggests that preservation by record is usually the most appropriate method of dealing with archaeological finds.
- Following an extensive Environmental Impact Assessment (EIA) supporting the Crossrail Bill, and the production of site-specific DDBAs, appropriate mitigation measures were scoped and specified in detail in individual project designs (site-specific WSIs – Written Schemes of Investigation) which were prepared in accordance with the principles set out in the Generic WSI, and developed in consultation with the relevant statutory authorities.
- Archaeological information that is gained from fieldwork will be followed by analysis and publication of the results and will be transferred to an approved public receiving body

This fieldwork report describes the results of a general watching brief on utilities diversions around the Moorgate worksite, monitored by Museum of London Archaeology (MOLA) under Crossrail contract C257 Archaeology Central.

The Moorgate shaft utilities diversions were split in to three different types. Two access shafts were excavated on the junction of Fore Street and London Wall and on London wall south of Moor House, and an adjoining tunnel (*Photo 1*, Figure 1, 9.1, 9.3). The diversions at street level were located between London Wall to the south , Ropemaker Street (9.9) to the north, Fore Street Avenue to the west and Moorgate to the east, Two trial pits were excavated in the basements of 8 Moorfields (9.6) and 87 Moorgate (9.7). A mini raking pile was also monitored post-demolition in the vicinity





of 91 Moorgate. All work is located in the City of London, EC2 (Figure 1). The centre of the site is at Ordnance Survey National Grid Reference 532716 181637.

**All levels in this document are quoted in metres Above Tunnel Datum (m ATD). To convert Tunnel Datum to Ordnance Datum subtract 100m, i.e. 1m OD = 101m ATD.**

All fieldwork was conducted between 18/04/11 and 16/12/11. It was supervised by Sam Pfizenmaier (MOLA Supervisor) and included the following activities:

Table 1 Archaeological Investigations

Task	Principal Contractor	Programme Dates
<ul style="list-style-type: none"><li>• <b>General Watching Brief</b> (Moorgate combined utility diversions at the Moorgate worksite),</li></ul>	C216 Laing O'Rourke	14 April 2011 to 16 December 2011

The event code (site code) is **XSP10**.

## 2 Planning background

The legislative and planning framework in which all archaeological work took place was summarised in the Site Specific Written Scheme of Investigation (SS-WSI): *Liverpool Street Station Design Package 138*, Doc. No C138-MMD-T1-RST-C101-00001, Version 2, April 2010; a brief summary is included here:

The overall framework within which archaeological work will be undertaken is set out in the Environmental Minimum Requirements (EMR) for Crossrail (<http://www.crossrail.co.uk/railway/getting-approval/environmental-minimum-requirements-including-crossrail-construction-code>). The requirements being progressed follow the principles of Planning Policy Guidance Note 16 on archaeology and planning (1990). Accordingly the nominated undertaker or any contractors will be required to implement certain control measures in relation to archaeology before construction work begins.

Schedules 9, 10 and 15 of the Crossrail Act (2008) concern matters relating to archaeology and the built heritage and allows the dis-application by Cross Rail of various planning and legislative provisions including those related to listed building status, conservation areas and scheduled ancient monuments (Schedule 9). Schedule 10 allows certain rights of entry to English Heritage given that Schedule 9 effectively dis-applied their existing rights to the Cross Rail project, and Schedule 15 allows Cross Rail to bypass any ecclesiastical or other existing legislation relating to burial grounds.

Notwithstanding these dis-applications, it is intended that agreements setting out the detail of the works and requiring relevant consultations and approvals of detail and of mitigation arrangements will be entered into by the nominated undertaker with the relevant local planning authorities and English Heritage in relation to listed buildings and with the Department of Culture, Media and Sport (DCMS) and English Heritage in relation to Scheduled Ancient Monuments (SAMs).

## 3 Origin and scope of the report

This report has been commissioned from Museum of London Archaeology (MOLA) by Crossrail Ltd. The report has been prepared within the terms of the relevant standard specified by the Institute for Archaeologists (IFA, 2001). It considers the significance of the fieldwork results (in local, regional or national terms) and makes appropriate recommendations for any further action, commensurate with the results.

This report will be made available from The London Archaeological Archive and Research Centre (LAARC) in due course.



## 4 Previous work relevant to the archaeology of the site

The primary previous Crossrail studies are as follows:

- A Crossrail **Site-specific Written Scheme of Investigation** (SS-WSI): *Liverpool Street Station Design Package 138*, Doc. No C138-MMD-T1-RST-C101-00001, Version 2, April 2010 [WSI]
- An **Addendum to the WSI**: Package C138 – *Liverpool Street Station, Addendum to Written Scheme of Investigation: Moorgate Shaft*, Doc. No: C138-MMD-T1-TCP-C101- 00001, Revision 2.0, July 2010. [Addendum]
- An **Archaeological Method Statement**: MOLA, *C257 Archaeology Central Method Statement Archaeological Evaluation and Watching Briefs (C138) Moorgate Shaft*, Doc. No: C257-MLA-T1-GMS-CR088-00003, Version 5, 30/08/11.
- A **Fieldwork Report**. MOLA, July 2011b *C257 Archaeology Central, Fieldwork Report, Archaeological Evaluation, 91 to 109 Moorgate – XSP10*, Document Number: C257-MLA-X-RGN-CRG02-50069 v2, 21.03.12

## 5 Geology and topography of site

The geological and topographical setting was covered in detail in the WSI and is summarised below.

The site sits within the ancient flood plain of the River Thames; consequently the topography of the surrounding area is generally from north-south. The drift geology consists of Pleistocene terrace gravels of the third (Taplow) Thames terrace, recorded between 107.60m ATD and 108.05m ATD during recent fieldwork at Moorgate (Crossrail 2012). They are one of the youngest and lowest of the Thames river terrace remnants, deposited between 130,000 to 190,000 years ago during ice-age conditions when the flow of the Thames was considerably stronger than it is today. Generally fine with mixed inclusions of sand and silt they are commonly overlaid by brickearth (Langley Silt Complex, a silty loam overlying the terrace gravels, formed from re-worked, fine-grained sediments laid down by wind or surface water) that was identified between 108.30m ATD and 108.60m ATD also at Moorgate (Crossrail 2012).

The archaeological potential of the terrace Gravel deposits is considered to be very low.

## 6 Archaeological and Historical Background

The archaeological potential of the Moorgate Shaft site is summarised below, and covered in detail in the detailed desk based assessment for Liverpool Street Station: Crossrail 2008, and the WSI SS-WSI – *Liverpool Street Station Design Package 138*, Crossrail, April 2010, Document No C138-MMD-T1-RST-C101-00001, Revision 2.0.

There is limited potential for prehistoric remains in this area; such horizons have been removed in the majority of cases by Roman and later activity. Prehistoric evidence, if present, is likely to be limited to residual artefacts found in later deposits, such as the small quantities of Iron Age pottery from Riverplate House (sitecode RIV87) in Finsbury Circus, and one piece of residual pottery retrieved from a later Roman levelling dump (Crossrail 2012) at 91 to 109 Moorgate.

Fieldwork c 120m to the north of site in 1989 at Moorgate Hall revealed a single Roman inhumation burial. This, however, was interpreted by the excavators to be isolated, and not part of the extra-mural cemetery which existed to the north of the Roman city (LAARC summary for MOH88). At least 28 cremations and 181 further inhumation burials have been recorded in the surrounding area, ranging in date from the 1st to the 4th centuries AD, most recently at 18–31 Eldon Street (ENS03). No clear evidence of other Roman extra-mural activity, such as buildings or burials, was observed during the recent evaluation (MOLA 2012) located on the site of the future Moorgate shaft (to the north), although layers of redeposited brickearth containing Roman material may have been preparation for a building. The majority of Roman activity in the immediate area has been limited to ditch cuts (probably for drainage) and occasional occupational evidence (beam slots and floors) especially in the northernmost area of the Moor House basement (MRL98). It therefore appears likely that there was some form of occupation in this area during part of the Roman period, and that it probably lay outside the main cemeteries.

The line of the Roman and medieval City Wall near Moorgate runs approximately along the line of the modern London Wall road. Constructed between c AD 180 and 225, the wall fell into disuse at the end of the Roman period, and from the 9th until the 16th centuries both the ditch and the City Wall were continually enlarged, repaired, rebuilt, re-cut and reused.

The City Wall (or later lack of maintenance of drainage through it) appears to have impeded drainage of the area and encouraged the development of the Moorfields Marsh. The marsh was recorded in recent fieldwork at Finsbury Circus (Crossrail 2011a) and 91–109 Moorgate (Crossrail 2012), and historically documented by Fitzstephen in the late 12th century, who described this area as a 'great fen or moor'. In 1415, the Mayor of London Thomas Falconer built a postern gate at the lower end of Moorgate at the junction with London Wall (demolished in 1762), and he ordered the digging of ditches to try and drain the area. In 1512 and 1527 further drainage schemes were carried out in the Moorfields area, which allowed this area of wasteland to be utilised for the first time since Roman times. Previous fieldwork in the area approximately 100m to the west of Fore Street Avenue, by W. Grimes in the early 20th century (Cripplegate buildings and the City Ditch site, both WFG17) identified multiple phases of ditch, dating from the 2nd century AD to the mid 17th century (and backfilled sometime after the Civil War). The Agas map of c 1570 shows a road (Little Moorfields) leading north from the postern gate, flanked on its western side by drying cloth being stretched on tenter frames. John Stow writing in c 1600 noted the presence of gardens and tenter-yards here. Rocque's map of London



(1746) shows that the road leading north from the Moorgate was now known as Finsbury, and it was flanked to the west by suburban development, behind which was another parallel street (Little Moor Fields), now known as Moorfields.

## **7 Research objectives and aims**

### **7.1 Objectives of the fieldwork**

The objectives of the archaeological investigations, as stated in the addendum to the WSI (Crossrail 2010), are set out below.

The overall objective of the Watching Brief was to establish the nature, extent and state of preservation of any surviving archaeological remains that will be impacted upon by the development. Specifically, the archaeological investigations had the potential to recover:

- Artefacts of prehistoric date redeposited in later deposits.
- Remains of Roman extra-mural activity, potentially including burials.
- Waterlain deposits from the Roman to medieval Moorfields Marsh, with the potential for organic preservation and palaeoenvironmental evidence.
- Late medieval and post-medieval drainage ditches, rubbish dumps and remains associated with the reclamation of Moorfields Marsh.
- In areas not truncated by later activity: remains of mid 17th-century or earlier buildings on the western side of Moorfields, and late 17th/early 18th-century or later buildings across the whole site.

### **7.2 Research Aims**

The original aims and objectives were listed in the Liverpool Street WSI (Crossrail 2009). Evidence relating to the Walbrook, its tributaries and Moorfields Marsh deposits may provide data relevant to the following themes:

- Understanding London's hydrology, river systems and tributaries and the relationship between rivers and floodplains;
- Understanding how water supply and drainage provision were installed and managed;
- Understanding the relationships between urban settlements and royal villas or religious estates;
- Examining the proposal that there was an ideological polarity between town and anti-town systems: Roman towns did not so much fail as were discarded;
- The end of the Roman occupation: developing explanatory models to explain socio-political change and considering the influence of surviving Roman structures on Saxon development; and
- Examining the use in any one period of materials from an earlier period (eg Saxon use of surviving Roman fabric) and the influence on craftsmanship, manufacture and building techniques.

## 8 Methodology of site-based and off-site work

All archaeological excavation and recording during the evaluation was carried out in accordance with:

- A Crossrail **Site-specific Written Scheme of Investigation (SS-WSI)**: *Liverpool Street Station Design Package 138*, Doc. No C138-MMD-T1-RST-C101-00001, Version 2, April 2010
- An **Addendum to the WSI**: Package C138 – *Liverpool Street Station, Addendum to Written Scheme of Investigation: Moorgate Shaft*, Doc. No: C138-MMD-T1-TCP-C101- 0001, Revision 2.0, July 2010.
- An **Archaeological Method Statement**: MOLA, *C257 Archaeology Central Method Statement Archaeological Evaluation and Watching Briefs (C138) Moorgate Shaft*, Doc. No: C257-MLA-T1-GMS-CR088-00003, Version 5, 30/08/11.
- Museum of London *Archaeological Site Manual* (MoL 1994)
- Corporation of London Department of Planning and Transportation, 2004 *Planning Advice Note 3: Archaeology in the City of London, Archaeology Guidance*

The site finds and records can be found under the site code XSP10 in the MOLA archive. They will be stored there pending a future decision over the longer-term archive deposition and public access process for the wider Crossrail scheme.

### 8.1 General watching Brief methodology

MOLA visited the Moorgate worksite at regular intervals to monitor the progress of excavations, making a basic record of notes, measurements, drawings and photographs consistent with an observation role; e.g. depth, character, date and survival/truncation of deposit sequence, height of natural geology. The majority of the ground works were not excavated beyond 1.2m and required no further presence. Where excavation exceeded 1.2m bGL or, when archaeologically significant horizons were encountered MOLA undertook a more continuous monitoring presence.

The heading shafts located at London wall were excavated to a depth of 5m bGL, in this instance a permanent MOLA presence was required on site. Both access shafts were shored by an extensive timber construction (Photo 2), down their full depth, likewise the tunnel connecting the two shafts (see Photo 1 and 9.4). As is evident from the photography monitoring of this work was particularly challenging, and complicated by the limited access during excavation.



Photo 1 London Wall heading shaft, looking west

## 8.2 Borehole Watching Brief Methodology

The archaeological Borehole Watching Brief covered one exploratory borehole (mini raking pile) within the footprint of the basement of the pre-existing buildings of 91 to 109 Moorgate (See Figure 1).

MOLA were called out to 8 Moorfields on Wednesday 12th October to assess finds (particularly bone, believed to be human, but also ceramics and leather) excavated from one mini raking pile. Although this section of ground works had been previously scoped out, the finds (Photo 12) were deemed to warrant a MOLA presence. The borehole locations were recorded by the Principal Contractor. A record of all archaeological deposits encountered was made in accordance with the principles set out in the Museum of London site recording manual (MoL 1994).



## 9 Results and observations

The locations of the watching brief and borehole are shown on Figure 1. The watching brief areas are described in order anticlockwise from Fore Street Avenue in the south-west to Moorfields in the north-west (see Figure 1).

### 9.1 Fore Street Avenue

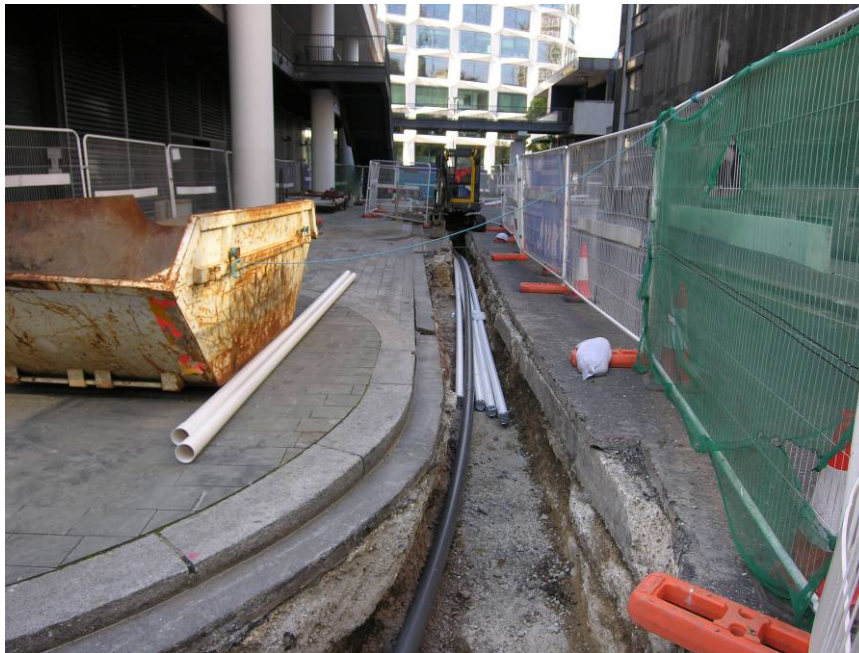


Photo 2 Fore Street Avenue, looking south

Fore Street Avenue (Figure 1)	
Location	Fore street Avenue, running south to London Wall (linking with eastern access shaft (see below)
Dimensions	0.9–1.2m (N–S) by 35m (E–W) and between 0.8m deep
OS National grid coordinates	536320 182972
LSG grid coordinates	82966 / 36300
Modern Ground Level/top of the slab	113.63m ATD
Modern subsurface deposits	Minimum of 0.8m bGL (112.83m ATD)
Level of base of archaeological deposits observed	No archaeology present
Natural observed	Not reached

Extent of modern truncation	20th-century made ground filled the trench
<b>Archaeological remains</b>	<b>Dating Evidence, Finds, and Samples</b>
Tarmac road surface, and underlying dumps to 113.33m ATD	No finds. 20th-century made ground
Previous utilities backfill of mixed gravel and sterile sand from 113.33m ATD–112.83m ATD.	No finds. 20th
<b>Interpretation and summary</b>	
The deposits uncovered represent 20th-century utilities work and associated make up layers.	

## 9.2 Western Access Shaft



Photo 3 Western Access shaft, removing 19/20th-century building foundations and north–south aligned wall [20], looking south-east

Western Access shaft (Figure 1, Figure 2)	
Location	Junction of London Wall and Fore Street
Dimensions	3.2m (N–S) by 3.1m (E–W) and 4.8m deep
OS National grid coordinates	536284 182958
LSG grid coordinates	82959 / 36284

Modern Ground Level/top of the slab	113.49m ATD
Modern subsurface deposits	Vent shaft and associated construction cut from between 111.69m ATD and 109.49m ATD
Level of base of archaeological deposits observed	109.49m ATD
Natural observed	Not reached.
Extent of modern truncation	>4m bGL or below 109.49m ATD
<b>Archaeological remains</b>	<b>Dating Evidence, Finds, and Samples</b>
[28] Mixed rubble levelling/makeup layer. Large wall segments. Late 19th/ early 20th-century. Landfill/levelling, between 110.19m ATD–108.49m ATD.	No finds
[22] Hypothetical construction cut for foundation pad/pier, late 19th/ early 20th Century. Between 110.29m ATD–110.19m ATD.	No finds
[21] Compact mixed silt [40%], sand [20%] and rubble [40%]. Rubble consists of yellow and red frogged brick.	No finds
Late 19th/early 20th-century rubble foundation pier for [20]. Occasional metal RSJ between 110.29m ATD–110.19m ATD.	No finds
[20] north–south running wall (Figure 2) formed from yellow frogged London stock bricks. Regular coursing, English Bond. Terminates 1m from northern edge of the shaft. Late 19th/early 20th-century wall between 112.84m ATD–110.34m ATD.	[20]: Brick [not retained]
[19] Loose mixed silty sand and 50% gravel. Frequent whole and half bricks. Assorted lenses of pea gravel and sand. 20th-century levelling/make up dumps. 113.09m ATD–112.09m ATD.	No finds
<b>Interpretation and summary</b>	
<p>The earliest deposit [28] is likely to be formed from landfill, possibly after World War II, following general ground clearance and levelling. No dateable finds were recovered from this relatively thick [1.7m] deposit suggesting it was dumped over a short period of time.</p> <p>Cutting this was a more compact pier foundation [21] built for a north–south brick wall [20], which had been truncated along its southern edge by a modern vent shaft and associated construction [apparently built around 2005]. The proportions of wall</p>	

[20] suggest it was of a structural nature. Along its eastern edge concrete had been poured, and had moulded around the wall, this was evidently done at a later date, and may be associated with the relatively recent foundations of Moor House to the north-east.



*Photo 4 Excavated tunnel approximately mid way between western and eastern access shafts. Modern foundations truncating earlier stock brick wall, looking east*



### 9.3 Eastern Access Shaft



Photo 5, London Wall heading tunnel, post-medieval layers (possibly the City Ditch [25]–[27], looking north

Eastern Access shaft (Figure 1, Figure 3)	
Location	London Wall, opposite Moor House
Dimensions	2.9m(N–S) by 2.5m (E–W) 4.9 m deep
OS National grid coordinates	536271 182982
LSG grid coordinates	82982 / 36271
Modern Ground Level/top of the slab	113.19m ATD
Modern subsurface deposits	20th-century brick foundations, rubble make up and north–south running telecommunication cables truncate to 109.09m ATD
Level of base of archaeological deposits observed	108.21m ATD or 4.98m bGL
Natural observed	Not reached
(Truncated/not truncated?)	n/a
Extent of modern truncation	>4.1m bGL or 109.09m ATD
Archaeological remains	Dating Evidence, Finds, and Samples
[27] (Figure 3, Photo 5) firm dark blue	No finds.

black silty clay [possible pit/ditch fill]. Between 108.27m ATD –108.21m ATD or 4.98m bGL	
[26] (Figure 3, Photo 5) [Possible pit/ditch fill]. Firm dark grey blue silty clay. Moderate ceramic building material (CBM) fragments, Mortar and pot. Occasional small chalk fragments [possible pit/ditch fill]. Between 108.87m ATD–108.27m ATD	pot 1580–1700 (13 large sherds)
[25] (Figure 3, Photo 5) [Possible pit/ditch fill]. Loose light grey brown sandy silt. Moderate mortar fragments. Occasional fish bone and oyster shell. Post-medieval deposit [possible pit/ditch fill]. Between 109.09m ATD–108.87m ATD	tobacco pipes 1660–1680 (7 bowls) pot 1550–1700 (2 sherds)
Brick foundations [car park retaining wall] between 112.79m ATD–109.09m ATD, rubble make up and north-south running telecommunication	No finds,
<b>Interpretation and summary</b>	
<p>The entire sequence was recorded in section from within the London Wall heading tunnel excavated between 3.90–4.98m bGL (Photo 5).</p> <p>Contexts [25], [26] and [27] (Figure 3) are consistent in appearance and form with fills or horizontal dumps (within the confines of the trench it is impossible to be more precise), the cut edges for which fall beyond the recorded narrow section [0.8m east–west]. Consequently, these may be fills of a pit or possibly the City Ditch. The relatively narrow date range of the latest deposit [25] of 1660–1680, suggests it may have been deposited over short period of time. The similarity in composition of context [26] and undated context [27], and [26]’s date of 1580–1700, may also suggest that they were deposited relatively quickly, and probably under the same conditions as [25], ie possibly to backfill the redundant city ditch in an attempt at land reclamation.</p> <p>Modern made ground associated with the 20th-century foundations of Moor House had removed all stratigraphy within the footprint of the access shaft above this level.</p>	



## 9.4 London Wall Heading



Photo 6, London Wall, looking west

London Wall (Figure 1)	
Location	Moorfields, immediately north of London Wall
Dimensions	45m long by 1.5–2.3m wide and between 0.9 and 1.3m deep
OS National grid coordinates	536274 183016
LSG grid coordinates	83025 / 36277
Modern Ground Level/top of the slab	113.13m ATD
Modern subsurface deposits	Minimum of 0.9m bGL (112.23m ATD)
Level of base of archaeological deposits observed	No archaeology present
Natural observed	Not reached
Extent of modern truncation	>1.3m bGL
<b>Archaeological remains</b>	<b>Dating Evidence, Finds, and Samples</b>
Paving and Concrete slab 0.15m from the basement wall.	No finds. 20th-century made ground

Blackish-grey layer with inclusions of broken brick and gravel.	No finds. 20th-century made ground
Pale brown concreted sandy gravel. Current building foundation pad/pier.	No finds.
<b>Interpretation and summary</b>	
<p>A mid 20th-century wall was recorded in an additional access shaft, located on the junction of London Wall and Moorgate (Photo 7). Initially this was identified by the principal contractor as part of the City Wall (a Scheduled Monument), that shares the same alignment as the modern street (section 6). However, closer examination revealed this wall to be of a much later date, and consequently not archaeologically significant. The deposits uncovered in the surrounding heading trenches represent 20th-century concrete foundations, previous utilities work (including a 'live' manhole) and associated layers of make up for the existing basement structure and structure of the surrounding buildings.</p>	



*Photo 7 London Wall heading, 20th-century wall aligned east–west, looking south–west*

## 9.5 Initial Diversions Moorgate Northbound (Phase 3)



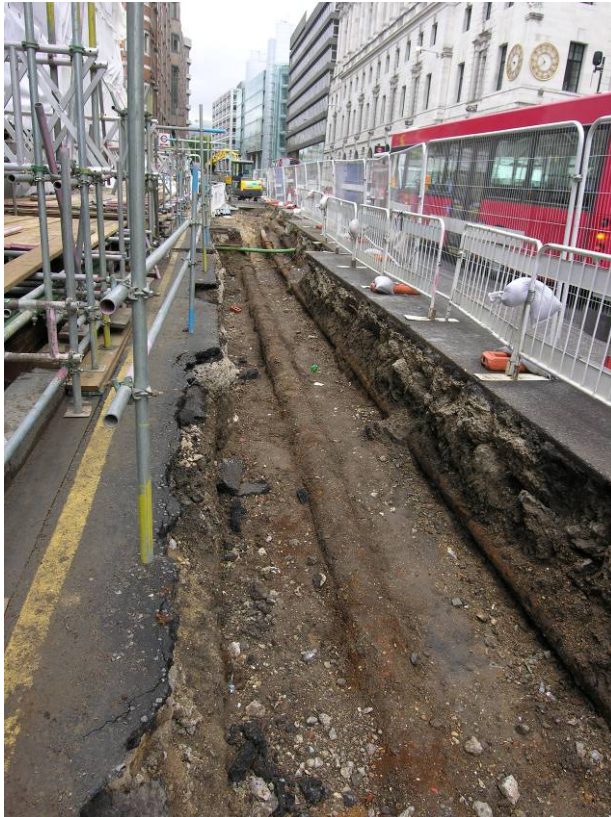
Photo 8 Moorgate diversions, looking south

Moorgate diversions (Figure 1)	
Location	Moorgate, from junction with London Wall (south) to junction with Ropemaker street (north).
Dimensions	200m+ (N–S) by 2.8m (E–W) and between 0.5m and 1.5m deep
OS National grid coordinates	536330 183084
LSG grid coordinates	83090 / 36358
Modern Ground Level/top of the slab	113.85m ATD
Modern subsurface deposits	Minimum of 1.5m bGL. (112.35m ATD)
Level of base of archaeological deposits observed	No archaeology present
Natural observed	Not reached
Extent of modern truncation	20th-century made ground filled the trench
Archaeological remains	Dating Evidence, Finds, and Samples
Mixed gravel from 113.35m ATD to 112.35m ATD.	No finds. 20th-century made ground
Tarmac road surface, and underlying dumps to 113.35m ATD.	No finds. 20th



### Interpretation and summary

The deposits uncovered represent 20th-century utilities work and associated live and redundant services, as well as associated make up layers. One large mid 20th-century iron pipe (partially uncovered: see Photo 9 below) extended along the length of this trench.



*Photo 9 Moorgate diversions, looking north*

## 9.6 Basement of 8 Moorfields



Photo 10. Rubble levelling visible at 0.51m bGL, looking south

Basement of 8 Moorfields (Figure 1)	
Location	Basement 8 Moorfields
Dimensions	0.5m (N–S) by 0.55m (E–W) and 0.51m deep
OS National grid coordinates	532743 181784
LSG grid coordinates	83046.7 / 36302
Modern Street Level	113.13m ATD
Modern subsurface deposits	Minimum of 0.51m bGL
Level of base of archaeological deposits observed	(The basement slab was 2.5m bGL) 110.12m ATD
Natural observed	Not Reached
(Truncated/not truncated?)	n/a
Extent of modern truncation	>0.51m bGL
Archaeological remains	Dating Evidence, Finds, and Samples
Grey-brown gravel make up. Occasional oyster shells (Photo 10). Levelling deposit for existing basement. Between 0.4–0.5m bGL. Base not seen	No finds. 19th-century made ground

Grey-brown gravel levelling/make up (Photo 10). Occasional oyster shells, grey concrete, modern CBM inclusions. Surface=0.4m bGL.	No finds. 19–20th-century made ground
<b>Interpretation and summary</b>	
<p>No in situ archaeology was present, however, oyster shells found within the rubble make up are probably residually deposited from nearby disturbed archaeological horizons, as implied by a nearby monitored mini raking pile (see 9.8, 12.3 below).</p> <p>Both layers are interpreted as levelling horizons associated with the current standing buildings construction. Given the depth of surviving archaeology recorded in the recent evaluation to the north (108.8m ATD) (Crossrail 2012), it is possible that further remains survive beneath the exposed trench base at 110.12m ATD.</p>	

## 9.7 Basement of 87 Moorgate



Photo 11 Sandy Concrete footing for existing basement at 0.9m bGL, looking south

Basement of 87 Moorgate (Figure 1)	
Location	Basement of 87 Moorgate
Dimensions	0.6m (N–S) by 0.86m (E–W) and 0.9m deep
OS National grid coordinates	532722 181589
LSG grid coordinates	83054 / 36299.5
Modern Ground Level/top of the slab	113.65m ATD



Modern subsurface deposits	Minimum of 0.9m BGL
Level of base of archaeological deposits observed	No archaeology present
Natural observed	Not reached
Extent of modern truncation	Filled the entire trial pit
<b>Archaeological remains</b>	<b>Dating Evidence, Finds, and Samples</b>
Pale brown concreted sandy gravel (Photo 11). Current building foundation pad/pier 0.52m bGL	No finds. 20th-century
Blackish-grey layer with occasional tile and CBM(Photo 11). Redeposited material from nearby disturbed archaeological horizons. 0.40m bGL	No finds. 20th-century
Concrete slab and brick wall footing protruded 0.15m from the basement wall 0.21m bGL. (Photo 11).	No finds. 20th-century
<b>Interpretation and summary</b>	
The deposits uncovered were 20th-century concrete foundations and associated layers for the existing basement structure.	

## 9.8 Mini Raking Pile



*Photo 12 Selection of finds from the mini raking pile between 111.65m ATD and 111.15m ATD, most likely from a post-medieval pit or dumped deposit*

Mini raking pile (Figure 1)	
Location	91 Moorgate
Dimensions	Borehole approx 0.2m <sup>2</sup> and monitored from 2–2.5m bGL.
OS National grid coordinates	532743 181784
LSG grid coordinates	83046.7 / 36302
Modern Ground Level/top of the slab	113.65m ATD
Modern subsurface deposits	Minimum of 0.51m bGL
Level of base of archaeological deposits observed	n/a
Natural observed	Yes (no height available), probably c 108.50m ATD
(Truncated/not truncated?)	Unknown, observed, but not in situ (see 8.2).

Extent of modern truncation	Unknown (2.5m bGL already drilled prior to monitoring)
<b>Archaeological remains</b>	<b>Dating Evidence, Finds, and Samples</b>
[40] Mid grey sticky clay silt, possibly pit fill or land raising dump. Contained tile, oyster shell, pottery and leather from 111.65m ATD–111.15m ATD.	pot: 14th-century Surrey border ware (possibly residual)
<b>Interpretation and summary</b>	
<p>A selection of animal bones, predominantly from medium to large size cattle and horse, was identified within a deposit between 2 and 2.5m bGL (which had been excavated by contractors prior to MOLA being called out, as this was not part of the original scope of works, and MOLA's presence was in addition to the separate utilities diversions). These had formed part of a larger assemblage, of which the principal contractor had retained a selection of finds (Photo 12), including (but unlikely originally limited to) tile, oyster shell, pottery, and one piece of degraded leather.</p> <p>The soil composition (judging from small quantities left adhering to the finds) was a sticky clay silt, probably from a dump or pit fill. This suggests that these finds may have been in-situ before excavated by the borehole. The small amount of pottery collected (2 sherds) was medieval (although this could be residual in a later feature). The layers above and below this deposit were not recorded, having been bored prior to MOLA's presence on site. A deposit of marsh-like material had been discarded nearby, and had evidently been drilled recently. This was consistent in appearance with medieval or Roman marsh deposits recorded during the previous evaluation at 91–109 Moorfields (Crossrail 2012). It is therefore possible that this feature was a pit or similar which had been cut down to the level of the marsh.</p>	

## 9.9 Ropemaker Street



Photo 13 Ropemaker Street, looking west

Ropemaker Street (Figure 1)	
Location	Ropemaker Street, from junction with Moorgate
Dimensions	25m+ (E–W) by 1.1–2.0m (N–S) and between 0.8m and 1.3m deep
OS National grid coordinates	536468 183115
LSG grid coordinates	83113 / 36475
Modern Ground Level/top of the slab	113.95m ATD
Modern subsurface deposits	112.65m ATD–112.45m ATD (a minimum of 1.3–1.5m bGL)
Level of base of archaeological deposits	No archaeology present
Natural observed	Not reached
Extent of modern truncation	> 1.3m bGL
Archaeological remains	Dating Evidence, Finds, and Samples
Tarmac road surface, and underlying concrete 0.4m thick	No finds. 20th-century made ground
Mixed deposits of concreted sandy gravel from 0.4–1.3m bGL.	No finds. 20th-century
Interpretation and summary	
The deposits uncovered represent 20th-century utilities work and associated live and redundant services, as well as make up layers. Initially this area was scheduled to be excavated to 1.5m+ bGL, and potentially required a greater MOLA monitoring presence. The subsequent excavation only reached 1.3m bGL.	



## 9.10 Moorfields

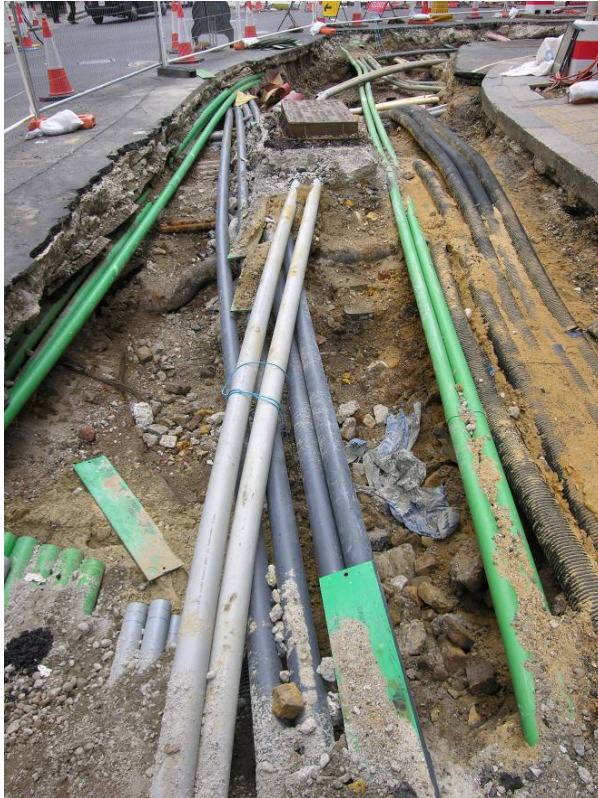


Photo 14 Moorfields, looking north

Moorfields diversions (Figure 1)	
Location	Moorfields, between Moor place and Ropemaker street.
Dimensions	80m (E–W) by 1.1–2.0m wide and between 0.8m and 1.1m deep
OS National grid coordinates	536459 183087
LSG grid coordinates	83078 / 36439
Modern Ground Level/top of the slab	113.83m ATD
Modern subsurface deposits	112.53m ATD–112.48m ATD (1.3–1.35m bGL)
Level of base of archaeological deposits observed	No archaeology present
Natural observed	Not reached
Extent of modern truncation	>1.1m bGL

Archaeological remains	Dating Evidence, Finds, and Samples
Mixed deposits of concreted sandy gravel from 113.43–112.48m bGL.	No finds
Tarmac road surface, and underlying concrete to 113.43m ATD.	No finds
Interpretation and summary	
The deposits uncovered represent 20th-century utilities work and associated live and redundant services, as well as make up layers.	



## 10 Assessment of results against original research aims

The draft revised GLAAS guidelines (English Heritage, 2009) require an Assessment of results against original expectations (these no longer mention the criteria for assessing national importance).

Likewise City of London guidance (CoL 2004) sets out advice for work carried out in London, including an assessment of results against original aims (assessment against the above criteria are only required evaluations).

### 10.1 Original research aims

The original research objectives were met, or not, as follows:

- *Artefacts of prehistoric date redeposited in later deposits.*
- *Remains of Roman extra-mural activity, potentially including burials.*
- *Water-lain deposits from the Roman to medieval Moorfields Marsh, with the potential for organic preservation and palaeoenvironmental evidence.*

No Prehistoric, Roman, or Roman/medieval marsh evidence was found.

The majority of the works were either too shallow to reveal such deposits, or situated in basements that had caused truncation down to the natural geology, entirely removing evidence of early occupation.

- *Late medieval and post-medieval drainage ditches, rubbish dumps and remains associated with the reclamation of Moorfields Marsh.*

Post-medieval deposits were identified, including those potentially relating to the backfilling of the redundant City Ditch (Eastern Access Shaft, see 9.3), and a pit (Mini Raking Pile, see 9.8).

- *In areas not truncated by later activity: remains of mid 17th-century or earlier buildings on the western side of Moorfields, and late 17th/early 18th-century or later buildings across the whole site.*

No such post-medieval buildings were identified, the majority of the trenches were either too shallow, truncated, or located in areas unlikely to uncover these specific remains (ie over or near the City Ditch).

### 10.2 Additional research themes

The following new themes have been identified from the fieldwork results:

- *Does comparison with the results from other sites suggest that the deposits in the eastern access shaft were fills of the City Ditch ? If so, what was the nature and environment in which the City Ditch was backfilled, and how does it relate to the extensive fieldwork from surrounding sites (12.3).*

These will be explored and defined further in post-excavation assessment.

## 11 Statement of potential archaeology

The following potentials will be assessed in greater detail during post-excavation assessment (see 13).

The results from the watching brief have potential for study of the following:

- Post-medieval reclamation/backfilling of the City Ditch and comparison with surrounding sites, particularly those excavated by W. Grimes to the west in the early 20th century, and more recent excavations at Moor House to the north.

### 11.1 Importance of Resources

*The importance of the excavated remains has been assessed using professional judgement, informed, where applicable, by the criteria for assessing the national importance of monuments (DCMS 2010, Annex 1).*

The 16th–17th-century deposits from the Eastern Access Shaft at London Wall are potentially backfills of the City Ditch. Comparison with those from previous archaeological sites in the area (in particular Moor House (MRL98), London Wall (WFG23) and Moorgate (LAL04)) has potential to confirm this identification, and make a limited contribution to the data on the City defences. They thus have some group value with this supporting documentation.

The deposits recovered from the mini raking pile at 87 Moorgate were not recorded in situ, considerably reducing their already limited importance. However, they provide some additional survival data (from a period not seen in previous Crossrail fieldwork: Crossrail 2012) for further Crossrail works in this area, such as the Moorgate Shaft. Despite this, they are of limited archaeological importance.

These remains are therefore assessed as being of **low importance**.

## **12 Conclusions**

### **12.1 Geology, Prehistoric, and Roman remains**

Natural geology, Prehistoric and Roman remains were not exposed during the course of fieldwork.

### **12.2 Medieval remains**

Medieval remains were limited to 2 sherds of 14th-century Surrey Border Ware pottery recovered from within a deposit (interpreted as a rubbish pit or land raising dump) within a mini raking pile (borehole) at 87 Moorgate. The assemblage (including tile, oyster shell, animal bone and leather) was tentatively dated as medieval, but may be later (see 8.2). These finds are of limited value given the non-archaeological methods of excavation, beyond telling us that medieval deposits may survive as strips of archaeology between the basement truncations bordering the western edge of 91 Moorgate.

### **12.3 Post-medieval remains**

The majority of the few archaeological remains exposed in the utilities works dated to this period, with pottery recovered from the late 16th and 17th centuries, with fabrics and forms typical of those in widespread use across the London area. The near-complete Bartmann jug (see 18.2), embellished with bearded face mask and the arms of the city of Amsterdam, was found within this series of deposits. The location, depth and condition of the finds suggests they were discarded over a relatively short period, with little subsequent disturbance, and may be from a fairly large pit (nearly 1m<sup>2</sup> was visible in section) or, more likely given the location, the City Ditch. It is possible that this is the same as the multiple phases of ditch, the latest from the mid 17th-century, which were identified by W. Grimes at Cripplegate buildings and the City Ditch site [both WFG17] in the early 20th century. These were interpreted as having been backfilled sometime after the Civil War, possibly as part of a wider strategy of land reclamation. Similar 17th-century deposits (multiple rubbish pits and backfilled north–south aligned ditches) were also identified to the north at Moor House (MRL98) and to the east (LAL04: London Wall and Moorgate). Given the confines of the visible section, and its surrounding context, it is not possible to be certain whether this is a remnant of the City Ditch or just a large pit. Further, detailed, comparison with the results from adjacent sites at the post-excavation assessment stage may well clarify this interpretation.

The Western Access Shaft was filled with rubble, possibly as a result of general ground clearance and levelling following World War II.

The two basement trial pits only exposed formation levels associated with the current buildings' foundations; there was, unsurprisingly, no surviving evidence for the post-medieval structures recorded at 6–8 Moorfields (Crossrail 1992), given the limited size and depth of the trenches. The possible dump/land levelling deposit recorded in the mini raking pile (taken with the residual oyster shell within the levelling deposit at 8 Moorfields, 9.6) implies that post-medieval survival in this area may be more extensive than previously believed.

### **13 Post-excavation assessment, analysis, publication and dissemination proposals**

The watching brief results will initially be disseminated via this report. The supporting site archive of finds and records (including digital data), post-excavation assessment, analysis and publication proposals will be considered in relation to later fieldwork in the wider context of archaeological potential and results across the Crossrail scheme.

A summary report will be published in the London Archaeologist excavation round up and also deposited with the LAARC.

### **14 Archive deposition**

The site archive containing original records and finds will be stored temporarily with MOLA pending a future decision over the longer-term archive deposition and public access process for the wider Crossrail project.

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## 16 Acknowledgements

The author would like to thank Grant Eade (Laing O'Rourke)) for his assistance on site as well as Jay Carver and Mike Court for commissioning and managing the work for Crossrail.

The watching briefs were supervised by the author. Other MOLA staff involved included Jacqui Pearce (pottery and tobacco pipes). The fieldwork was managed by MOLA Assistant Contracts Manager Nicholas Elsdon and Contracts Manager Elaine Eastbury.

## 17 NMR OASIS archaeological report form

### 17.1 OASIS ID: molas1-117580

Project name	Crossrail Central Moorgate Watching brief on general utilities diversions
Short description of the project	The worksite at the Moorgate Shaft site (part of Crossrail contract C257 Archaeology Central) consists of utilities diversions centred around the junction of London Wall and Moorgate, running north to Ropemaker street, as well as two access shafts and a connecting tunnel, and various other shallow excavations. The depth of excavations in the majority of trenches restricted the archaeology encountered. Within two access shafts located on London wall archaeology was found but limited to post medieval deposits, the earliest dated 1550-1700, probably from a rubbish dump although also potentially a late fill of the city ditch. A borehole monitored in 8 Moorfields also uncovered post medieval remains, consisting of ceramics and animal bone of common occurrence and type for the period.
Project dates	Start: 18-04-2011 End: 16-12-2011
Previous/future work	Yes / Yes
Any associated project reference codes	molas1-112781 - OASIS form ID
Type of project	Field evaluation
Site status	None
Current Land use	Transport and Utilities 3 - Utilities
Monument type	WALL Modern
Significant Finds	POT Post Medieval
Significant Finds	TOBACCO PIPE Post Medieval
Methods & techniques	'Test Pits'
Development type	Service infrastructure (e.g. sewage works, reservoir, pumping station, etc.)
Prompt	Crossrail act
Position in the planning process	After full determination (eg. As a condition)



Country	England
Site location	GREATER LONDON CITY OF LONDON CITY OF LONDON Crossrail Central Moorgate combined utilites diversions
Postcode	EC2
Study area	200.00 Square metres
Name of Organisation	MOLA
Project brief originator	Crossrail
Project design originator	Crossrail
Project director/manager	Elaine Eastbury
Project supervisor	Sam Pfizenmaier
Type of sponsor/funding body	Crossrail Ltd
Name of sponsor/funding body	Crossrail
Physical Archive recipient	LAARC
Physical Contents	'Ceramics','other'
Digital Archive recipient	LAARC
Digital Contents	'Animal Bones','Leather'
Paper Archive recipient	LAARC
Paper Contents	'Animal Bones','Ceramics','Leather','Stratigraphic'
Paper Media available	'Context sheet','Matrices','Photograph','Plan','Report','Section'
Publication type	Grey literature (unpublished document/manuscript)
Title	Crossrail Central Moorgate Combined utilites diversions
Author(s)/Editor(s)	Pfizenmaier, S.



Date	2012
Issuer or publisher	MOLA
Place of issue or publication	London
Description	A4 Client Fieldwork Report
Entered by	Sam Pfizenmaier (spfizenmaier@mola.org.uk)
Entered on	17 January 2012

## 18 Appendices:

### 18.1 Tobacco pipes

Jacqui Pearce

#### Introduction

The clay tobacco pipes were recorded in accordance with current MOL Archaeology practice and entered onto the Oracle database. The pipe bowls have been classified and dated according to the Chronology of London Bowl Types (Atkinson and Oswald 1969), using the prefix AO. Quantification and recording follow guidelines set out by Higgins and Davey (1994; Davey 1997).

#### The clay pipes

A total of 9 clay tobacco pipe bowls were recovered from one context ([25]). No stem fragments or mouthpieces were collected, and no pipes have been accessioned with makers' marks or decoration. All pipe bowls identified are typical of London manufacture and all have been smoked.

Context [25] is dated to c 1660–80 and includes a mix of pipes current at this date (types AO13 and 15) and slightly earlier types current c 1640–60 (AO9 and 10). They were most likely discarded in the early 1660s. Almost all the pipe bowls are fully milled although only one is burnished (of poor quality).

#### Potential and significance

The pipe assemblage has no real potential for further chronological refinement, and is mostly relevant in the local context only.

#### Recommendations

No further work is recommended.

#### Bibliography

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## 18.2 Post-medieval pottery

Jacqui Pearce

### Introduction

A total of 18 sherds from a minimum of 14 vessels (3101 g) were spot-dated from two small contexts (neither with more than 13 sherds), and also includes unstratified material. All pottery was recorded using standard codes for fabric, form and decoration, with quantification by sherd count (SC), estimated number of vessels (ENV) and weight in grams. The data were entered onto the MOLA Oracle database. All sherds collected are quite large, some of them joining to form complete vessel profiles.

### The pottery

All pottery recorded dates to the late 16th and 17th centuries, with fabrics and forms typical of those in widespread use across the London area. Context [25] is broadly dated to c 1550–1700 on the basis of base sherds from two Bartmann jugs in Frechen stoneware (FREC), one of the main imported wares from the Continent during this period. A near-complete Bartmann jug, embellished with bearded face mask and the arms of the city of Amsterdam was found in context [26], lacking only its neck and handle. There are also sherds from two more Bartmänner in the same context. London-area redwares (PMR) are represented by sherds from the base of a jar or jug and the handle of a tripod pipkin, and part of a handled bowl is made in Essex-type fine redware, from the Harlow are (PMFR), which was current in London c 1580–1700, providing a TPQ for the context. The remaining pottery comes from the Surrey-Hampshire borders and includes sherds from two flanged dishes in whiteware with yellow (clear) glaze (BORDY), one with green glaze (BORDG) and one in redware (RBOR). Part of a FREC Bartmann and a chamber pot in BORDY were also unstratified and date to the same period.

### Potential and significance

All pottery is domestic in character and the size and condition of the sherds collected suggests that they were discarded over a relatively short period, with little subsequent disturbance. The finds include a good representation of fabrics and forms in current use during the late 16th to early 17th century and illustrate well the ceramic preferences of the time. The near-complete Bartmann from context [26] would make a good photograph.



## **Annex 1: Figures**

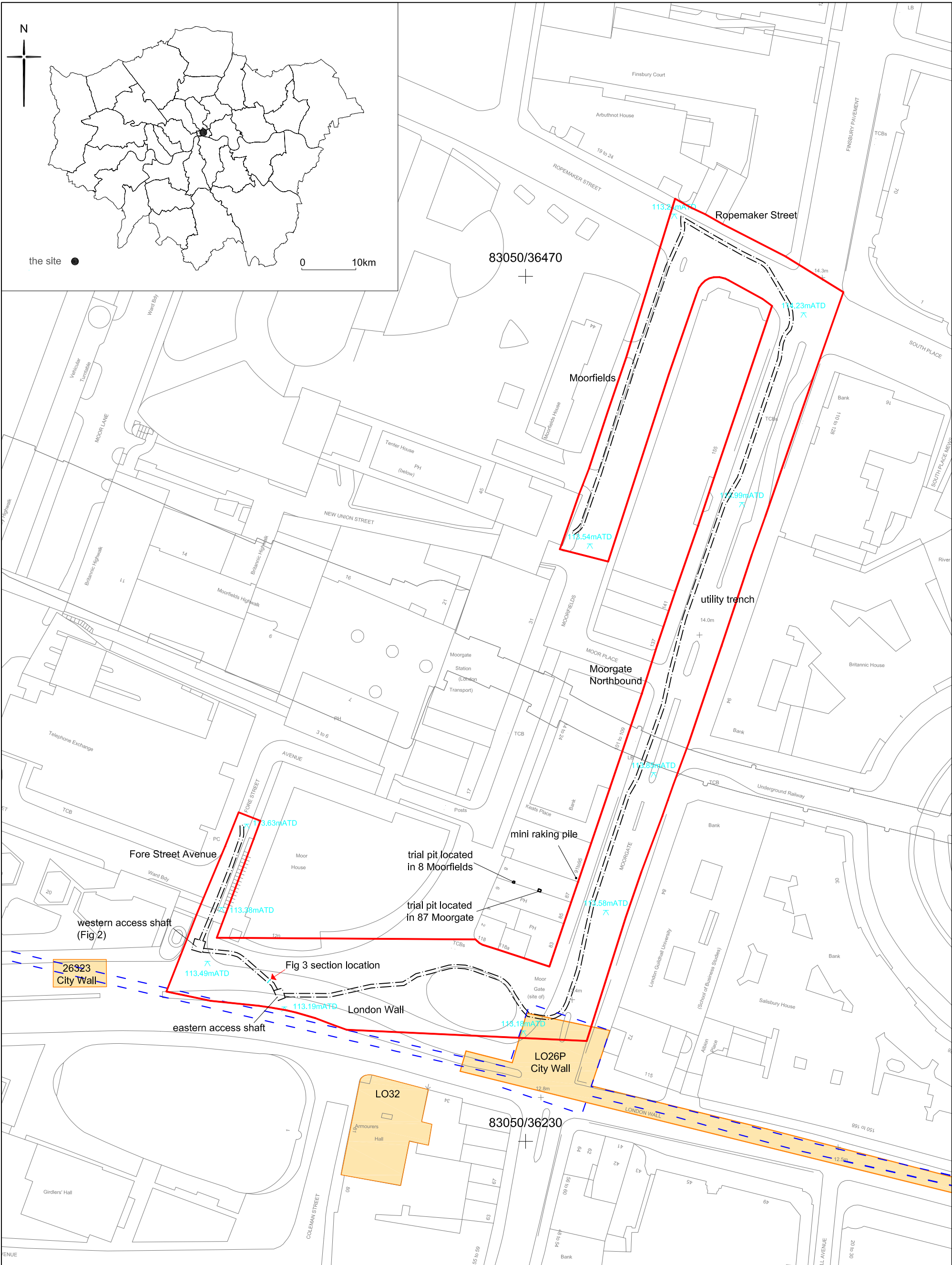


Fig 1 Location of utilities diversions, trial pits and mini raking pile

- Site outline
- Watching brief area
- Scheduled Monument (London City Wall)
- 2008 Reconstruction of London City Wall location
- TBM in mATD (for mOD, subtract 100m)
- Section line

0 1:1000 @ A3 50m

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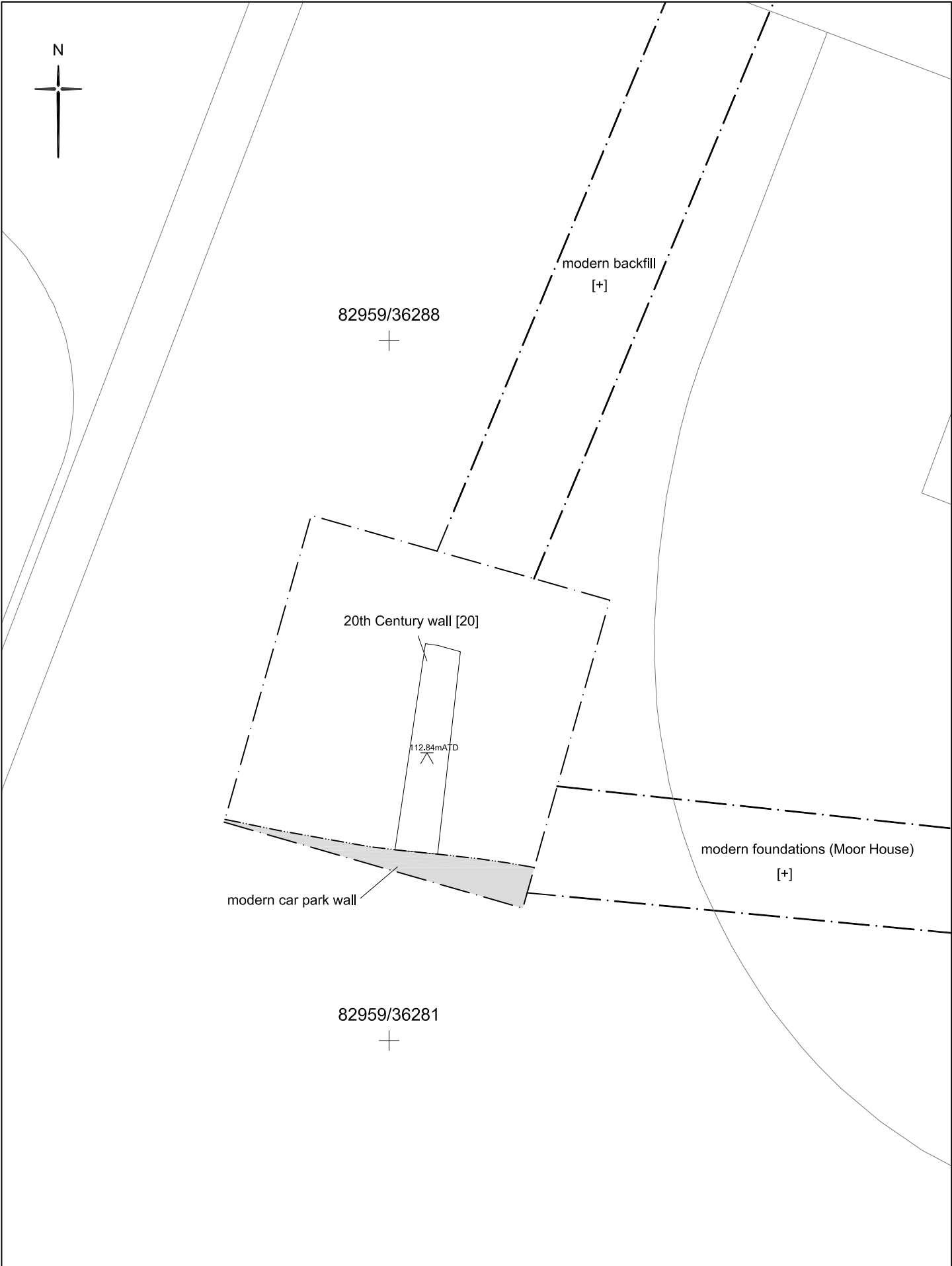





Fig 2 Archaeological features in western access shaft

-  Watching brief area
-  Archaeological features
-  Modern truncation

0 1:50 @ A4 2.5m

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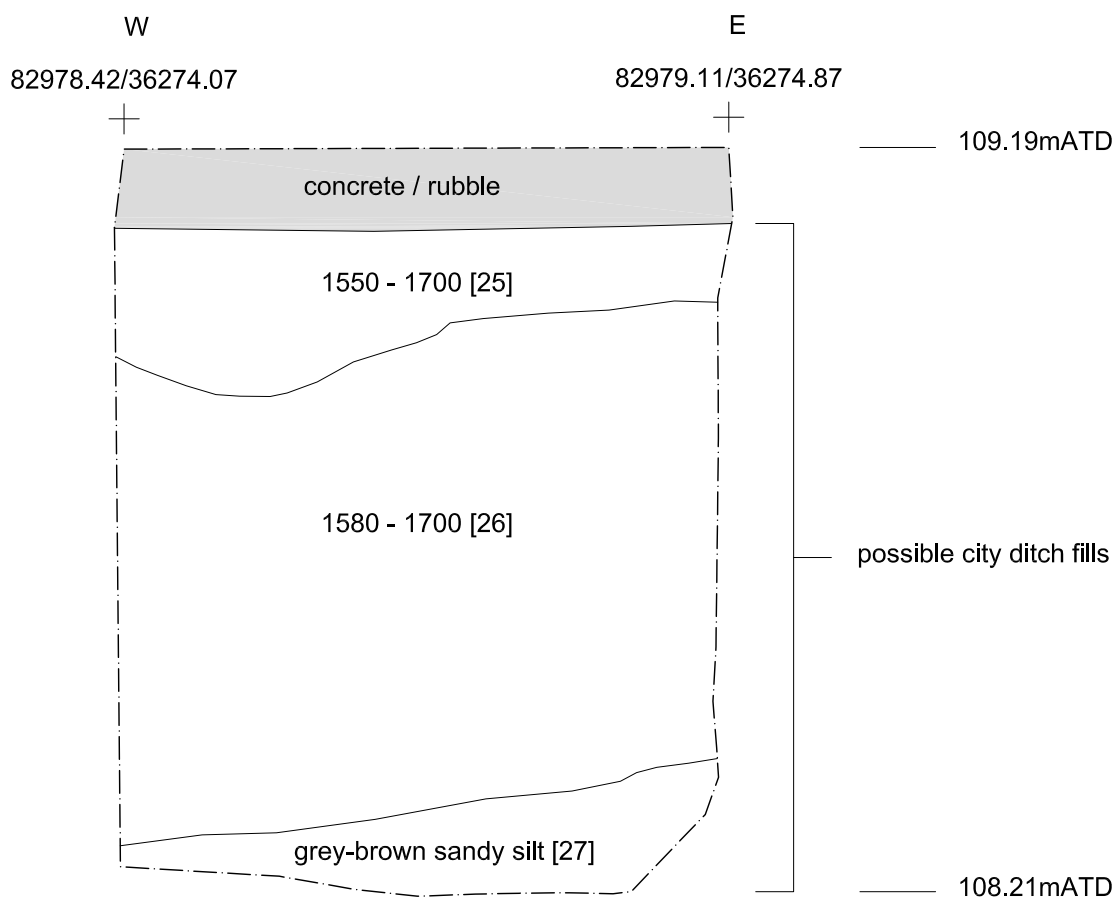




Fig 3 West facing section from eastern access shaft, showing possible city ditch fills (see fig 1 for location)

-  Limit of excavation
-  Archaeological features

0 1:10 @ A4 0.5m

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