C257 Archaeology Central

Fieldwork Report

Farringdon, Smithfield Market Basement

Archaeological Watching Brief on trial holes in locations of proposed Grout Shafts (XSF10)

Document Number: C257-MLA-X-RGN-CRG02-50136

Document History:

Revision:	Date:	Prepared by:	Checked by:	Approved by:	Reason for Issue:
1.0	25.07.12	Sam Pfizenmaier (MOLA)	Nicholas Elsden (MOLA)	George Dennis (MOLA)	For Crossrail Review.
2.0	28.09.12	Sam Pfizenmaier, Patrizia Pierazzo (MOLA)	Nicholas Elsden (MOLA)	Elaine Eastbury	Revised from Crossrail Review; For approval

CROSSRAIL REVIEW AND ACCEPTANCE STATUS This decal is to be used for submitted documents requiring acceptance by CRL.		
☐	Code 1.	Accepted. Work May Proceed
☐	Code 2.	Not Accepted. Revise and resubmit. Work may proceed subject to incorporation of changes indicated
☐	Code 3.	Not Accepted. Revise and resubmit. Work may not proceed
☐	Code 4.	Received for information only. Receipt is confirmed
Reviewed/Accepted by:(signature)		
Print Name:		Date:
Acceptance by CRL does not relieve the designer/supplier from full compliance with their contractual obligations and does not constitute CRL approval of design, details, calculations, analyses, test methods or materials developed or selected by the designer/supplier.		

Non technical summary

This report presents the results of a general watching brief carried out by Museum of London Archaeology (MOLA) in the underground railway/basement beneath Smithfield Market , London EC1, in the City of London, as part of works for the future Crossrail Farringdon Station. This report was commissioned from MOLA by Crossrail Ltd. This work is being undertaken as part of a wider programme to mitigate the archaeological implications of railway development proposals along the Crossrail route.

This report covers the proposed locations of three grout shafts beneath Smithfield Market, to the south of Charterhouse Street and west of Lindsey Street. (These lie outside the main worksite at Farringdon: the Eastern Ticket Hall located between Lindsey Street and Hayne Street.) The watching brief was carried out under Crossrail contract C257 Archaeology Central.

Three engineering trial pits and a trial trench were excavated at each grout shaft location, in order to determine the impact on the listed building and its foundations.

Natural London Clay was recorded in each shaft location, varying in depth between 0.6 and 1.20m below basement floor level.

A variety of brick structures were exposed and left in situ, all of which are constructed from materials in use during mid to late 19th-century. Three shallow narrow offset footings, exposed in the eastern and central shafts, are almost certainly the remnants of foundations for an east–west aligned platform allowing access to railways that flanked it to the north and south.

Also within the footprints of the eastern and central shafts, two brick and concrete walls were exposed on an east–west alignment, that are foundations for a railway that was in use until at least 1937. In the western grout shaft, two narrow parallel walls (also probably constructed in the 19th century) are less easily identifiable, but are also most likely the foundations for a platform that allowed access to the market above.

19th and 20th-century backfill consisting of brick rubble overlay all these features, some of which had evidently been re-excavated numerous times over the last 150 years.

The watching brief on the trial pits has demonstrated that there is extensive survival of underground structures in the proposed locations of the three grout shafts. These are all associated with the early development of the underground railway tunnel and the overlying Smithfield Market.

These structures lie within the curtilage of Smithfield Market, a Grade II Listed Building, and thus form part of the Listed structure. These are, however, of limited importance compared with features exposed above floor or ground level (see 11.1).*

The 19th-century tunnel extends to between 6m and 7m below ground level, and has truncated any earlier archaeological remains which may once have existed at these locations.

Contents

List of Figures

NB Given the poor quality of images of the historic map when enlarged, reference to the complete image in Figure 6 is recommended when using Figures Figure 2, Figure 4 and Figure 5.

List of Photos

List of Tables

1 Introduction

Crossrail is a new cross-London Rail Link project which will provide transport routes across the south-east of England and London. The route will link Maidenhead and Heathrow in the west with Shenfield in the north-east and Abbey Wood in the south-east. In central London, from Royal Oak in the west to Pudding Mill Lane and Royal Victoria Dock in the east, Crossrail will consist of a tunnelled section with seven new stations linked to the existing transport network.

The new Crossrail Farringdon station will be constructed between Farringdon Road and Lindsey Street. Two new ticket halls will be constructed at either end of the deep, tunnel-level, platforms: one at Farringdon Road, to the west (Western Ticket Hall, to be built by Thameslink), and one at Lindsey Street to the east (Eastern Ticket Hall, to be built by Crossrail). This report is concerned with works which lie between the two ticket halls.

The Crossrail mitigation response to archaeology is described in the Crossrail Generic WSI (Crossrail 2009a) and the detailed desk based assessment (DDBA; Crossrail 2008b), 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 an archaeological watching brief that was carried out beneath Smithfield Market by Museum of London Archaeology (MOLA) under Crossrail contract C257 Archaeology Central.

The sites of the proposed grout shaft locations are in the underground railway/basement beneath Smithfield Market, London EC1, in the City of London, (Figure 1). The approximate centre of the site is at OS National Grid Reference 531825 181785.

All fieldwork was conducted between 12/6/12 and 28/6/12 and supervised by Sam Pfizenmaier (MOLA Supervisor).

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

Table 1 Site Details

Task	Principal Contractor	Provisional Programme
• **General Watching Brief** on 9 trial pits and 3 shallow trial trenches in basement of **Smithfield Market** (Moorgate Spur) (Figure 1)	C430 Laing O'Rourke / Strabag jv (LORS)	12th to 28th June 2012

The three proposed grout shaft locations are variously numbered 1, 2, and 3, or 2, 3, and 4 in different documents. To avoid confusion, they are referred to simply as the western, central, and eastern grout shafts in this report (Figure 1). These three positions are relative to each other, ignoring others proposed for locations outside Smithfield Basement.

The event code (sitecode) is XSF10.

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 (Crossrail 2009b) and the Addendum to that WSI (Crossrail 2011) (see section 4 below) – which should be referred to for further detail. 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 (Crossrail 2008a). The requirements being progressed follow the principles of Planning Policy Guidance Note 16 (PPG16)(DoE 1990), and it's replacements Planning Policy Statement 5 (PPS5)(DCLG 2010) and the National Policy Planning Framework (NPPF)(DCLG 2012), on archaeology and planning. 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 allow the dis-application by Crossrail 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 disapplied their existing rights to the Cross Rail project, and Schedule 15 allows Crossrail to bypass any ecclesiastical or other existing legislation relating to burial grounds.

Notwithstanding these disapplications, 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 archaeology of site

The principal previous Crossrail studies are as follows:

- *Crossrail 2005a Environmental Statement*
- *Crossrail 2005b Assessment of Archaeology Impacts, Technical Report. Part 2 of 6, Central Route Section, 1E0318-C1E00-00001*, [Specialist Technical Report (STR)]
- *Crossrail 2008b MDC – Work Package 3, Archaeology Detailed Desk Based Assessment, Farringdon Station, Doc. No.: CR-SD-FAR-EN-SR-00001* (DDBA)
- Crossrail 2009b *Crossrail SS-WSI - Farringdon Station, Site-specific Written Scheme of Investigation, Crossrail November 2009, Doc. No. CR-SD-FAR-EN-SY-0001 Version 6.0* [WSI]
- Crossrail 2011 *An Addendum to the WSI: Package C136 – Farringdon Station, Addendum to Written Scheme of Investigation: Trial Trench Evaluation, Watching Brief & Detailed Excavation – Eastern Ticket Hall (XSF10), Doc. No. C136-SWN-T1-XAP-M123_WS098-00001 Revision 2.0, 05.07.11* [Addendum]
- MOLA for Crossrail, 2012a*, C257 Archaeology Central, Fieldwork Report Archaeological Evaluation, Farringdon Eastern Ticket Hall (XSF10),Doc. No.: C257-MLA-X-RGN-CRG02-50060 Revision 2.0, 28.02.12*

All fieldwork was carried out to a method statement prepared in line with the principal contractor's method statement. The above cited reports are all available from the London Archaeological Archive and research Centre (LAARC).

5 Geology and topography of site

The drift geology consists of Pleistocene river terrace gravels (Hackney Sands and Gravels) shaped by erosion caused by glacial melt water following the last ice age. The archaeological potential of the terrace Gravel deposits is considered to be very low. These overlie London Clay, found across London and dating to around 50 million years before present.

The topography of the West Smithfield area is dominated by the former River Fleet, the main channel approximating to the line of Farringdon Street and Farringdon Road. The Fleet is the largest of London's lost rivers (Barton 1992), now confined to a sewer beneath Farringdon Street and New Bridge Street.

The current site lies on the higher slopes to the east of the Fleet. Modern street levels on Charterhouse Street (immediately to the north of Smithfield Market and partially over the underground railway) slope gradually down from *c* 116.9m ATD to the east, to 116.0 or less to the west. Further west, the land slopes down much more steeply towards the former River Fleet, falling from 116.50m ATD in West Smithfield to 107.9m ATD in Farringdon Street. The effects of modern truncation are described in section 5.1.

Tributaries flowing from east to west were also once present in the area. The former course of the Faggeswell Brook has been predicted from the contours of the underlying geology (MOLA 2011) and recently identified in archaeological evaluations at the Crossrail Farringdon Eastern Ticket Hall (MOLA for Crossrail 2012a).

The site roughly corresponds with the northern channel edge of one of these tributaries, lying on the margins of the Fleet Valley.

5.1 Archaeological and Historical Background

The following is a brief summary of the background to the site, see the DDBA (Crossrail 2008b) for further detail.

The three proposed grout shafts are all situated underneath the 19th-century Central Market buildings associated with Smithfield Market built by Horace Jones in 1868, and the railway cutting and tunnel for the Metropolitan Line (this section completed 1865). The current street level on Lindsey Street (above the proposed location of the eastern grout shaft) is approximately 117.00m ATD. This is 8m higher then the ground level at the base of the tunnel complex (109.00m ATD). Therefore, in the basements of Smithfield Market and the Moorgate Spur, the only archaeological remains likely to survive are foundations of the Market and railway; themselves forming a listed building within the curtilage of the market building (see 9.1 and 11.1). All earlier remains are expected to have been removed by excavation of the basement and railway cutting.

Potentially some underground structures may survive which were contemporary with this 19th-century construction, for example a signal box located in the railway tunnel near the proposed location of the western grout shaft. There were also lifts, cranes and the remnants of turn-tables, constructed for meat transportation that may fall within the grout shaft locations.

Late 20th-century remedial work to the underground complex (in particular, reinforcement of the 19th-century columns, and vermiculite fireproofing sprayed on to the majority of the exposed steel foundations sometime in the mid 1980s) has significantly altered the impression of the listed building construction.

6 Research objectives and aims

6.1 Objectives of the fieldwork

The objectives of the archaeological investigations, as stated in the Addendum to the WSI (Crossrail 2011), are set out below.

The overall objectives of the investigation were to establish the nature, extent and state of preservation of any surviving archaeological remains that will be impacted upon by the development.

The task-specific aims and objectives from the Addendum are:

- The watching brief will refine the extent and significance of the archaeological resource and inform further mitigation measures.

Specifically, the archaeological investigations have the potential to recover:

- Post-medieval buildings and features associated with the creation and expansion of Smithfield Market and the underground railway system.

The C257 MOLA method statement noted that:

- In addition, the GWB in Smithfield Market (Moorgate Spur) has the additional objective to prevent any impact to the listed structure.

6.2 Research Aims

The original aims and objectives were listed in the WSI (Crossrail 2009), and stated that 'Archaeological investigation and mitigation within the Crossrail worksites for Farringdon Station have the potential to contribute to the research themes set out below':

- Contributing to our understanding of the creation of the London suburbs with direct contribution to today's aspirations for an urban regeneration.

7 Methodology of site-based and off-site work

All archaeological excavation and recording during the targeted watching brief was carried out in accordance with:

- Crossrail, 2009a *Archaeology Generic Written Scheme of Investigation*, Doc No. CR-PN-LWS-EN-SY-00009
- Crossrail, 2011 *Package C136 – Farringdon Station, Addendum to Written Scheme of Investigation: Trial Trench Evaluation, Watching Brief & Detailed Excavation – Eastern Ticket Hall (XSF10), Doc. No. C136-SWN-T1-XAP-M123_WS098-00001 Revision 2.0*, 05.07.11
- Museum of London *Archaeological Site Manual* (MoL 1994)
- English Heritage Greater London Archaeology Advisory Service, June 1998 *Archaeological Guidance Papers 1–5*
- English Heritage Greater London Archaeology Advisory Service, May 1999 *Archaeological Guidance Papers 6*
- English Heritage Greater London Archaeology Advisory Service, 2009 Archaeological Guidance Papers 1–5 (consultation draft) [1. Desk-Based Assessments, 2. Written Schemes of Investigation, 3. Fieldwork, 4. Reporting, dissemination and publication, 5. Popular dissemination and communication of archaeology]

The site finds and records can be found under the site code XSF10 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.

7.1 General watching brief Methodology

The General Watching Briefs consisted of a basic monitoring presence to observe the works carried out either by the Principal Contractor without constraint on their working methods (Crossrail 2009c).

ESG soil mechanics were subcontracted by C430 Laing O'Rourke / Strabag jv (LORS) to hand excavate 9 trial pits and 3 trenches spread across the three proposed grout shaft locations. Trial Pits 4 and 6 were eventually combined due to their proximity. A small area of trench between Trial Pit 5 and Trial Pits 4 and 6 was excavated to 0.3m bGL (below ground level – here actually the tunnel/basement floor level), and then abandoned. **Each intervention was excavated with care so as not to damage any part of the listed structure.**

The trial pits were excavated between 0.85m and 1.65m bGL, in order to identify the extent of underground obstructions. Monitoring and recording during the general watching brief was generally made by observation from ground level. MOLA staff only entered the trial pit/trenches or by agreement with the Principal Contractor (where there was provision of proper access and where it was safe to do so). The trenches were not shored (as previously agreed between ESG and the Principal Contractor), and where excavations were made beyond 1.2m bGL particular care was taken to not enter these parts of the trenches.

A written and drawn record was made in accordance with the principles set out in the Museum of London site recording manual (MoL 1994). The photos and figures included in this report have been specifically chosen so as to illustrate the archaeological/building

features encountered. The interventions were surveyed in after backfilling [not ideal, but the chosen methodology of the sub-contractor] and the location co-ordinates were supplied to MOLA by the Principal Contractor.

8 Results and observations including stratigraphic report and quantitative report

8.1 Proposed Eastern Grout Shaft trial pits and trenches

8.1.1 Trial Pit 1

Photo 1, Brick foundation for platform [76] (top of picture), railway foundation [77] (base of picture), looking north.

Trial Pit 1 Eastern Grout Shaft (Photo 1) (Figure 2)	
Location	Eastern Grout Shaft
Dimensions	0.86m (N–S) by 1.3m (E–W) and between 1.2 and 1.44m deep
OS National grid coordinates	531887 181818
LSG grid coordinates	82240 / 36531
Modern Ground Level/top of the slab	109m ATD
Modern subsurface deposits	20th-century footings truncate to 1.44m beneath ground level (107.56m ATD)
Level of base of archaeological deposits observed	Concrete base of context [77] continues beyond trench base at 107.56m ATD.
Natural observed	London Clay at 108.39m ATD
Extent of modern truncation	19th/20th-century made ground filled the trial pit to a depth of 0.61m bGL.

Archaeological remains	Dating Evidence, Finds, and Samples
[76] 5 surviving offset courses of yellow stock brick footing (Photo 1). Between 108.57 and 108.06m ATD, cutting London Clay.	Part of listed building (brick samples not taken)
[77] 3 courses of yellow stock brick footing (top on edge) over associated concrete foundation (Photo 1). Between 108.60 and 7.44m ATD, cutting London Clay.	Part of listed building (brick samples not taken)

Interpretation and summary

Natural London Clay was recorded across the trial pit to a depth of 108.39m ATD. Two parallel brick structures [76] and [77] were exposed along the northern and southern edges of the trench.

Structure [76] survived to a depth of 0.51m and appeared to continue beyond the northern and eastern limits of excavation. Nineteenth-century cartographic evidence, in conjunction with modern mapping indicates this structure is the southernmost edge of foundations for a large platform, long since demolished (see Figure 2). They also support the identification of Context [77], to the south, as being the foundations for a rail track that was incorporated in the plan of the depot area (see 9.1, 12.3 and Photo 20 Colour-coded plan of the terminus, 1878. (COL/PLD/PL/02/LCM/SUN/030)This consisted of three brick courses embedded into a more robust concrete footing, the base of which was not exposed.

Both structures appear contemporary; brick types are consistent with those used during the 19th-century, and therefore were part of the original market foundation (*c* 1868), or later construction for the market or the Metropolitan Railway. Both were aligned east–west, and continued beyond the eastern limit of the trial pit. To the west, a later (1980s?) column and associated concrete foundation truncated both structures to at least 1.44m bGL. The trial pit was filled with loose rubble to ground level at 109m ATD.

These foundations, of Smithfield Market and the Metropolitan Railway, form part of the listed building (see 11.1).

8.1.2 Trial Pit 2

Photo 2 Brick offsets (bottom right) for original phase of market foundations (c 1868), railway foundation [78] (in facing section), looking north.

Trial Pit 2 Eastern Grout Shaft (Photo 2) (Figure 2 & Figure 3)	
Location	Eastern Grout Shaft
Dimensions	1.4m (N–S) by 1m (E–W) and between 1.00m and 1.66m deep
OS National grid coordinates	531891 181816
LSG grid coordinates	82245 / 36531
Modern Ground Level/top of the slab	108.96m ATD
Modern subsurface deposits	19th/20th-century made ground filled the trial pit to a depth of 0.61m bGL. (108.35m ATD)
Level of base of archaeological deposits observed	Concrete base of context [78] continues beyond trench base at 107.35m ATD.
Natural observed	London Clay at 108.35m ATD

Extent of modern truncation	20th-century backfill was recorded at 0.61m bGL.
Archaeological remains	**Dating Evidence, Finds, and Samples**
[78] 3 courses of yellow stock brick footing (top on edge) over associated concrete foundation (Photo 2). Between 108.65 and 7.35m ATD, only exposed to a depth 1.30m, continues beyond trench base.	Part of listed building (brick samples not taken)
Interpretation and summary	
Natural London Clay was recorded across the trial pit at a depth of 108.35m ATD. A brick structure [78] was partially exposed along the northern edge of the trench. This shared a similar construction and alignment to that of [77] (see 8.1.1 above) exposed to the north in Trench 1, and is likewise identified as the foundation for a rail track that was probably in use until at least the early 20th century (see Figure 6 and 12.3), an interpretation supported by cartographic evidence in conjunction with modern mapping. Concrete foundations for the column base extended 0.8m from the eastern trench edge, and 1.2m from the southern limit of excavation, at a depth of 1m bGL (107.96m ATD). Seven brick offsets overlaid these foundations. All appear to be part of the original underground/market foundations of the 1860s. These foundations, of Smithfield Market and the Metropolitan Railway, form part of the listed building (see 11.1).	

8.1.3 Trial Pit 3

Photo 3 20th-century brick foundations (top centre) abutting 19th-century concrete base, looking west.

Trial Pit 3 Eastern Grout Shaft (Photo 3) (Figure 2)	
Location	Eastern Grout Shaft
Dimensions	1.3m (N–S) by 1.6m (E–W) and between 1.2 and 1.6m deep
OS National grid coordinates	531887 181812
LSG grid coordinates	82241 / 36525
Modern Ground Level/top of the slab	108.89m ATD
Modern subsurface deposits	Visible at 107.69m ATD
Level of base of archaeological deposits observed	n/a
Natural observed	London Clay at 107.69m ATD
Extent of modern truncation	20th-century backfill was recorded at 1.2m bGL. (107.69m ATD)
Archaeological remains	**Dating Evidence, Finds, and Samples**
Concrete foundations at 107.29m ATD, supporting an offset brick column base.	19th-century
Later concrete foundation abutting column base.	19th- or 20th-century
Interpretation and summary	
Natural London Clay was recorded across the trial pit to a depth of 107.69m ATD. Modern truncation associated with the standing building appears to be more extensive then the surrounding trial pits, as London Clay was exposed at 107.69m ATD compared to 108.39m and 108.35m ATD in Trial Pits 1 and 3. This may be partly explained by the undulations in ground level seen across the underground complex. Nineteenth-century concrete foundations were recorded at 107.29m ATD, the base of which was not exposed. This foundation extended 0.4m from the lowest brick offset. Three further brick offsets overlaid these foundations, forming the base of a substantial column. Immediately to the north, a later concrete foundation abutted this (probably remedial work) the base of which appeared to be exposed at 107.29m ATD, and continued beyond the northern limit of the trial pit. The concrete foundations, of Smithfield Market, form part of the listed building (see 11.1).	

8.1.4 Trench 1

Photo 4 19th–20th-century dump deposits, looking east.

Trial Trench 1 Eastern Grout Shaft (Photo 4) (Figure 2)	
Location	Eastern Grout Shaft, between Trial pits 2 and 3.
Dimensions	0.56m-0.62m (N–S) by 3.25m (E–W) and between 1.15m deep
OS National grid coordinates	531889 181814
LSG grid coordinates	82243 / 36525
Modern Ground Level/top of the slab	108.90m ATD
Modern subsurface deposits	No structures exposed
Level of base of trench	107.75m ATD
Natural observed	London Clay at 108.34m ATD
Extent of modern truncation	19th/20th-century backfill was recorded at 0.56m bGL. (108.69m ATD)

Archaeological remains	**Dating Evidence, Finds, and Samples**
No archaeology exposed	n/a
Interpretation and summary	
Natural London Clay was recorded across the trial pit to a depth of 108.34m ATD. No structures were exposed. Backfilled horizontal dumps (with the occasional 19th-century brick fragment) made up the majority of the sequence. These were probably formed soon after the construction of the original phase of building, and have seen little disturbance since. No elements of the listed building were exposed in this trial trench.	

8.2 Proposed Central Grout Shaft trial pits and trenches

8.2.1 Trial Pits 4 and 6 (combined)

Photo 5 Parallel brick structures [81] (right of picture) and [82], looking west.

Trial Pits 4 and 6 (combined) Central Grout Shaft (Photo 5, Photo 6) (Figure 4)	
Location	Central Grout Shaft
Dimensions	0.96m (N–S) by 1.91m (E–W) and between 1.02 and 1.65m deep
OS National grid coordinates	531821 181787
LSG grid coordinates	82174 / 36501
Modern Ground Level/top of the slab	108.60m ATD
Modern subsurface deposits	Visible at 106.95m ATD
Level of base of archaeological deposits observed	Made ground at 107.80m ATD
Natural observed	London Clay at 107.97m ATD
Extent of modern truncation	20th-century concrete foundations visible from ground surface to 106.95m ATD.

Archaeological remains	Dating Evidence, Finds, and Samples
[84] Firm mid blue grey London Clay exposed between 107.97m ATD and 106.95m ATD	Sterile
[83] Dense grey brown sterile clay-Made ground, for brick structures [81] and [82]. Exposed between 108.20m ATD and 107.94m ATD.	No finds
[82] 3 courses of yellow stock brick (two offsets). (Photo 5, Photo 6) Between 108.45 and 108.19m ATD.	Probably mid to late 19th century Part of listed building (brick samples not taken)
[81] 3 courses of yellow stock brick (two offsets) Between 108.00 and 8.25m ATD. (Photo 5, Photo 6)	Probably mid to late 19th century Part of listed building (brick samples not taken)

Interpretation and summary

Natural London Clay was recorded across the trial pit at 107.97m ATD.

A layer of made ground formed from excavated and redeposited London Clay was exposed across the trial pit, as a foundation for brick structures [81] and [82]. Both were constructed in similar styles and materials, and probably date to the mid to late 19th century. The location [relative to the standing building and original platform/depot location, see Photo 20] and composition of these structures suggests that they are probably related to [76] in Trial Pit 1, and likewise are almost certainly foundations for a platform, now demolished.

Later concrete foundations truncated both of these structures, particularly [82] at both eastern and western limits. It is possible that both [81] and [82] continued on a parallel east–west alignment, prior to later remedial interventions.

The foundations, of Smithfield Market or its construction, form part of the listed building (see 11.1).

Photo 6 brick structures [81] (top) and [82] (bottom) truncated by concrete foundations. Their location is consistent with that of an early 19th-century platform, looking north.

8.2.2 Trial Pit 5

Photo 7 19th-century footings and two iron pipes, looking north.

Trial Pit 5 Central Grout Shaft (Photo 7) (Figure 4)	
Location	Central Grout Shaft
Dimensions	1.95m (N–S) by 1.10m (E–W) and between 0.49 and 0.85m deep
OS National grid coordinates	531820 181790
LSG grid coordinates	82173 / 36504
Modern Ground Level/top of the slab	108.68m ATD
Modern subsurface deposits	Visible across trial pit to a depth of 0.85m bGL (107.83m ATD)
Level of base of archaeological deposits observed	n/a
Natural observed	Not exposed
Extent of modern truncation	19th/20th-century iron pipes and related backfill filled the trial pit.
Archaeological remains	**Dating Evidence, Finds, and Samples**
Two brick offset foundations.	19th-century
Interpretation and summary	
Natural deposits were not exposed in this relatively shallow trench. Two brick offsets were recorded between 0.36 and 0.56m from the base of a 19th-century column at the northern limit of the trial pit. Two iron pipes were exposed at the base of the trench between 108.18m ATD and 107.96m ATD. No further structures were recorded; excavation was abandoned at this depth. The brick foundations and the iron pipes, from Smithfield Market, form part of the listed building (see 11.1).	

8.2.3 Trial Trench 2

Photo 8 Parallel walls [92] and [93], foundations for railway, looking south.

Trial Trench 2 Central Grout Shaft (Photo 8) (Figure 4)	
Location	Central Grout Shaft
Dimensions	4.18m (N–S) by 0.58m (E–W) and between 0.36m and 1.28m deep
OS National grid coordinates	531824 181781
LSG grid coordinates	82178 / 36494
Modern Ground Level/top of the slab	108.64m ATD
Modern subsurface deposits	20th-century backfill to 1.28m bGL (107.36m ATD)
Level of base of archaeological deposits observed	107.70m ATD
Natural observed	Not exposed
Extent of modern truncation	19th/20th-century backfill was recorded at 0.56m bGL. (107.69m ATD)
Archaeological remains	**Dating Evidence, Finds, and Samples**
[93] Red and yellow stock brick (Photo 8) exposed to a height of 0.23m between 108.54m ATD and 108.30m ATD.	Probably 19th-century. Part of listed building (brick samples not taken)

[92] Red and yellow stock brick (Photo 8), exposed to a height of 0.84m between 108.54m ATD and 107.70m ATD.	Probably 19th-century. Part of listed building (brick samples not taken)
[91] 19th-century backfill (Photo 8) situated between structures [92] and [93]. Inclusions of broken glass and brick fragments. Exposed between 108.55m ATD and 108.30m ATD.	Not retained
[90] 20th-century backfill between 108.64m ATD and 107.36m ATD.	Not retained
Interpretation and summary	
Natural deposits were not exposed at 1.28m bGL. Two parallel and similar structures [92] and [93] (dated mid to late 19th century) were exposed sharing an east–west orientation (these are associated with structures [77] and [78] exposed in Trial Pits 1 and 2 to the east, see 12.3, and likewise, are almost certainly foundations for sleepers for a railway (Figure 4). In the southern part of the trial pit a brick column and four offsets were constructed onto a concrete base, which extended 0.4m into the trench at a depth of 0.56m bGL (108.08m ATD).Two separate dumps [90] and [91] filled the trench to ground level. These foundations, of the Metropolitan Railway, form part of the listed building (see 11.1).	

8.3 Proposed Western Grout Shaft trial pits and trenches

8.3.1 Trial Pit 7

Photo 9, 20th-century foundations abutting earlier structures, looking north.

Trial Pit 7 Western Grout Shaft (Photo 9) (Figure 5)	
Location	Western Grout Shaft
Dimensions	1.51m (N–S) by 0.52m (E–W) and between 0.94 and 1.5m deep
OS National grid coordinates	531764 181747
LSG grid coordinates	82116 / 36464
Modern Ground Level/top of the slab	108.98m ATD
Modern subsurface deposits	19th/20th-century backfill sloping down from south to north at 108.30m ATD
Level of base of archaeological deposits observed	n/a
Natural observed	Firm mid blue grey London Clay exposed between 108.28m ATD and 107.48m ATD [85]

Extent of modern truncation	20th-century concrete foundations abutting 19th-century brick footings truncate to 0.3m bGL in the northern part of the trial pit.
Archaeological remains	**Dating Evidence, Finds, and Samples**
Two concrete pads, the lowest of caused truncation to 1.5m bGL (107.48m ATD), and extended 0.4m from the northern trench edge.	19–20th century
At 0.61m bGL (108.37m ATD) a later phase of concrete footing was stepped back, upon which 4 brick offsets had been laid, as a foundation for a column.	19–20th-century
Interpretation and summary	
Natural London Clay [85] was recorded across the trial pit sloping down from south to north, at a maximum height of 0.7m bGL (108.28m ATD). The concrete pads and the later concrete footing form part of the foundations for Smithfield Market, and appear to be of 19th-century date. Abutting these structures and partly obscuring them was a (late) 20th-century brick wall. Backfill was visible in the western facing section, showing the extent of the truncation of London Clay caused by the original ground works. These foundations, of Smithfield Market, form part of the listed building (see 11.1).	

8.3.2 Trial Pit 8

Photo 10 19th-century brick offsets and column, looking west.

Trial Pit 8 Western Grout Shaft (Photo 10, Photo 11) (Figure 5)	
Location	Western Grout Shaft
Dimensions	1.51m (N–S) by 1.62m (E–W) and between 1.2 and 1.6m deep
OS National grid coordinates	531760 181743
LSG grid coordinates	82112 / 36459
Modern Ground Level/top of the slab	108.98m ATD
Modern subsurface deposits	19th/20th-century backfill sloping down from south-north. Visible at 108.32 m ATD
Level of base of archaeological deposits observed	Base of wall (continues beyond trench base) at 108.03m ATD
Natural observed	Firm mid blue grey London Clay exposed between 108.28m ATD and 107.48m ATD [87]
Extent of modern truncation	20th-century backfill to 0.6m bGL (108.38m ATD)

Archaeological remains	Dating Evidence, Finds, and Samples
[86] Red and yellow stock brick wall (Photo 11), exposed to a height of 0.66m between 108.69m ATD and 108.03m ATD. [Further recorded in Trench 3 to the east]	Probably 19th-century. Part of listed building (brick samples not taken)
A concrete pad extended 0.45m from the eastern trench edge to a depth of 1.19m bGL (107.79m ATD). Seven brick offset footings were set on top of this pad, forming the foundation for a column.	19th-century
Interpretation and summary	
Natural London Clay [87] was recorded across the trial pit at a maximum height of 0.6m bGL (108.28m ATD). The concrete and brick column foundation forms part of Smithfield Market. A wall [86] was visible in the northern trench edge, aligned east–west, surviving to a depth of 0.66m (further recorded in Trench 3 to the east, see 8.3.4). A row of small concrete columns (supporting redundant 20th-century cables) shared this alignment, apparently coincidently, and had truncated the top surviving 2 brick courses. Backfill filled the trench to ground level, the top 0.6m apparently deposited during the mid 1980s. These features, from Smithfield Market, form part of the listed building (see 11.1).	

Photo 11 Section of wall [86] most likely delineating the edge of a platform partially exposed in section, looking north.

8.3.3 Trial Pit 9

Photo 12, 19th-century drain overlain by 20th-century concrete foundation (right of picture), looking south.

Trial Pit 9 Western Grout Shaft (Photo 12) (Figure 5)	
Location	Western Grout Shaft
Dimensions	1.6m (N–S) by 1.10m (E–W) and between 0.57m and 1.65m deep
OS National grid coordinates	531759 181747
LSG grid coordinates	82110 / 36464
Modern Ground Level/top of the slab	108.65m ATD
Modern subsurface deposits	20th-century backfill sloping down west-east from ground level to 107.85m ATD.
Level of base of archaeological deposits observed	Base of wall (continues beyond trench base) at 108.03m ATD
Natural observed	[89] Firm mid blue grey London Clay exposed between 107.85m ATD and 107m ATD
Extent of modern truncation	20th-century concrete foundation slab truncates to 1.65m bGL (107m ATD)
Archaeological remains	**Dating Evidence, Finds, and Samples**
Ceramic drain, aligned east–west, truncating the natural strata at 0.91m bGL (107.71m ATD).	19th-century
Concrete footing, 1.15m thick, encased the above drain. Visible from ground level (108.65m ATD) to 107.50m ATD.	20th-century

Interpretation and summary
Natural London Clay [89] was recorded across the trial pit at a maximum height of 0.8m bGL (107.85m ATD). The 19th-century ceramic drain ran down the middle of the trench. It is interpreted as a storm drain, encased in the much later 20th-century concrete footing. No other structures were exposed in the trench, probably because it was sufficiently far from the visible columns to avoid their foundations. 19/20th-century backfill filled the trench to ground level. These features, from Smithfield Market, form part of the listed building (see 11.1).

8.3.4 Trial Trench 3

Photo 13, two parallel walls [86] and [88], possibly denoting the northern edge of a'19th-century] platform, looking south-east.

Trial trench 3 Western Grout Shaft (Photo 13, Photo 14) (Figure 5)	
Location	Western Grout Shaft
Dimensions	0.89m (N–S) by 3.3m (E–W) and between 1.05m and 1.25 deep
OS National grid coordinates	531762 181745
LSG grid coordinates	82113 / 36460
Modern Ground Level/top of the slab	108.98m ATD
Modern subsurface deposits	20th-century backfill to 1.05m bGL (107.93m ATD)
Level of base of archaeological deposits observed	Wall [86] at 108.03m ATD, continues beyond trench base.
Natural observed	[87] Firm mid blue grey London Clay exposed between 107.92m ATD and 107.73m ATD.
Extent of modern truncation	No post 19th-century structures present.
Archaeological remains	**Dating Evidence, Finds, and Samples**
[86] Red and yellow stock brick wall (Photo 13, Photo 14), exposed to a height of 0.66m between 108.69m ATD and 108.03m ATD.	Probably 19th-century. Part of listed building (brick samples not taken)
[88] Red and yellow stock brick wall, (Photo 13, Photo 14) two offsets visible on north-east face, exposed to a height of 0.49m between 8.67m ATD and 8.18m ATD.	Probably 19th-century. Part of listed building (brick samples not taken)
Interpretation and summary	
Natural London Clay [87] was recorded across the trial pit at a maximum height of 1.05m bGL (107.92m ATD). Two parallel walls [86] and [88] (forms suggest a 19th century date of construction) were exposed sharing an approximate east–west alignment. Both walls appear associated and are only 0.18m apart. The southernmost [86] and was slightly narrower (0.22m – one brick's length), and its base not exposed. To the north [88] was wider (0.34) with two offsets, but only 0.49m high. Mapping indicates that these walls were probably the northern edge of foundations for a platform, as they bear greater similarity in construction to platform foundations in Trial Pit 1 ([76] in 8.1.1), and in Trial Pit 4/6 ([81] and [82] in 8.2.1) rather then the deeper and generally more robust sleeper foundations found in Trench 2 (8.2.3). The remainder of the trial trench was filled with 19th/20th-century rubble backfill. These features, from the Metropolitan Railway or Smithfield Market, form part of the listed building (see 11.1).	

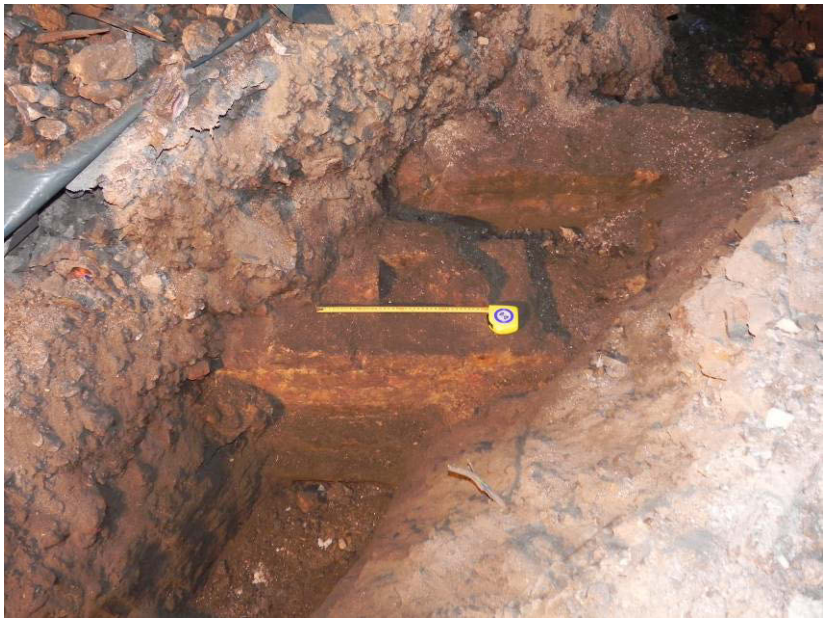


Photo 14 wall [88] (front of picture) with slightly narrower [86] (at back), looking south-east.

9 Documentary Research

Patrizia Pierazzo

In order to more closely identify the features exposed during the fieldwork, an initial piece of documentary research was undertaken. This involved consulting documents and plans at the London Metropolitan Archive (LMA).

The products are further historical background to Smithfield Market (9.1); interpretation of the structural remains (9.2), which has then been incorporated into the fieldwork results (8) and conclusions (12.3). Sources consulted are listed in 9.3, and further references in 9.4.

9.1 Introduction to the history of Smithfield market

The Smithfield area has been dedicated to the trading of livestock for many centuries, but it was only towards the end of the 18th century that the scale of the trading started to radically change the surrounding area. Following the approval of the Smithfield Market Removal Act of 1852, the livestock was relocated to Islington and the area around Smithfield was destined to the trading of cut meat. The construction of appropriate new market facilities commenced in 1867, after a second act of parliament was passed (the Market Act, 1860, approving the erection of the current building).

The plans for the construction of the East and West Market Buildings followed the demolition of a number of residential buildings in the area and included the creation of a new underground railway terminus, enabling the transportation of the meat directly into the market via an underground railway.

The arrival of the railways in the first half of the 19th century had already changed and improved the movement of fresh meat and animals, to the extent that by 1849 almost a million animals were transported into London by rail. Previously live animals could only be driven to markets such as Smithfield on the hoof, but the railways allowed the speedy transport of fresh cuts of meat rather than livestock.

Therefore an underground terminus was envisaged for Smithfield, designed to link to the existing railway lines transporting meat. Sir Horace Jones was the City architect in charge of designing the new market and the first stone was laid in 1867 and within one year the extensive and richly ornate building of Smithfield Market had been constructed, opening on 24th November 1868.

An agreement between the Corporation and the Great Western and the Metropolitan Railway Companies (as seen at the London Metropolitan Archives and reproduced below), specifies several details of the construction of the basement terminus and the quoted cost of construction for it.

> *"Much of the roads or streets surrounding the meat and poultry market were purchased for the purpose of a railway station or railway terminus, with lifts and hoists for communication with the market places. […] The station or terminus should not be used as a passenger station except in connection to the market and for market purposes. […] by the Metropolitan Railway Act of 1861, the Metropolitan Railway Company were authorized to make and maintain a Railway in the parish of St John Clerkenwell, and terminating beneath the Meat and Poultry Market, authorised by the Market Act of 1860. […] The station is made in immediate connection with the Metropolitan Railway. In order to provide a more convenient approach to the Railway*

Station it is necessary that the southern entrance thereto should be of greater width and of less inclination than it would have been. […]

Article 14. The station walls and along the four sides of the basement shall be built up to the present surface level there, and shall be proper and sufficient for the support of the walls of the Market House, and the roof of the station, and the arches or other support of the roof, and the works connected therewith, shall be proper and sufficient […].

Article 15. The station walls and along the four sides of the basement […] the roof of the station and the columns, girders, and brick arches, which with those station walls will form the supports of the Market House and the floor thereof shall be respectively designed and constructed (exclusive of flagging) under the direction and satisfaction of the referees. […] All to be done to the reasonable satisfaction of Mr Bunning, or other, the City Architect. […]

Article 33. The cost of the columns, girders, and brick arches shall be ascertained and defrayed as follows (that is to say):

The cost shall be ascertained by the referees, and shall be certified by them in writing […]

If the cost so ascertained and certified shall be less than 35.000 pounds, then the Corporation will pay 3/5 thereof, and the companies will pay 2/5 thereof.

If the cost so ascertained and certified shall amount to 35.000 pounds or upwards, and shall not exceed £42.000, then the companies will pay £14.000 part thereof, and the Corporation will pay the residue thereof.

[…] It the cost ascertained and certified shall exceed £42.000 then the referees shall ascertain and certify, by writing, under their hands, to the corporation and to each of the companies, whether any, and if any, what part of the excess beyond £42.000 arose by reason of any of the columns having been, for the purposes and at the request of the companies, placed in irregular position, and the amount, if any, so ascertained and certified shall be paid solely by the Companies. And in estimating the amount of increased cost, arising from the irregular position of the columns, it shall be assumed that straight lines and thirty feet distances apart were the basis of the original construction, and any departure there from in the basement works for the purposes of the railway, or the stations, either as to lines or distances, shall be deemed an irregularity under this arrangement, and the calculation of increased cost made accordingly.

As described in the Morning Post of the 3rd November 1868, the market building covered a total area of 620 by 240 feet at ground floor level. The Metropolitan Railway Terminus linked three railway lines coming from the east, north-west and south-west. At basement level, the cut and cover tunnel formed a triangular space, providing access to the market for the trains of the Great Western, Midland, Great Northern, South-Western, and Chatham and Dover Lines, which did much to relieve the amount of traffic above ground.

The Great Northern Railway was delivering prime cuts of beef from Aberdeen and Scotland, where mutton was also loaded onto the trains and from the Home Counties where beef, mutton, pork and veal were loaded. Smaller loads, but higher in value, were carried by the Great Western, carrying finest quality hams and bacon from Ireland and Wiltshire. The Midland was bringing meat and poultry in large quantities from the North, Scotland and the midland counties of Ireland. In addition the London, Chatham, and Dover transported game and poultry. The terminus allowed access to the ground floor market via lifts used to carry the cuts of meat to the retail area.

The building was closed during the Second World War, and suffered bomb damage only 15 days before the end of the air raids when a V2 rocket struck the north side of

Charterhouse Street. The rocket, which penetrated the roof of the Poultry Market to the west, destroyed the floor level and ended up in the railway tunnels below. The building collapsed and, at a very busy time of the day in the area, killed 110 people while many more were left injured. That section of the market was subsequently demolished.

After the war, another section of the Market Buildings, the Poultry Market, suffered a major fire in 1958; a replacement building was built on the site as a consequence. This building was constructed by the Corporation of London to the design of Sir Thomas Bennett in 1962–1963.

The surviving market building, located between Long Lane, Lindsay Street and Charterhouse Street, is now a Listed Grade II structure and the underground railway terminus, though now unused, represents a fundamental part of the listed asset.

Listing description for the 1868 building:

Name	EAST BUILDING OF CENTRAL MARKET
List entry Number	1285241
Location	EAST BUILDING OF CENTRAL MARKET, WEST SMITHFIELD EC1
Grade	II*
Date first listed	05-Jun-1972
Listing details WEST SMITHFIELD EC1 TQ 3181 NE 2/10 East Building of Central Market 5.6.72 Meat market. 1868 by Horace Jones, City Architect. Red brick with Portland stone dressings and corner towers; structural cast-iron to gateways and interior; tipped Welsh slate roofs with double-thickness glass louvres to lower half and louvred dormers to upper half of roof. Rectangular plan with central through-road (Central Avenue) running north to south. French-Italian Renaissance style. One storey. 36-bay north and south elevations x 6-bay east and west elevations. North and south elevations: each have central cast- iron elliptical-arched gateway to Central Avenue surmounted by pediment with City Arms to scrolled cast-iron tympanum and flanked by coupled Doric pilasters surmounted by large sitting statues of London, Edinburgh, Dublin and Liverpool. Semi-circular arched recesses to flanking bays, with decorative cast-iron grilles to tympanae and to square-headed windows with cornices and bracketed cills, articulated by Doric pilasters to triglyph frieze and moulded cornice surmounted by urns. Similar east and west elevations each have coupled Doric pilasters flanking tall cast-iron gateway, with ornate tympanum to bracketed pediment over semi-circular arch with City Arms. Two-storey corner pavilions: coupled Doric pilasters to similar pedimented ground floor elevations with City Arms set in foliat-carved tympanae flanked by stone griffins couchant; octagonal upper stages have oculi set in shell architraves above plate-glass sashes set in eared architraves, enriched tympanae and acroteria to pediments; each have bell-shaped cupola tiled with decorative leaf-punched copper tiles and surmounted by louvred wood lantern. Interior: Grand Avenue has 15-bay queen-post roof with decorative spandrels to lateral and transverse arch bracing, supported on cast-iron tie-beam and column assembly with foliate capitals to columns and decorative spandrels to bracing; 10 original cast-iron lanterns survive, attached to cast-iron brackets with decorative spandrels projecting from wrought-iron screens with fleur-de-lys parapets; central bay of each side has decorative wrought-iron gates each set beneath decorative iron grille. Flanking market halls centres around lateral avenue with foliate capitals to row of cast-iron columns supporting lattice girders with decorative spandrels to timber arch-braced trusses; other roofs have cast-iron columns with octagonal capitals to simpler trusses without decorative spandrels.	
TQ3187881780	

9.2 Interpretation of the structural remains

The archaeological investigation of the built remains uncovered by the Watching Brief trenches and test pits revealed levels of the building previously concealed below ground level. In particular, brick foundations supporting the railway tracks, column foundations and platforms foundations were observed and were identified with the help of the available cartographic evidence (by the Buildings Specialist and the Senior Archaeologist).

Overlaying the late 19th-century, un-scaled, and slightly distorted photo of the basement map (Figure 6) with the supplied Principal Contractors basement plans resulted in a not-entirely consistent match. Furthermore, the mis-match may have been slightly amplified by the sub-contractors methodology of surveying the interventions after backfilling (see 7.1). Therefore, whilst some features can be positively identified with structures on the plan, the interpretation of others remains less certain.

These identifications are integrated into the results in section 8, and the conclusions in section 12.3. All historic documents and maps were found at the London Metropolitan Archives.

The following photographs reproduce two sectional elevations (extracted from GLC/AR/BR/22/BA/043620, London Metropolitan Archives) drawn in 1916 showing the shape of the foundations of the railway terminus in the easternmost area. As clearly visible in the drawings, the columns are built on foundations of offset bricks supported on concrete bases and the level of the railway track is slightly above the top level of those foundations.

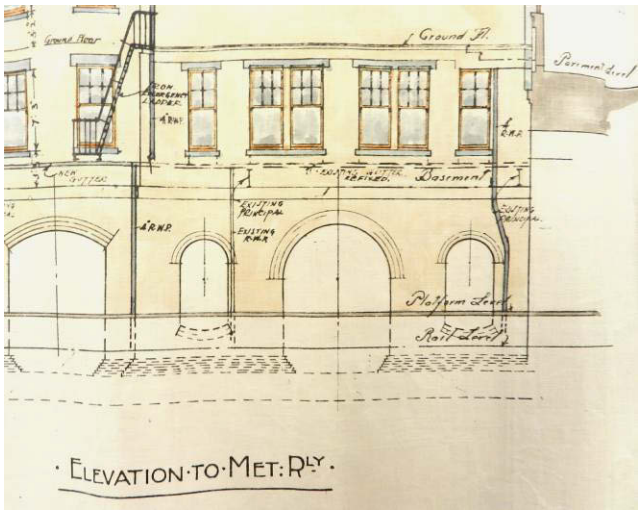


Photo 15 Sectional elevation, 1916 (GLC/AR/BR/22/BA/043620)

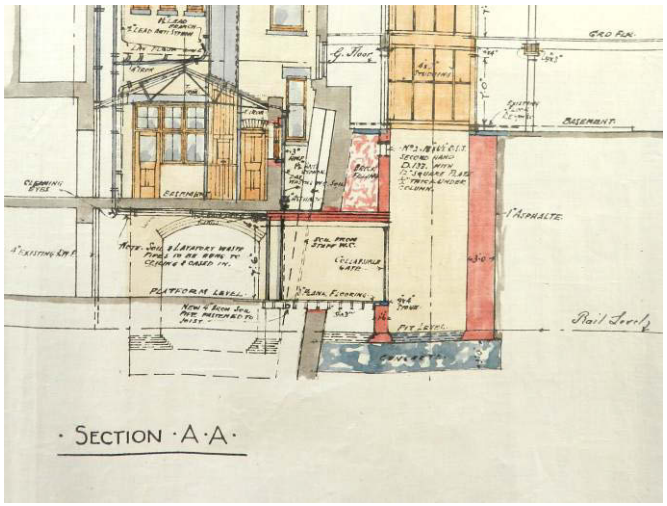


Photo 16 Sectional elevation, 1916 (GLC/AR/BR/22/BA/043620)

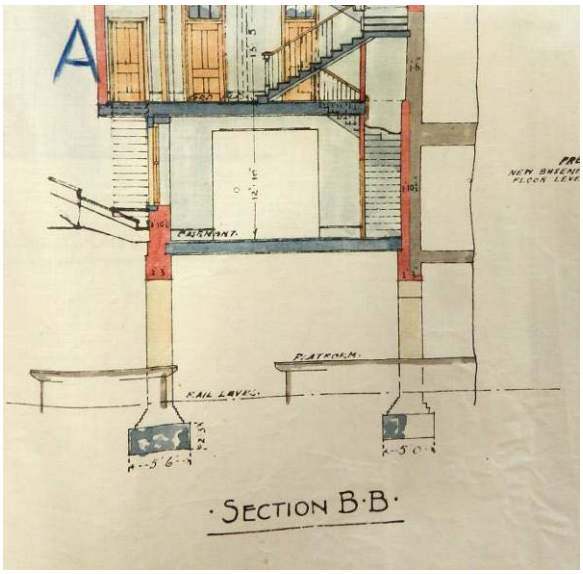


Photo 17 Sectional elevation, 1916. (GLC/AR/BR/22/BA/043620)

Photo 18. Photograph of the terminus following the WWII explosion, 1940, showing one of the platforms (COL/AC/23/0123)

Photo 19 Photograph of the terminus following the WWII explosion, 1940, showing one of the platforms. Note the brick supporting wall clearly shown in the bottom right hand corner (COL/AC/23/0122)

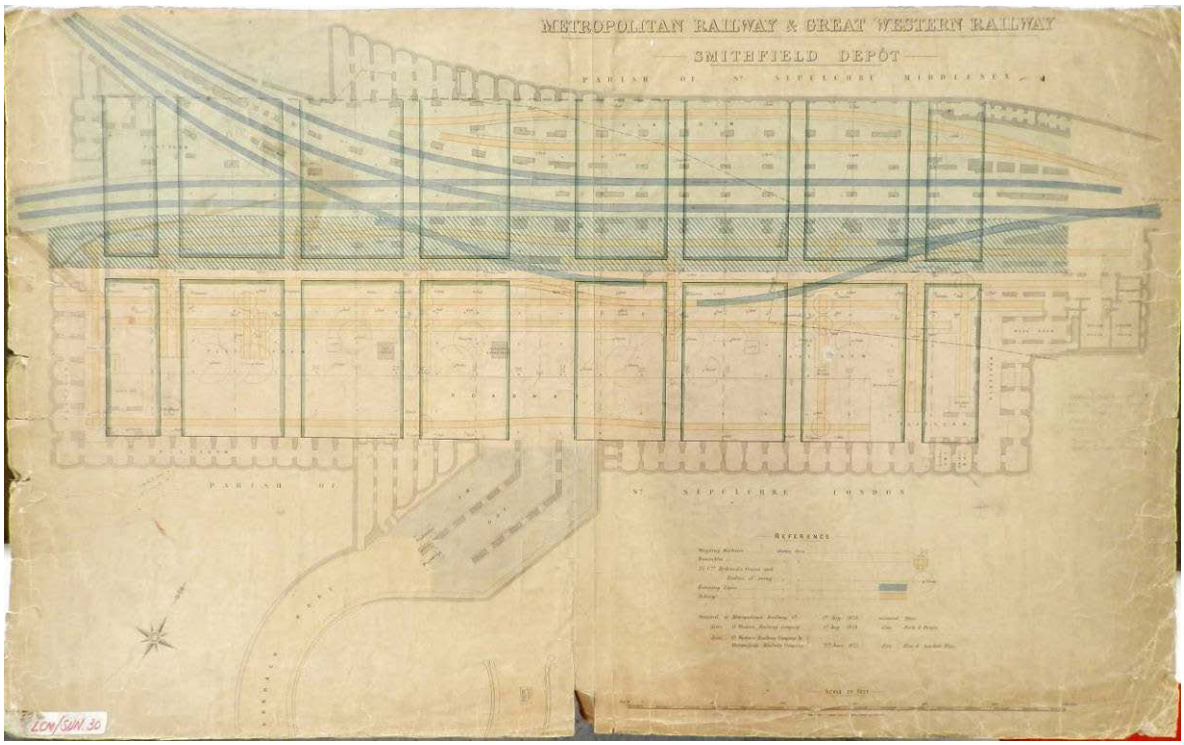


Photo 20 Colour-coded plan of the terminus, 1878. (COL/PLD/PL/02/LCM/SUN/030)

9.3 Documents inspected at the London Metropolitan Archives

Table 2 Documents inspected at the London Metropolitan Archives, 02/08/2012

CLA/017/MP/01/001/A	Duplicate agreement between the City of London Corporation and The Great Western and Metropolitan Railway Companies as to the provision of a railway station beneath the proposed Metropolitan Meat and Poultry Market, Smithfield	1862 Jul 22	No information
CLA/017/MP/01/008	Tenders for building	1866	No information
CLA/017/MP/01/001	Articles of agreement between the Corporation and the Great Western and the Metropolitan Railway Companies, as to the apportionment of the basement of the market between the Railway Companies	1862 Jul 22	Photo 1
CLA/017/MP/01/003	Typescript copies of; Description of Neco Meat Market, Opening Ceremony & Banquet. Market Improvements Cttee report presented 14 July 1859 relative to the site of Smithfield. and Extract from Fitz Stephen's Description of London (trans.) re. Smithfield.	1859	No information
CLA/017/MP/01/002	Descriptions and estimated cost of 7 designs submitted for the new Metropolitan Meat & Poultry Market	1864	No information
GLC/AR/BR/22/BA/043620	Smithfields Goods Station, Armour and Company Limited, 52-64 Charterhouse Street, 8-9 Hayne Street, 4 Lindsey Street, Long Lane, City of London: Building Act case file (Goods Stations and Shops)	1916-1959	Drawing 1, 15 June 1916: -plan at platform level, Photo 2 Drawing 4, 15 June 1916: -Section BB, Photo 3 -Section CC, Photo 4 -Section DD, Photo 5 -Section EE, Photo 6 Drawing 5, 15 June 1916: -Section AA, Photo 7a -Elevation to MetRy, Photo 7b

COL/AC/23/0122	Smithfield Goods Station (A.D.R.) Bomb damage. B/w c.12 x 9 ins. Endorsements: Neg. No. B.Box 354/1. Neg taken 16.10.1940. Stamped G.W.R. Chief Engineer's Office, Aldermaston Photographics Department.	1940	Photo 8
COL/AC/23/0123	Smithfield Goods Station (A.D.R.) Bomb damage. B/w c.12 x 9 ins. Endorsements: Neg. No. B.Box 354/2. Neg taken 16.10.40. Stamped: G.W.R. Chief Engineer's Office, Aldermaston Photographics Department.	1940	Photo 9
COL/SVD/PL/09/3175	G[reat] W[estern] R[ailway] Smithfield Goods Depot Lodge. Plan and elevation of proposed new Lodge. Scale: 1/38 (approx).	December 1873	No information
COL/SVD/PL/09/3176	G[reat] W[estern] R[ailway] Smithfield Goods Depot Lodge. Plan and elevation of proposed new Lodge. Scale: 1/38 (approx).	December 1873	No information
LCC/VA/GOAD/II/1938	Fire insurance plans	1926 - 1958	No information
SC/GL/GOA/VOL/I/1886	INSURANCE PLAN OF THE CITY OF LONDON [prepared and published by] CHAS. E. GOAD C.E. [address on sheets published in 1886:]	1896	London Chatham and Dover and other railways under west and south branches, London Chatham and Dover east branches
COL/PLD/PL/02/LCM/SUN/030	Metropolitan Railway & Great Western Railway, Smithfield Depot. Plan showing lines, sidings, weighing machines, turntables and cranes, colour coded to show ownership of the total area. Scale 1/240. Lithographic copy (R.J.Cook & Hammond)	1878	Photo 14
COL/PLD/PL/02/LCM/SUN/023	Great Western Railway - Smithfield. Circular roadway [now Retunda]. Plan, longitudinal sections and section. Scales 1/528 (plan) and 1/192 (natural scale). City Surveyor's Office. Endorsed 'Before Central Markets Committee 1st.Nov.1897'.	April 1897	No information

ACC/1297/MET/10/651/001	Correspondence (with plans)	1873-75	Photo 10, drawing 1321, 13th Jan 1873 Photo 11, drawing 1223, 19 aug 1873 Photo 12, 1366, 24 feb 1874
ACC/1297/MET/10/651/002	Correspondence (with plans)	1873-75	Photo 13, copy of the contract
CLA/017/LC/06/003	Originally housed in single folder. Includes: Metropolitan Meat and Poultry Market annotated with names and location of shop holders (1868)	1868	No information
ACC/1297/M&DJ	Records of the Metropolitan and Metropolitan District Joint Railway	1868 - 1933	Not available

9.4 References

Corporation of London, 1996, *Smithfield Conservation Area Character Summary*,

The Morning Post, 3 November 1868

Websites:

http://www.smithfieldmarket.com/content/market/history-of-the-market (accessed on the 1st August 2012)

http://www.flyingbombsandrockets.com/V2_maintextd.html (accessed on the 1st August 2012)

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 (assessment against the above criteria are only required for evaluations).

10.1 Original research aims

The original research objectives were met as follows:

- *To prevent any impact to the listed structure*

  The listed structure was not damaged in this fieldwork.

- *The watching brief will refine the extent and significance of the archaeological resource and inform further mitigation measures.*

  This watching brief has shown that foundations from both the underground railway and Smithfield Market, all covered by the listing, survive at all three of the proposed grout shaft locations.

- *Post-medieval buildings and occupation features representing the creation and expansion of the extra-mural suburbs*

  Extensive foundations and other 19th/20th-century structures associated with the construction and refurbishment of the listed standing building and railway were identified, and to a limited extent demonstrate both the transport infrastructure and logistics of food supply required by the rapidly expanding Victorian metropolis.

- *Contributing to our understanding of the creation of the London suburbs with direct contribution to today's aspirations for an urban regeneration.*

  Despite the above, this evidence is too limited to significantly address these wide-ranging concepts.

11 Statement of potential archaeology

The watching brief has **demonstrated the survival** of foundations and other features from the Metropolitan Line and Smithfield Market in the three proposed grout shaft locations. No other features were exposed.

They also indicate that there is a **high potential** for similar features in other parts of the Smithfield Basement and Moorgate Spur (eg if the grout shafts were to be relocated to avoid the features in the trial pits, they are very likely to encounter others).

11.1 Importance of Resources

The importance of the excavated remains has been assessed using professional judgement (including consulting MOLA's buildings specialists), informed, where applicable, by the criteria for assessing the national importance of monuments (DCMS 2010, Annex 1)

The brick features **fall within the curtilage(s) of the Grade II* listing** of Smithfield Market (as agreed with the City of London in Crossrail's first applications under the Heritage deed), and are therefore considered **covered by the listing** (David Keeley, Crossrail, pers comm 24.07.12).

However, within such a listed structure there may be features of varying importance. The 19th- and 20th-century brick and concrete foundations and drainage features are not obviously of great significance, and it may prove permissible to modify or remove those which do not have a current structural role. Similarly, it is evident that some of the later remedial work, particularly the ironwork (sprayed with vermiculite fireproofing) and columns are of little intrinsic merit.

Removal of such features would require an appropriate level of recording, and may need to be conducted under a Heritage Deed under the Crossrail Act (to be determined by Crossrail's Built Heritage specialists).

Considered as solely as archaeological resources, the various features are of **low to moderate importance** given their historic associations with either the Metropolitan Line or Smithfield Market, but conversely their inherent limited ability to illustrate activities better demonstrated by other, more extensive, parts of those structures.

12 Conclusions

12.1 Geology

Natural geology in the form of London Clay was exposed in all but two interventions, both in the location of the central grout shaft (TP 5 and Trench 2). Levels were generally consistent across the site varying between 108.39m ATD in Trial Pit 1 and 107.69m ATD in Trial Pit 3, where 19th/20th century truncations were slightly deeper (both located in the eastern grout shaft). Given the depth beneath street level of the basement/tunnel floor level (approximately 8m) all natural strata observed had been horizontally truncated by 19th-century structures.

12.2 Roman to mid 19th-century remains

As indicated above, any such remains once present have been removed by construction of the cut and cover Metropolitan Line, and the basement of Smithfield Market.

12.3 Late 19th and 20th-century remains

All of the archaeological remains encountered date to this period (see 5). The earliest deposits can be confidently dated no earlier than 1865, the date of this section of the Metropolitan Line, and the near-contemporary construction of Smithfield Market in 1868 by Horace Jones.

Therefore all of the foundations exposed by the test pits are parts of either the railway or the Market, within the curtilage of the listed building, and thus form elements of the Grade II listing (see 11.1).*

The trial pits revealed the earliest phase of Market construction to be concrete piers, usually at least 1.5m in depth but comparatively narrow, upon which lay a corbelled (brick offset) base that varied between 4–7 offsets. These were entirely below current floor level in the subterranean tunnels (approximately 109.00m ATD). They are perhaps a better indicator of the ground level immediately after construction of the railway and market. Structural columns 1m thick by 2m wide sat on these foundations, supporting the market/ railway superstructure.

Shallow brick foundations [[76], [81] and [82]], in Trial Pits 1 and 4/6 (see 8.1.1 and 8.2), are dated to the 19th century, and are almost certainly the foundations for a long platform, that originally extended at least 100m east–west, flanked by a railway to the north and siding to the south.

The two parallel sets of wall foundation (both precisely 1.16m apart and constructed from yellow stock bricks – the top course on edge) recorded in Trial Pits 1 and 2 (walls [77] and [78] see 8.1.1, 8.1.2 in the eastern grout shaft) and Trench 2 (walls [92] and [93] see 8.2.3 in the central grout shaft) are the foundations for the southern railway siding.

None of the four walls were fully exposed, the deepest being at least 1.6m in height [77]. The locations of these structures are consistent with a siding clearly displayed on a pre-war basement plan of the market (Figure 2, Figure 4), that terminates to the west of the central grout shaft and joins up with the railway to the east. Assuming similar levels of truncation (i.e. little) it is probable that these structures will survive at this depth (108.54m ATD) along the line of the railway.

The distance between the walls of 1.18m (3 ft 9 in), and to the centres 1.62m (5 ft 3in) corresponds reasonably with the Standard Gauge of *c* 4 ft 8 in or 1.43m, used for the Metropolitan Line.

Within the western grout shaft trench, two parallel walls ([86] and [88], (see 8.3.4 and Figure 5) were exposed at 0.4m bGL aligned east–west, and constructed of materials consistent with those used during the latter half of the 19th century (yellow stock bricks). These walls appear to relate to a structure or structures visible on the GWR Smithfield plan of *c* 1878 (Figure 6, Photo 20), located approximately 10m to the east of a crane base and lift, of which no visible remains survived at basement/tunnel level. They could either relate to the platform or the associated railway immediately to the north, which share the same east–west alignment. They are certainly one or the other, but given their similarity in size, composition, and construction to the platform foundations located in Trial Pit 1, 4 and 6 they are most likely also to be footings for a platform (see Photo 17), not foundations for a railway.

Also in the western grout shaft, there was no evidence relating to the signal box, suggesting either that its foundations were both very shallow and narrow, or that it had been entirely removed by the later 20th-century columns. To the west in Trial Pit 9 (8.3.3, Photo 12) the east–west ceramic drain was aligned towards the signal box, and was probably originally associated with it.

The remaining deposits are all associated with the backfilling and levelling of the ground surface after construction of the tunnel complex, dating from the late 19th century to the early 21st century.

13 Publication and dissemination proposals

The Watching Brief results will initially be disseminated via this report and the supporting site archive of finds and records (including digital data). Any publication proposals will be considered in relation to later fieldwork at the Farringdon Eastern Ticket Hall site, and also 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 Bibliography

Crossrail, February 2005a *Environmental Statement*

Crossrail, February 2005b *Assessment of Archaeology Impacts, Technical Report. Part 2 of 6, Central Route Section, 1E0318-C1E00-00001*, [Specialist Technical Report (STR)

Crossrail, July 2008a Environmental Minimum Requirements (including Crossrail Construction Code) Annex 1 to the EMR CR-QMS-P-0302, http://www.crossrail.co.uk/railway/getting-approval/environmental-minimum-requirements-including-crossrail-construction-codel (last accessed 06.07.12)

Crossrail, 2008b, MDC – *Work Package 3, Archaeology Detailed Desk Based Assessment, Farringdon Station, Doc. No.: CR-SD-FAR-EN-SR-00001* [DDBA]

Crossrail, 2009a *Archaeology Generic Written Scheme of Investigation*, Doc No. CR-PN-LWS-EN-SY-00009

Crossrail, 2009b *SS-WSI - Farringdon Station, Site-specific Written Scheme of Investigation, Crossrail, Doc. No. CR-SD-FAR-EN-SY-0001 Version 6.0* [WSI]

Crossrail, 2009c *Archaeology Specification for Evaluation & Mitigation (including Watching Brief) CR-PN-LWS-EN-SP-0001, version 3*

Crossrail, July 2011 *Package C136 – Farringdon Station, Addendum to Written Scheme of Investigation: Trial Trench Evaluation, Watching Brief & Detailed Excavation – Eastern Ticket Hall (XSF10), Doc. No. C136-SWN-T1-XAP-M123_WS098-00001 Revision 2.0, 05.07.11*

Department for Culture, Media, and Sport [DCMS], 2010, *Scheduled Monuments, Identifying, protecting, conserving and investigating nationally important archaeological sites under the Ancient Monuments and Archaeological Areas Act 1979*, March 2010, http://www.culture.gov.uk/images/publications/ScheduledMonuments.pdf (last accessed 06.07.12)

Department of the Environment (DoE), 1990 *Planning Policy Guidance 16, Archaeology and Planning* [PPG16].

Department of Communities and Local Government (DCLG), 2010 *Planning Policy Statement 5, Planning for the Historic Environment* [PPS5].

Department of Communities and Local Government, 2012 *National Policy Planning Framework* [NPPF].

English Heritage Greater London Archaeology Advisory Service, June 1998 *Archaeological Guidance Papers 1–5*

English Heritage Greater London Archaeology Advisory Service, 2009 *Archaeological Guidance Papers 1–5 (consultation draft) [1. Desk-Based Assessments, 2. Written Schemes of Investigation, 3. Fieldwork, 4. Reporting, dissemination and publication,*

Institute for Archaeologists, (IFA), 2001 *By-Laws, Standards and Policy Statements of the Institute for Archaeologists, (rev. 2001), Standard and guidance: field evaluation*

Institute for Archaeologists (IFA), supplement 2001, *By-Laws, Standards and Policy Statements of the Institute for Archaeologists: Standards and guidance – the collection*

Museum of London, 1994 *Archaeological Site Manual 3rd edition*

MOLA for Crossrail, 2012a*, C257 Archaeology Central, Fieldwork Report Archaeological Evaluation, Farringdon Eastern Ticket Hall (XSF10),Doc. No.: C257-MLA-X-RGN-CRG02-50060 Revision 2.0, 28.02.12*

MOLA for Crossrail, 2012b *C257 Archaeology Central, Method Statement, Archaeological Watching Briefs, Farringdon Eastern Ticket Hall, Doc. No.: C257-MLA-T1-GMS-CRG02-00001 Revision 8, 11.06.12*

15 Acknowledgements

The author would like to Ruaidhri Farrell (Laing O′Rourke) and Andy Scholes (Crossrail) for their assistance on site, and Jay Carver and Mike Court for commissioning and managing the work for Crossrail.

The watching brief was supervised by the author, who wrote the report, with input from Patrizia Pierazzo and David Sorapure of MOLA's Standing Buildings Team. The fieldwork was managed by MOLA Assistant Contracts Manager Nicholas Elsden and Contracts Manager Elaine Eastbury.

16 NMR OASIS archaeological report form

OASIS ID: molas1-130768

Project name	Crossrail Watching Brief at Farringdon on trial holes in locations of proposed Grout Shafts
Short description of the project	Three engineering trial pits and a trench were excavated at each grout shaft location. Natural London Clay was recorded in each shaft, varying in depth beneath ground level of between 600-1200mm. A variety of brick structures were exposed, all of which were constructed from materials in use during mid to late 19th-century. Three shallow narrow offset footings, exposed in the eastern and central shafts, were possibly foundations for the existing standing building, or scaffolding foundations/supports. Within the footprints of the eastern and central shafts, two brick and concrete walls were exposed that are likely to be the foundations for a railway that was in use until at least 1937. In the western grout shaft two 19th century narrow parallel walls were the remains of a southern perimeter wall that was demolished sometime during the 20th-century, after expansion of the market and extensions to the underground infrastructure. 19th and 20th-century backfill consisting of brick rubble overlay all these features, some of which had evidently been re-excavated numerous times over the last 150 years.
Project dates	Start: 12-06-2012 End: 28-06-2012
Previous/future work	No / Yes
Type of project	Field evaluation
Site status	Listed Building
Current Land use	Transport and Utilities 2 - Other transport infrastructure
Monument type	WALL Modern
Monument type	FOUNDATION Post Medieval
Monument type	WALL Post Medieval
Methods & techniques	"Annotated Sketch","Targeted Trenches","Test Pits"
Development type	Rail links/railway-related infrastructure (including Channel Tunnel)
Prompt	Crossrail act
Position in the planning process	After full determination (eg. As a condition)
Site location	GREATER LONDON CITY OF LONDON CITY OF LONDON Crossrail Farringdon Eastern Ticket Hall- Smithfield Market
Postcode	EC1
Study area	20.00 Square metres
Site coordinates	NGR - NW 181679 181679 LL - 54 -6 (decimal) LL - 54 28 47 N 006 21 05 W (degrees) Point
Height OD / Depth	Min: 7.69m Max: 8.39m

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 Exists?	No
Digital Archive recipient	LAARC
Digital Media available	"Images raster / digital photography","Text"
Paper Archive recipient	LAARC
Paper Contents	"other"
Paper Media available	"Context sheet","Photograph","Plan","Report"
Title	C257 Archaeology Central Fieldwork ReportArchaeological Watching Brief on trial holes in locations of proposed Grout Shafts
Author(s)/Editor(s)	Pfizenmaier, S
Date	2012
Issuer or publisher	MOLA
Place of issue or publication	London
Description	A4 Ringbound report

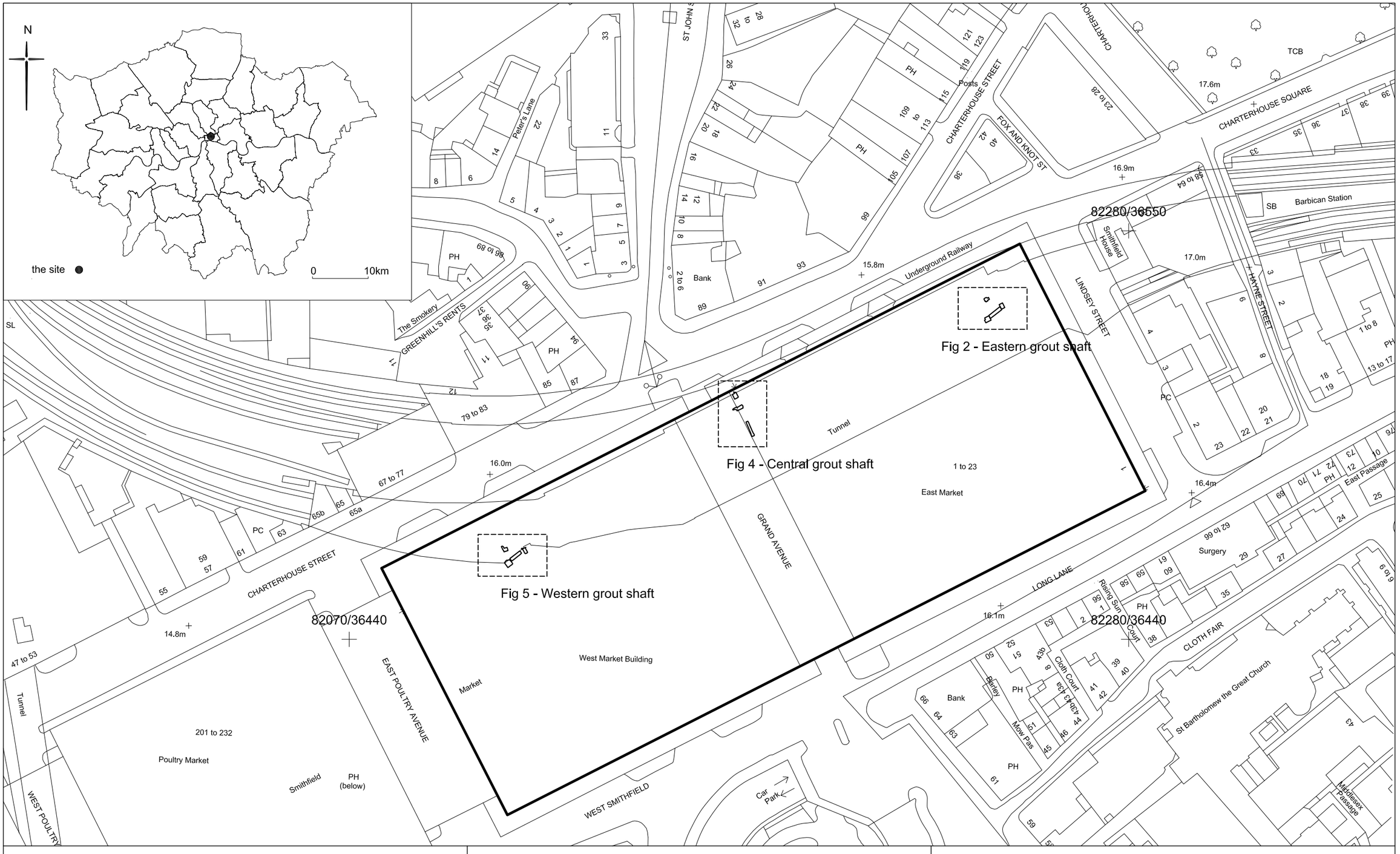


Fig 1 Location of proposed grout shafts and trial holes

Trench edge
Figure location
Site outline

1:1000 @ A3

0 50m

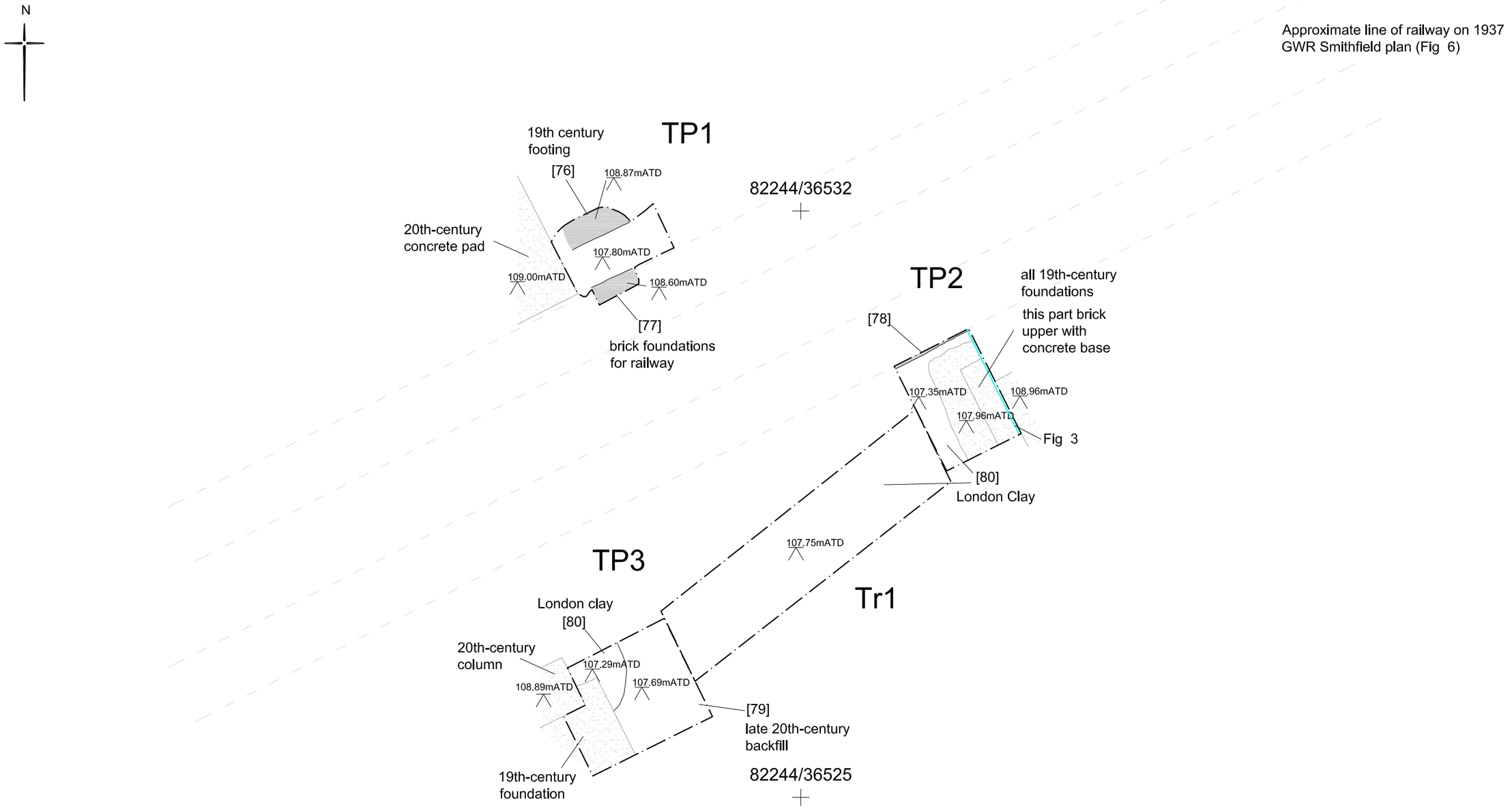


Fig 2 Plan of trial holes in the proposed eastern grout shaft

Trench edge
Archaeological walls
Concrete piles
108.69mATD Levels in mATD
Section line

1:50 @ A3

0 2.5m

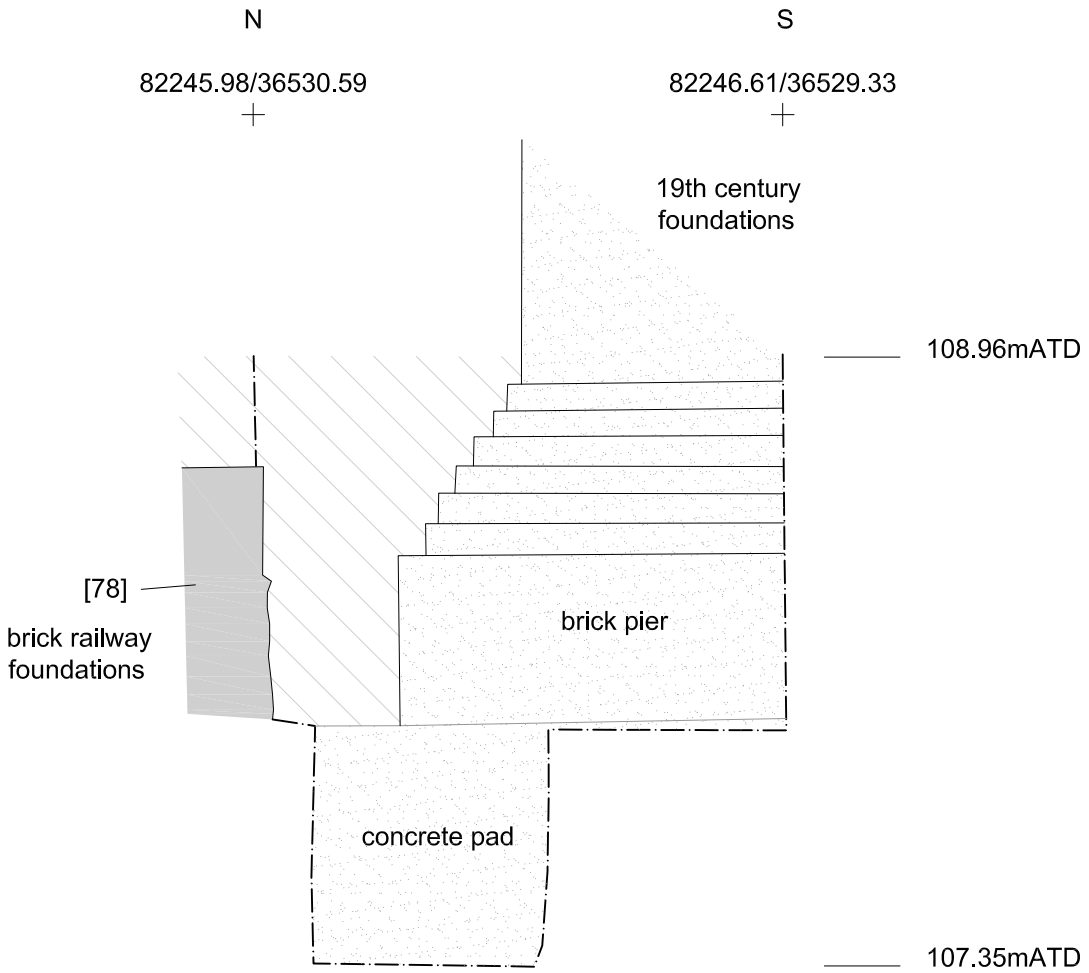


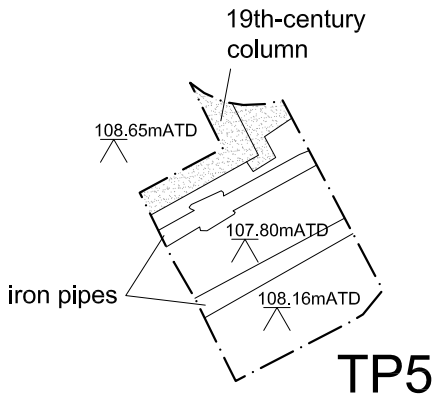
Fig 3 West-facing section of Trial Pit 2

Limit of excavation
Modern backfills
Limit of excavation

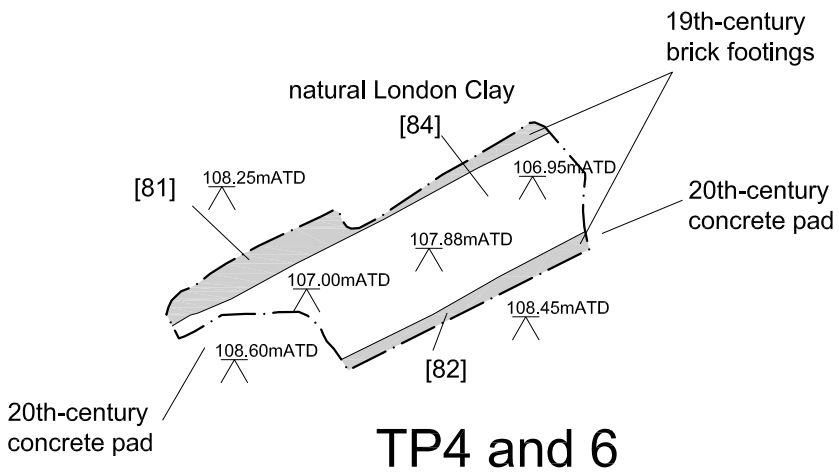
1:20 @ A4
0 1m

N

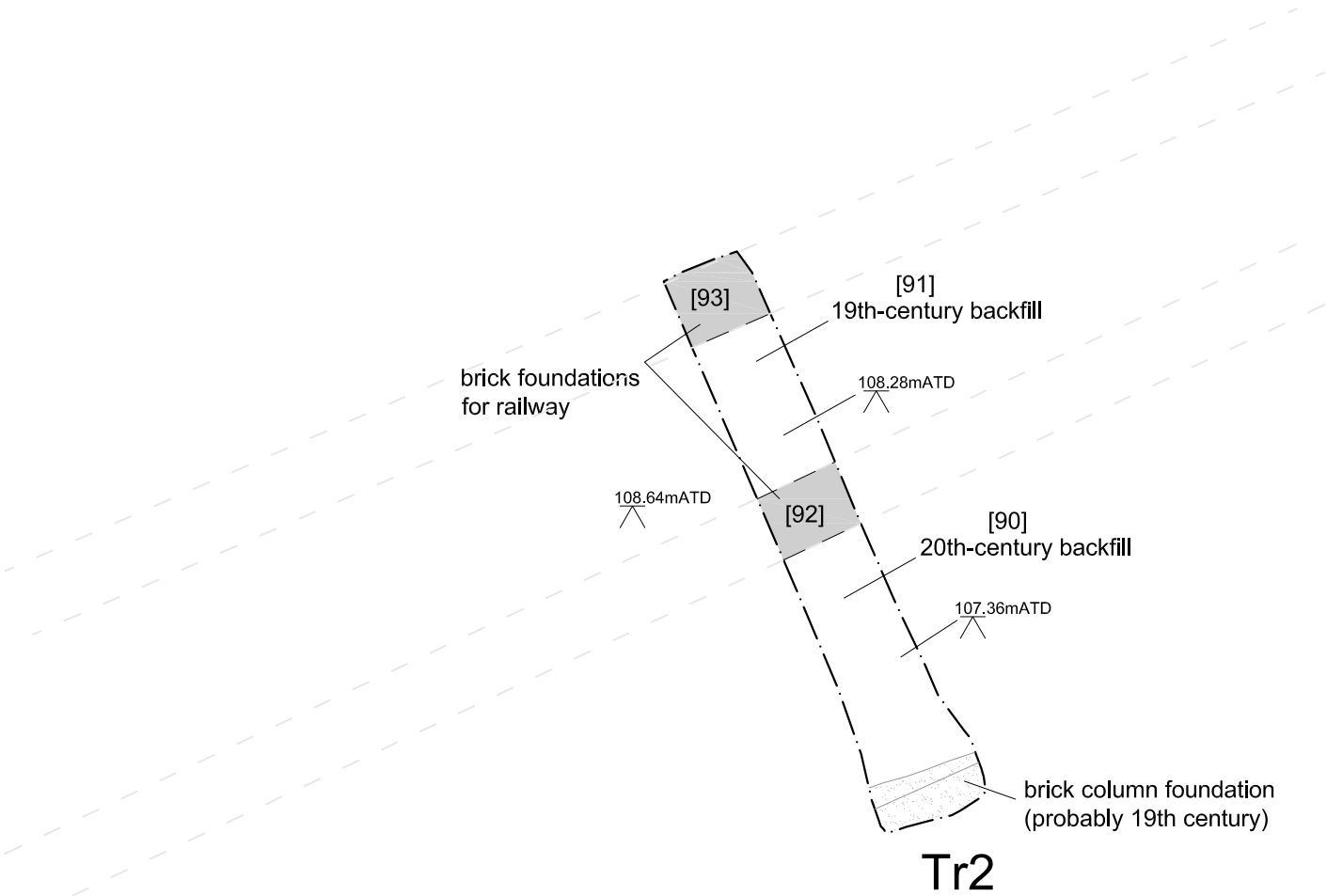
82176/36507



TP5



TP4 and 6



Tr2

82176/36493

Fig 4 Plan of trial holes in the proposed central grout shaft

Trench edge

Archaeological walls

Concrete piles

108.69mATD Levels in mATD

1:50 @ A3

0 2.5m

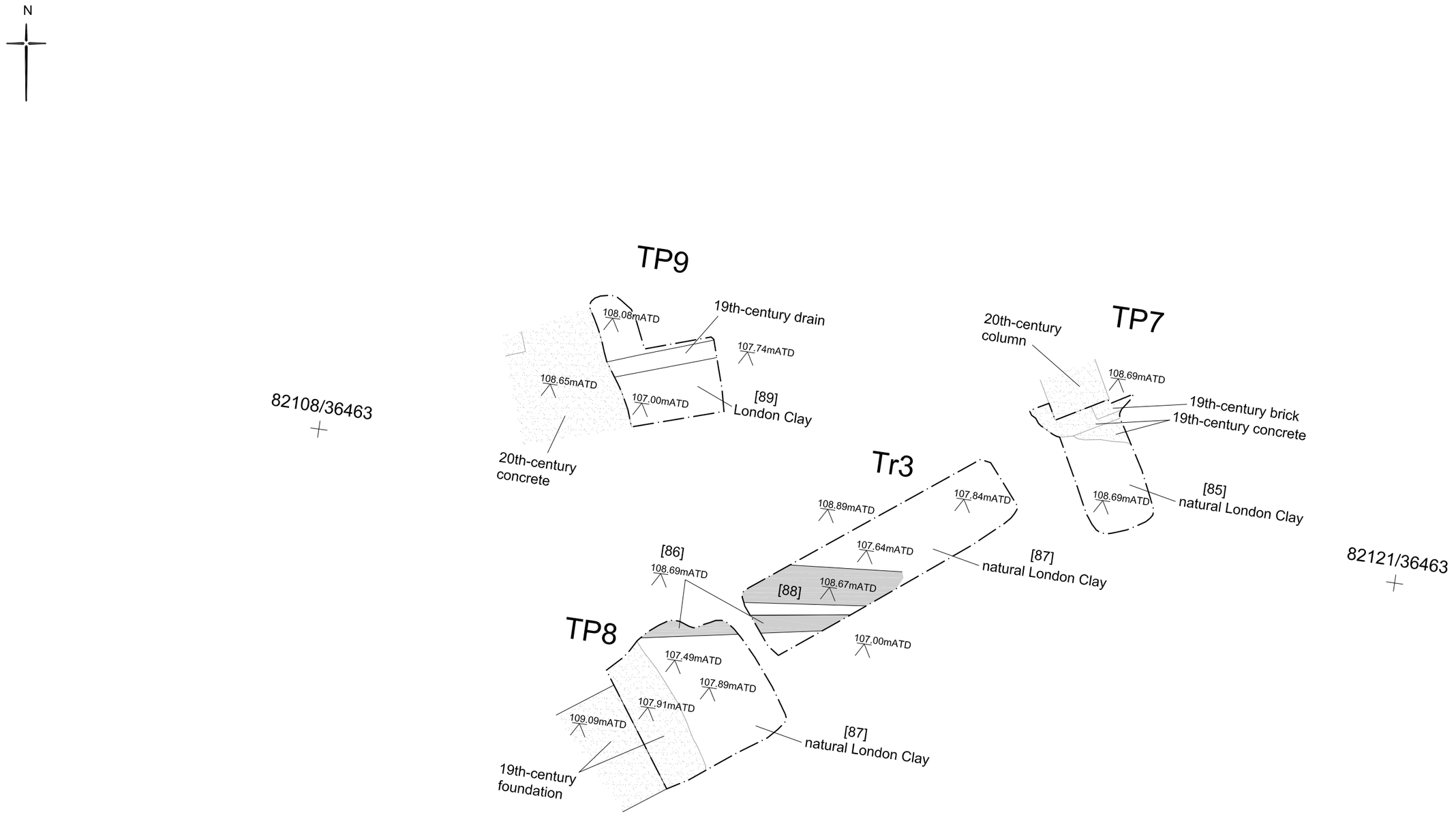


Fig 5 Plan of trial holes in the proposed western grout shaft with underlying mapping of the 1878 Great Western Railway depot

Trench edge
Archaeological walls
Concrete piles
108.69mATD Levels in mATD

1:50 @ A3

0 2.5m

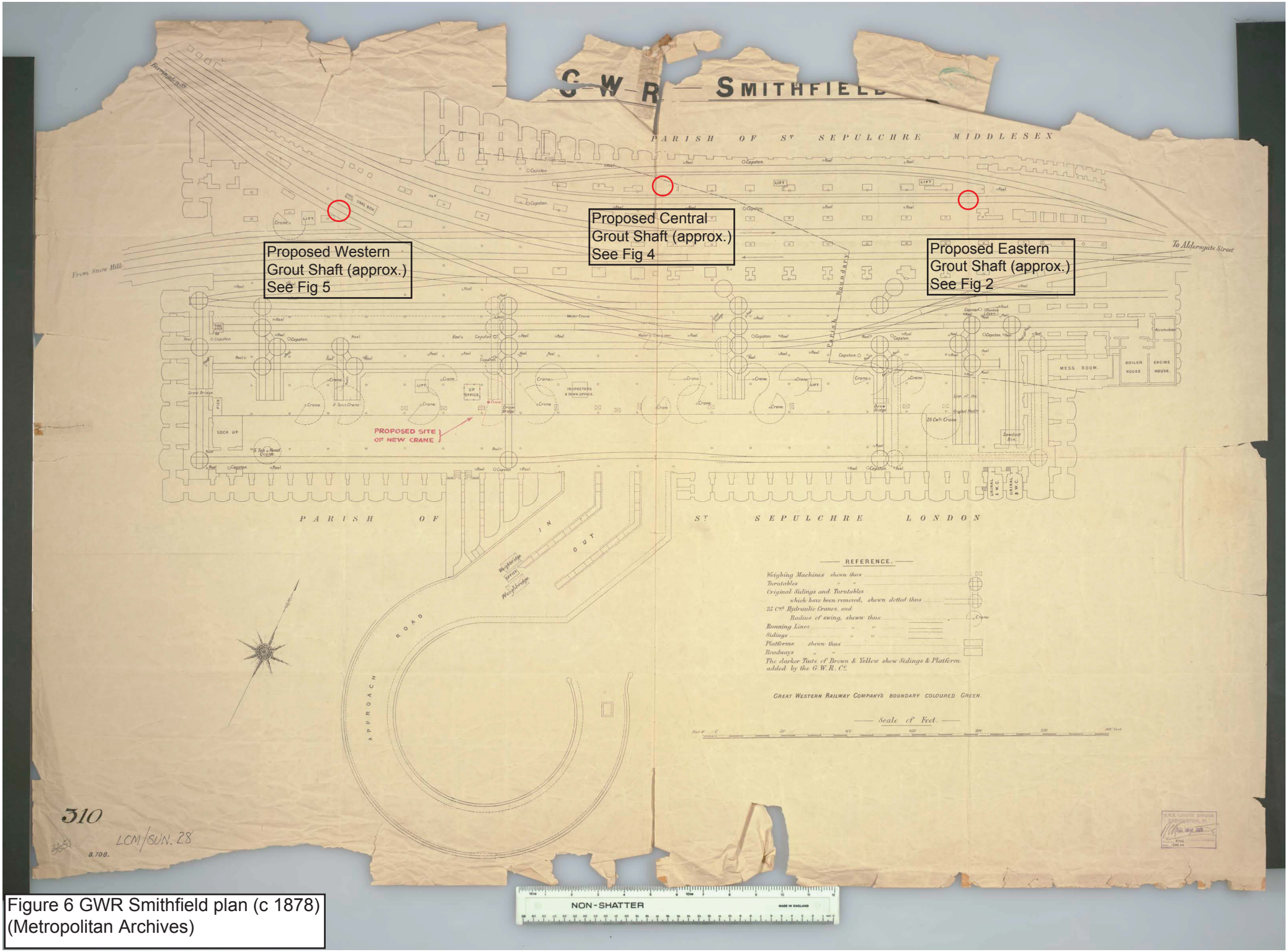


Figure 6 GWR Smithfield plan (c 1878) (Metropolitan Archives)