



BOUNDARY GARDENS
Arnold Circus
Boundary Estate
London E2

London Borough of Tower Hamlets

Evaluation report

November 2009

**BOUNDARY GARDENS
Arnold Circus
Boundary Estate
London E2**

London Borough of Tower Hamlets

Evaluation report

Site Code: ADC09

National Grid Reference: 533643 182548

Project Manager

Jo Lyon

Author

Alison Telfer

Graphics

Judit Peresztegi

**Museum of London Archaeology
© Museum of London 2009**

Mortimer Wheeler House, 46 Eagle Wharf Road, London N1 7ED
tel 020 7410 2200 fax 020 7410 2201
molas@museumoflondon.org.uk
www.museumoflondonarchaeology.org.uk

Summary (non-technical)

This report presents the results of an archaeological evaluation carried out by Museum of London Archaeology (MOLA) on the site of Boundary Gardens, Arnold Circus, Boundary Estate, London, E2. The report was commissioned from MOLA by the London Borough of Tower Hamlets.

Following the recommendations of English Heritage (GLAAS), one archaeological evaluation trench was excavated at the top of Boundary Gardens. The gardens adorn a two-tiered mound, located in the centre of Arnold Circus. Trees on the mound have a protection order, which was respected in locating the evaluation trench, the purpose of which was to provide information on the level and nature of the deposits which form the mound.

After recording by MOLA staff, the excavation was made available for visits by the local community. Groups of school children were able to take part in a 'dig' on the site, under the supervision of the MOLA supervisor and members of staff from the LAARC (London Archaeological Archive Research Centre) and the Museum of London.

The results of the field evaluation have helped to refine the initial assessment of the archaeological potential of the site. A power auger was enlisted to obtain information of the full sequence of deposits through the core of the mound, within the area of the evaluation trench. A full archaeological profile was thus obtained for the mound on the circus.

The proposed redevelopment at Arnold Circus involves the restoration of Boundary Gardens. Determining the nature of the deposits which make up the mound was a prerequisite of a planning condition, prior to commencement of the restoration of the gardens. This information was achieved during the course of the evaluation.

Contents

1	Introduction	5
1.1	Site background	5
1.2	Planning and legislative framework	8
1.3	Origin and scope of the report	8
1.4	Aims and objectives	8
2	Topographical and historical background	9
2.1	Topography	9
2.2	Prehistoric and Roman	9
2.3	Saxon and medieval	9
2.4	Post-medieval	9
3	The evaluation	14
3.1	Methodology	14
3.2	Results of the evaluation	14
3.3	Assessment of the evaluation	15
4	Archaeological potential	20
4.1	Realisation of original research aims	20
4.2	General discussion of potential	21
4.3	Significance	21
5	Proposed development impact and recommendations	22
6	Acknowledgements	23
7	Bibliography	23
8	NMR OASIS archaeological report form	26
	APPENDIX II: Assessment of the building material	32
	APPENDIX III: Assessment of the clay pipes	34
	APPENDIX IV: Assessment of the leather	37
	APPENDIX V: Assessment of the registered finds and bulk glass	38
	APPENDIX VI Assessment of the hand-collected animal bone	40
	APPENDIX VII: Conservation note	42

List of Illustrations

Front cover: photograph showing bandstand and group of school children taking part in community dig, facing west

Fig 1 Site location	6
Fig 2 Location of evaluation trench	7
Fig 3 Agas map from c1560, showing the area of the site	11
Fig 4 Gascoigne map from 1703, showing the area of the site	11
Fig 5 Rocque map from c 1746, showing the area of the site	12
Fig 6 Ordnance Survey map from 1872, showing the area of the site	12
Fig 7 Ordnance Survey map from 1893, showing the area of the site	13
Fig 8 Ordnance Survey map from 1914, showing the area of the site	13
Fig 9 Section drawing, south-east facing	16
Fig 10 Photograph showing trench, facing north	17
Fig 11 Photograph showing St Hilda's East women's group, facing north	17
Fig 12 Photograph showing children from Virginia School, facing north-west	18
Fig 13 Photograph showing trays of finds from the evaluation	18
Fig 14 Photograph showing a selection of pipes from the evaluation	19
Fig 15 Photograph showing parts from shoes found during the evaluation	19

List of Tables

Table 1 Summary of deposits from Evaluation Trench 1	14
Table 2 Detailed descriptions of mound deposits	15
Table 3 NMR OASIS archaeological report form	26
Table 4 Summary of the Delft tiles from context [7]	32
Table 5 Clay tobacco pipe quantification	34
Table 6 Chronological distribution of datable clay pipe bowls	35
Table 7 Contents of animal bone archive	40
Table 8 Summary of the hand-collected animal bone groups	40
Table 9 Summary of conservation work	42

1 Introduction

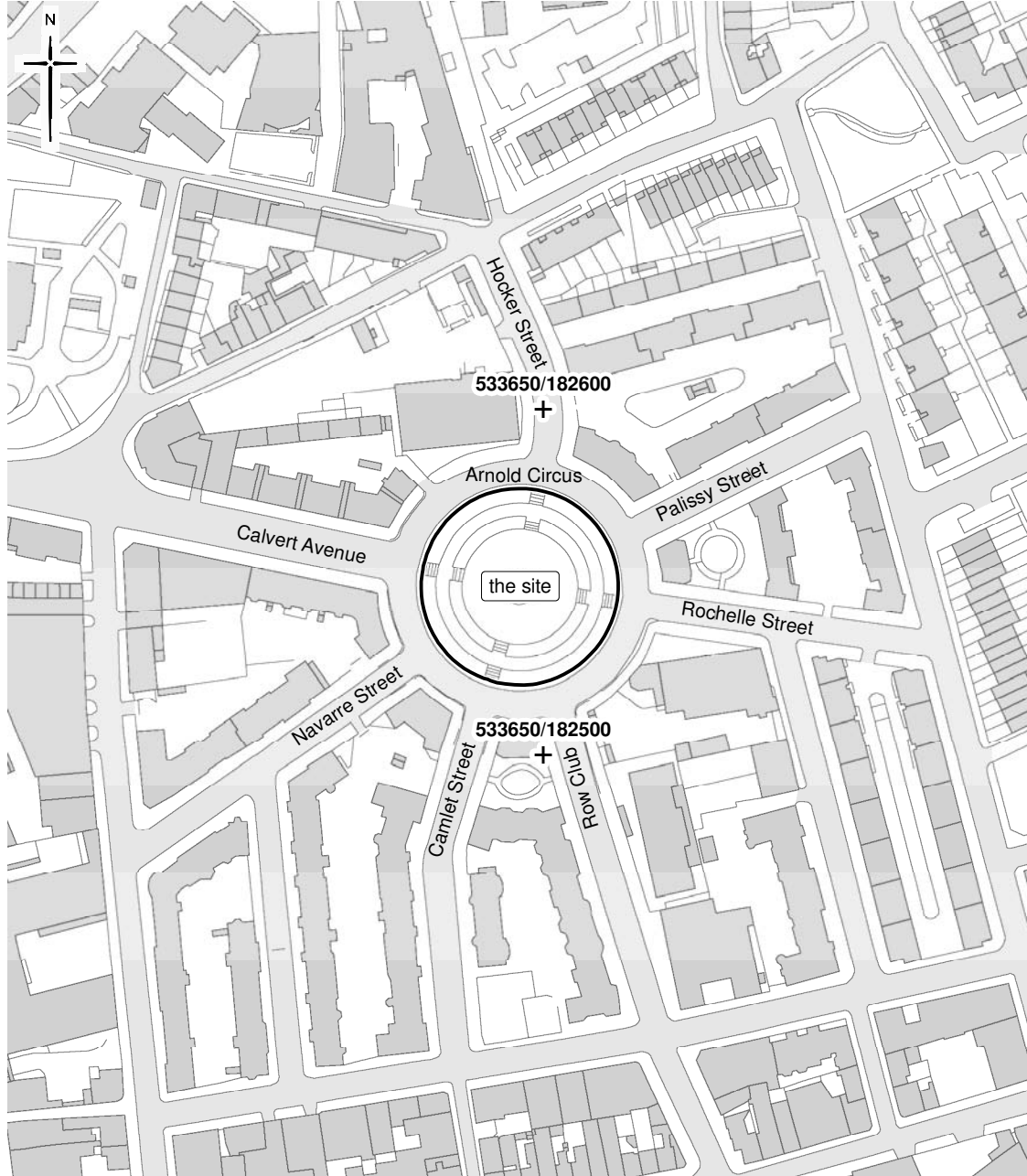
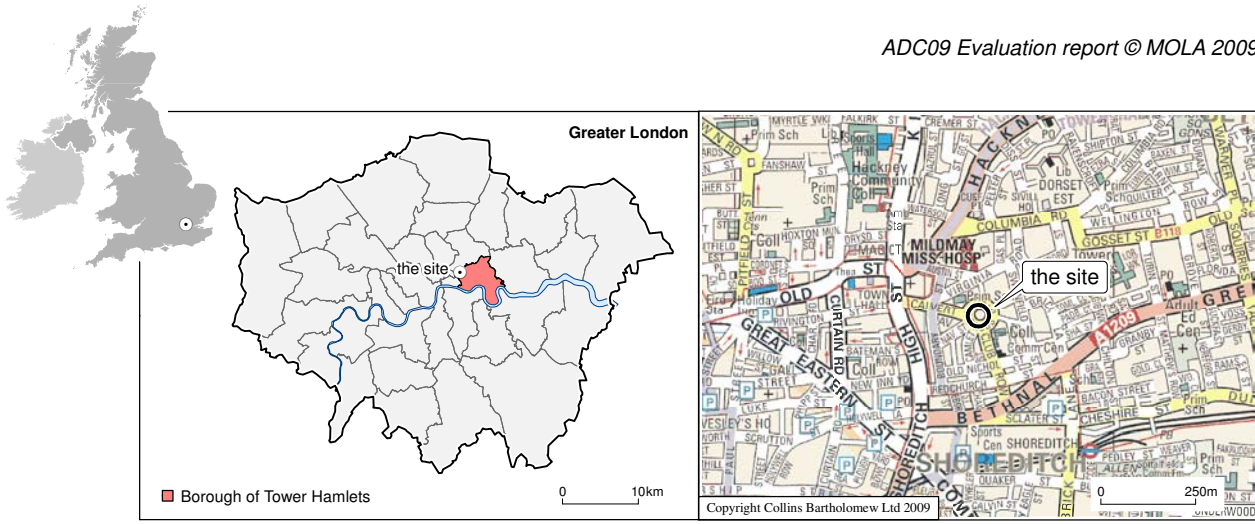
1.1 Site background

The evaluation took place at Arnold Circus, Boundary Estate, London E2, hereafter called 'the site'. The site comprises the central area (Boundary Gardens) of Arnold Circus. It is a circular raised garden within a ring road; the raised garden has two stepped tiers, with a bandstand located centrally at the top (front cover). The garden and ring road (Arnold Circus) form a central area from which the following roads radiate: Palissy Street to the north-east, Rochelle Street to the south-east, Club Row to the south, Camlet Street and Navarre Street to the south-west, Calvert Street to the north-west and Hocker Street to the north (Fig 1). The centre of the site lies at National Grid reference 533643 182548. Modern pavement level near to the site lies at c 16m OD. The existing central mound lies at c 19.75mOD. The site code is ADC09.

A *Method Statement* was previously prepared, which included background information covering the area of the site (MOLA, 2009). This document should be referred to for information regarding the methods of excavation and research for the fieldwork and subsequent community 'dig'.

The archaeological field evaluation was carried out in June 2009; this involved the excavation of a single trench in an area of the mound that did not endanger the protected trees (Fig 2).

The proposed redevelopment involves the restoration of Boundary Gardens, originally laid out in 1900. Archaeological investigation was required to assist with the design of the restoration scheme; the exercise has also facilitated the elaboration of an appropriate mitigation strategy for any archaeological remains identified. The current site lies within a Conservation Area. Boundary Gardens are a Listed Park and Garden; houses on the Boundary Estate are Grade II Listed.

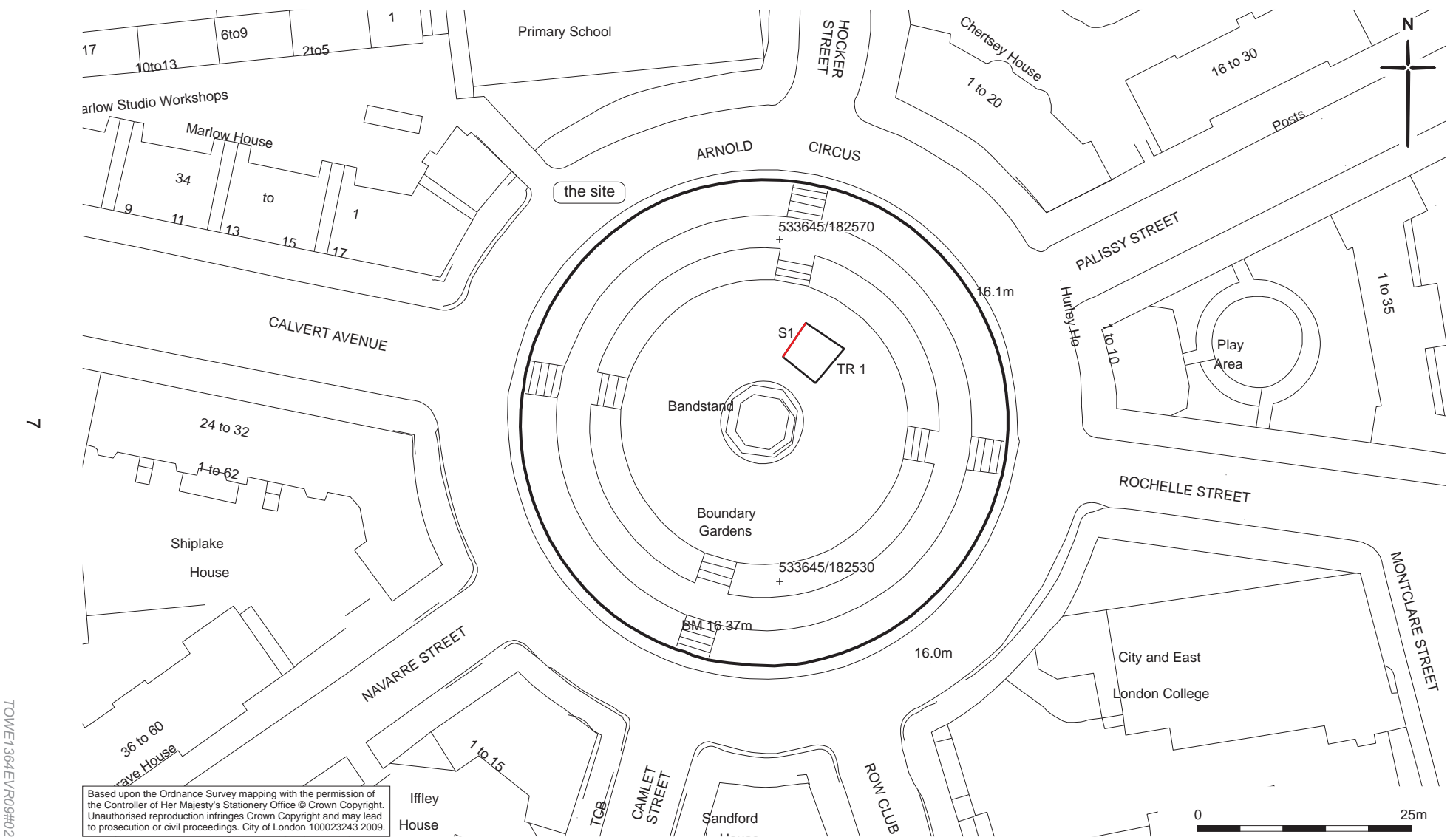


Based upon the Ordnance Survey mapping with the permission of the Controller of Her Majesty's Stationery Office © Crown Copyright. Unauthorised reproduction infringes Crown copyright and may lead to prosecution or civil proceedings. City of London 100023243 2009.

Scale 1:2,000 @ A4

0 100m

Fig 1 Site location



Based upon the Ordnance Survey mapping with the permission of the Controller of Her Majesty's Stationery Office © Crown Copyright. Unauthorised reproduction infringes Crown Copyright and may lead to prosecution or civil proceedings. City of London 100023243 2009.

Fig 2 Location of evaluation trench

TOWE1364EVR09#02

ADCC09 Evaluation report © MOLA 2009

1.2 Planning and legislative framework

The legislative and planning framework in which the archaeological exercise took place was summarised in the *Method Statement* which formed the project design for the evaluation (see Section 2, MOLA, 2009).

1.3 Origin and scope of the report

This report was commissioned by the client, the London Borough of Tower Hamlets and produced by the Museum of London Archaeology Service (MOLA). It has been prepared within the terms of the relevant Standard specified by the Institute for Archaeologists (IFA, 2001).

Field evaluation, and the *Evaluation report* which comments on the results of that exercise, are defined in the most recent English Heritage guidelines (English Heritage, 1998) as intended to provide information about the archaeological resource in order to contribute to the:

- formulation of a strategy for the preservation or management of those remains; and/or
- formulation of an appropriate response or mitigation strategy to planning applications or other proposals which may adversely affect such archaeological remains, or enhance them; and/or
- formulation of a proposal for further archaeological investigations within a programme of research

1.4 Aims and objectives

All research is undertaken within the priorities established in the Museum of London's *A research framework for London Archaeology*, 2002.

The following research aims and objectives were established in the *Method Statement* for the evaluation (section 2.2.1; MOLA, 2009):

- What lies below the tarmac of the mound in the centre of Arnold Circus?
- Can the previous Victorian surface (tarmac/paving) be identified?
- Can the nature and level of earlier archaeological deposits be reached and identified through the use of a power auger?
- What are the earliest deposits identified?
- What are the latest deposits identified?

2 Topographical and historical background

2.1 Topography

The underlying natural geological deposits in the area of the site consist of river terrace gravels, in this area known as the Hackney Gravels, mixed with sand and clay. These gravels are capped locally by brickearth (silty clay and sand).

Calculations based on the level of natural strata at the nearest archaeological sites suggest that the uppermost surface of natural brickearth, assuming no horizontal truncation, varies between 12.70m OD and 15.40m OD (Miller, 1999). If the rise in the ground was uniform from south to north, the level of natural strata on the site below Boundary Gardens would be c 14.20m OD.

2.2 Prehistoric and Roman

Few artefacts of prehistoric date have been found in the vicinity; the chief interest of early date derives from the location of the site near the projected junction of two Roman roads, designated Road 2 (the main road from London to the north, the precursor of Shoreditch High Street, running from Bishopsgate to Kingsland Road) and Road 20 (a road skirting London to its north, and the precursor of Old Street) (see Margary, 1955). This location is of additional interest because the line of Road 2 appears to change direction slightly here. This would have been a suitable place for a few roadside buildings, and there may well have been tombs beside the roads, even at this distance from London (1.5km from the limits of the Roman town at Bishopsgate) (Miller, 1999).

2.3 Saxon and medieval

The church of St Leonard's, located at the western end of Calvert Street, is thought to have Saxon origins, although the church is not securely documented until the 12th century. The name of Shoreditch is apparently Anglo-Saxon, and (as it sounds) would seem to imply a substantial amount of local drainage (LCC 1922, 98).

The small medieval village of Shoreditch was situated a little to the north and west of the church, around the junction of Shoreditch High Street with Old Street. It is not immediately obvious why, if these medieval roads were the direct successors of the Roman roads, that the junction had shifted slightly westwards in this way. It is possible that the village was sited here in order to be closer to fields further to the north. An upper branch of the Walbrook stream was located to the south, creating marshland around it (Miller, 1999).

2.4 Post-medieval

The area now known as the Boundary Estate had belonged to the gardens of the Nunnery of St John the Baptist, which was established at Holywell (to the south-west of Arnold Circus, across Shoreditch High Street) in the 12th century. The land can be seen on Agas's map from the middle of the 16th century (Fig 3), with the church of St Leonard's to the west; by the beginning of the 18th century, it appears to be located somewhere within land belonging to Lady Fitch and gardens belonging to Kemp and Richardson (Fig 4). The site appears to be cultivated during the 18th century (Fig 5), but fully developed by the 19th. A significant increase in population and industry

(primarily workshops) meant a significant decrease in living standards in this area, and by the middle of the 19th century, the area around the present-day Arnold Circus was known as the Old Nichol, which became a notorious slum (Fig 6). Nearly 6000 people lived in buildings in an area bounded by Virginia Road to the north, Mount Street to the east, Old Nichol Street to the south and Boundary Street to the west.

The local vicar, the Reverend Osborne Jay, campaigned for improvements in the area, and in 1890, the London County Council (LCC), under Part 1 of the 1890 Housing Act, put forward a comprehensive scheme for the clearance (see Fig 7) and redevelopment of the Old Nichol slum area. The proposals, which became known as the Boundary Street, Bethnal Green Improvement Scheme, covered a large area (6ha) and involved the displacement of 5719 people (London Borough of Tower Hamlets, 2007).

An initial scheme outlined the construction of rectangular blocks of housing, but this was scrapped in favour of a centralised plan, with blocks arranged down tree-lined avenues, radiating from a central circus. This arrangement incorporated an open central space and housed a greater number of people. The revised plan was approved in 1893 and the first area was cleared in the same year and completed by 1900. Breaking with traditional layouts, the scheme was unusual for its time in providing open space, and being based on a road pattern. Buildings were designed for the site rather than as standard blocks, relating architecturally to each other and to the site as a whole (Fig 8). As such, the estate was an inspiration to many later housing developments. The final total rehoused under the scheme was 4600, although, ironically, many of the Old Nichol inhabitants were sent further afield to Dalston and Bethnal Green, homes on the new estate being given to the 'industrious poor' (<http://friendsofarnoldcircus.wordpress.com/history>).

The Boundary Estate was the first major initiative undertaken by the LCC in the improvement of its housing stock. The scheme was handled by the council's new Housing of the Working Classes Branch, most of those involved having been trained at the Architectural Association, with Owen Fleming (head of the Branch until 1900) acting as architect-in-charge.

Earth from the foundations of the accommodation blocks was heaped up at the focus of the radial road plan, to provide a raised central garden. Although this had the advantage of saving on carting costs, the primary purpose was to provide a unifying element in the new community. The four sets of steps lead up the two tiers of terracing, to the top level platform. Here stands the bandstand (listed Grade II), erected in 1909. In addition, there are over 50 tree preservation orders on trees within the Boundary Estate.

The gardens are approached through wrought-iron overthrows (listed Grade II, along with the perimeter fencing) and up the four sets of steps, which are roughly at the four main compass points. The Boundary Estate buildings (listed Grade II as a group), which surround the gardens of Arnold Circus, include a number of properties which front the Circus or line the streets radiating from it.

The LCC undertook further slum clearances across London; another large scale redevelopment was that of the Millbank Estate (Wise, 2008, 270); bricks from the Millbank Prison (demolished in 1893) were reused to construct housing for the working poor in Westminster. Millbank Prison was itself laid out with pentagons radiating from a central circle.

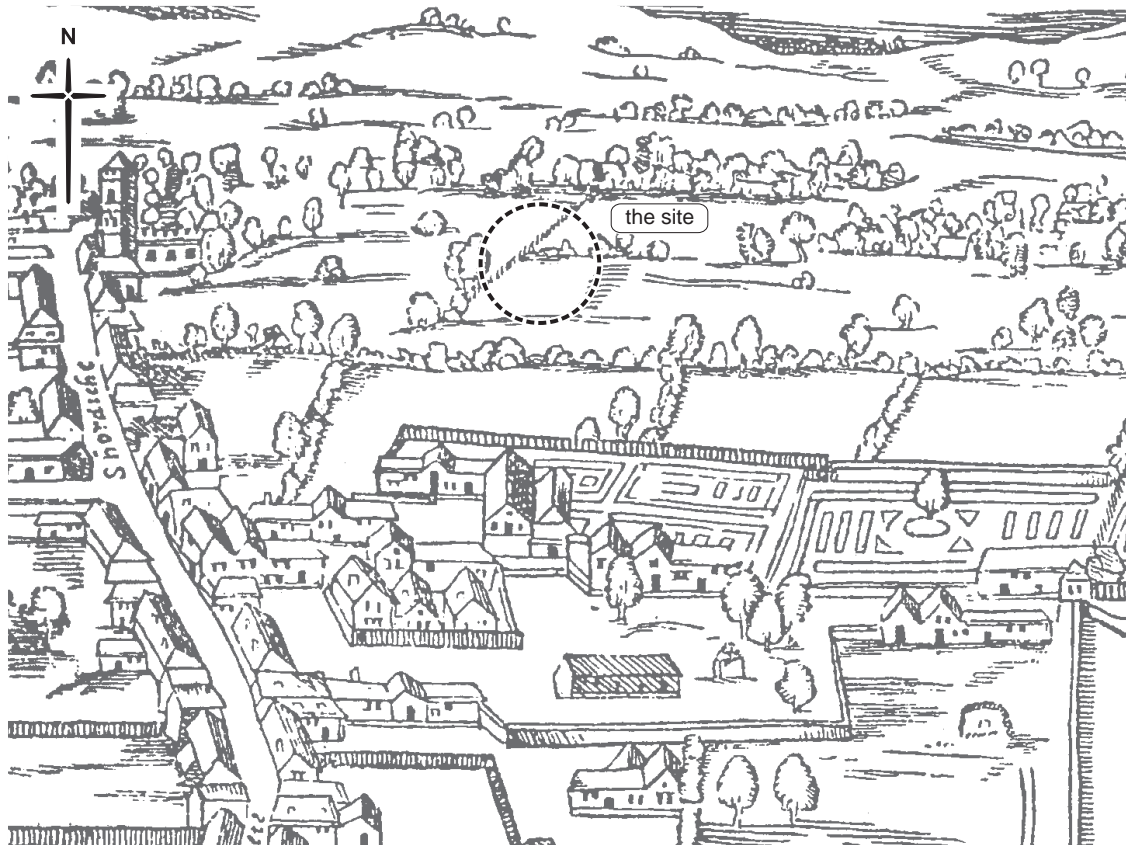


Fig 3 Agas map from c 1560, showing the area of the site

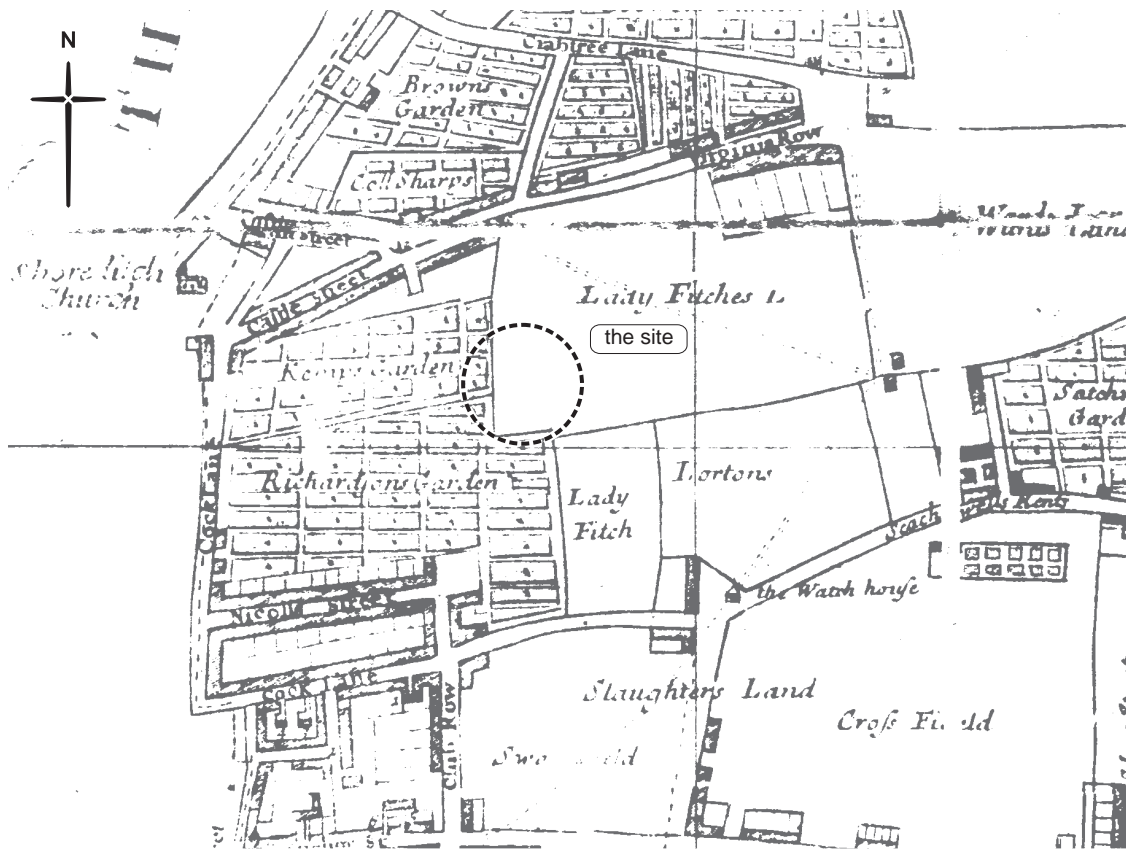


Fig 4 Gascoigne map from 1703, showing the area of the site

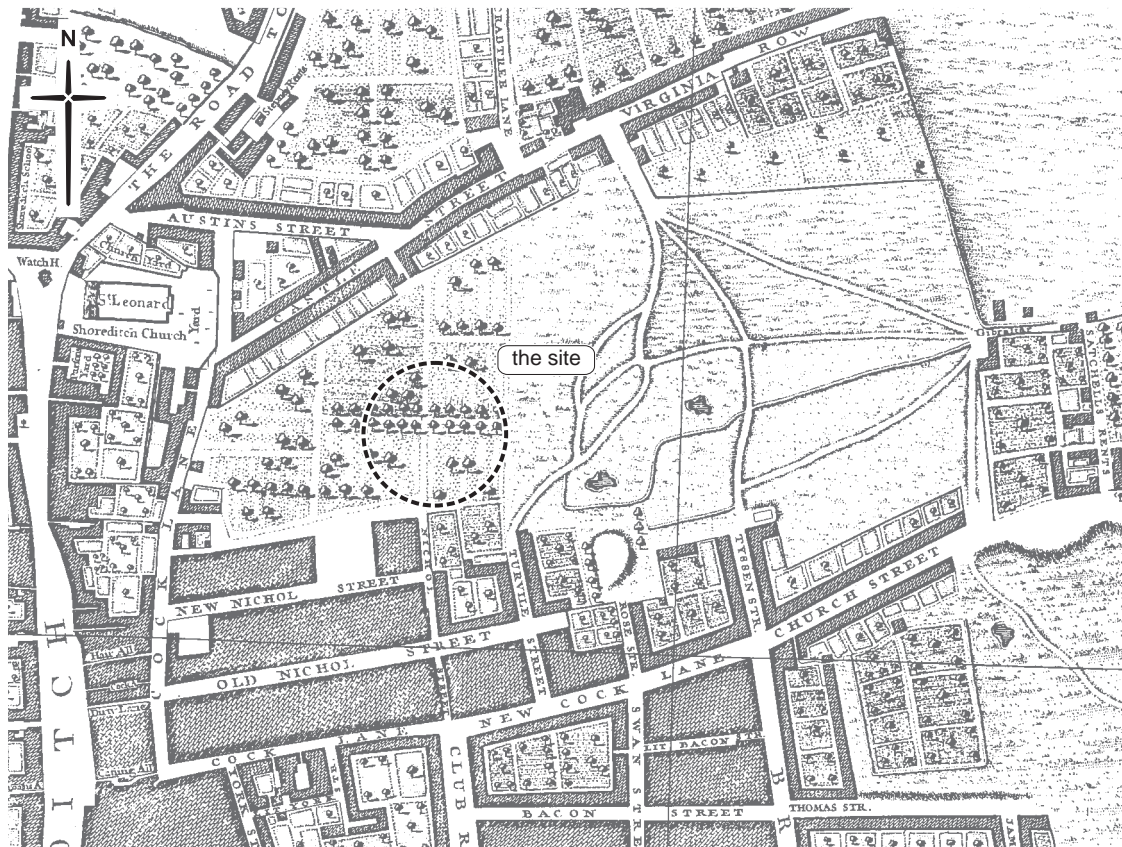


Fig 5 Rocque map from c 1746, showing the area of the site

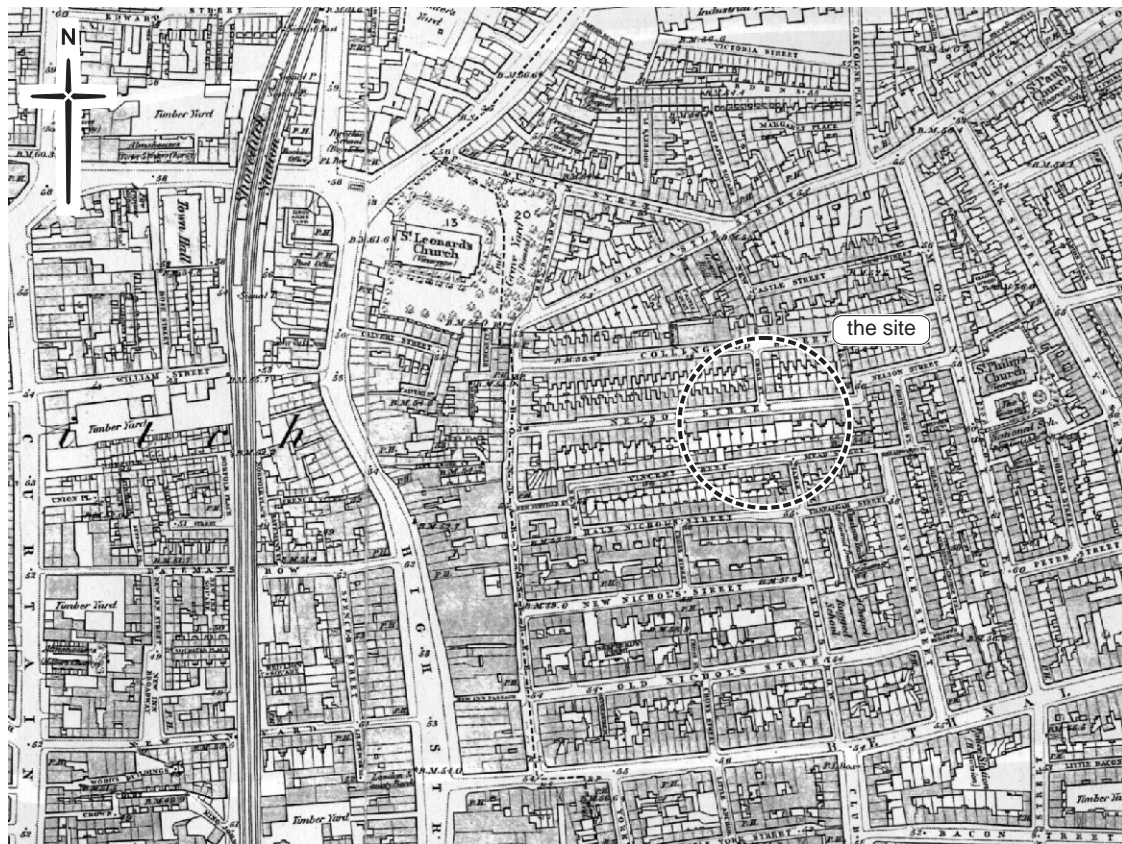


Fig 6 Ordnance Survey map from 1872, showing the area of the site

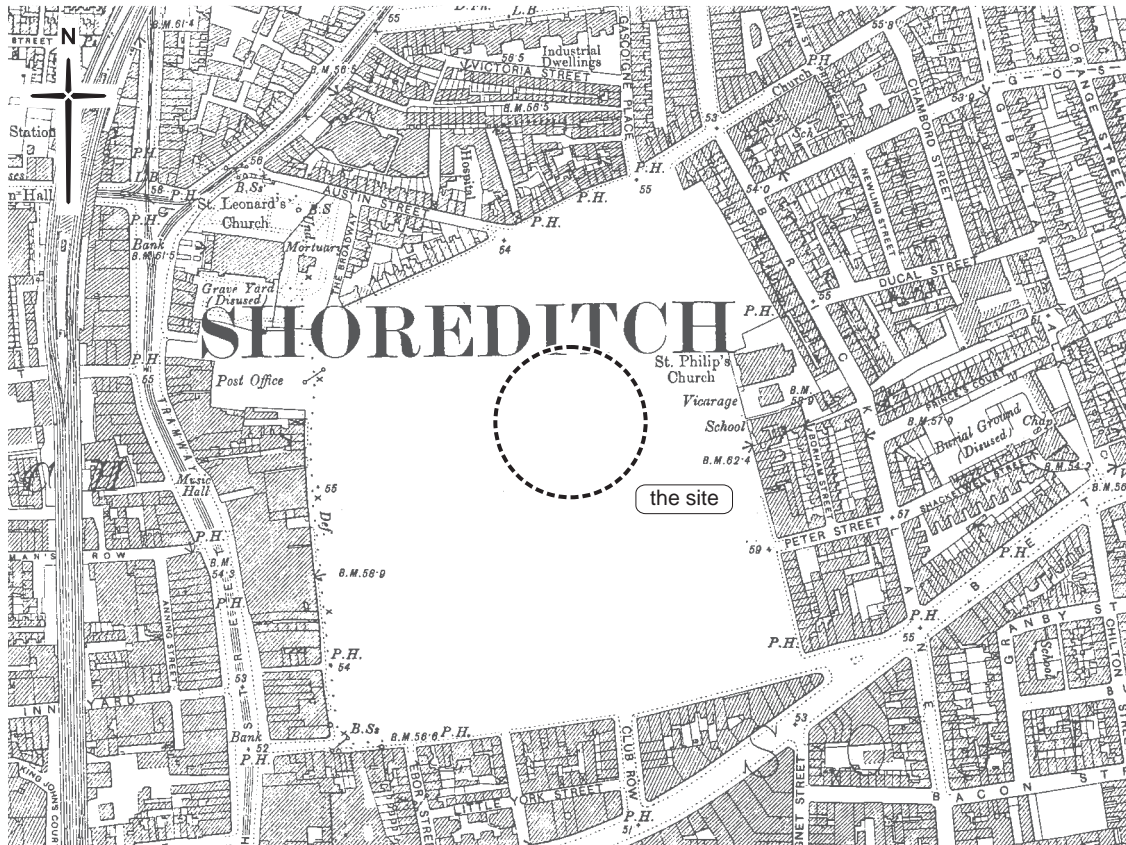


Fig 7 Ordnance Survey map from 1893, showing the area of the site

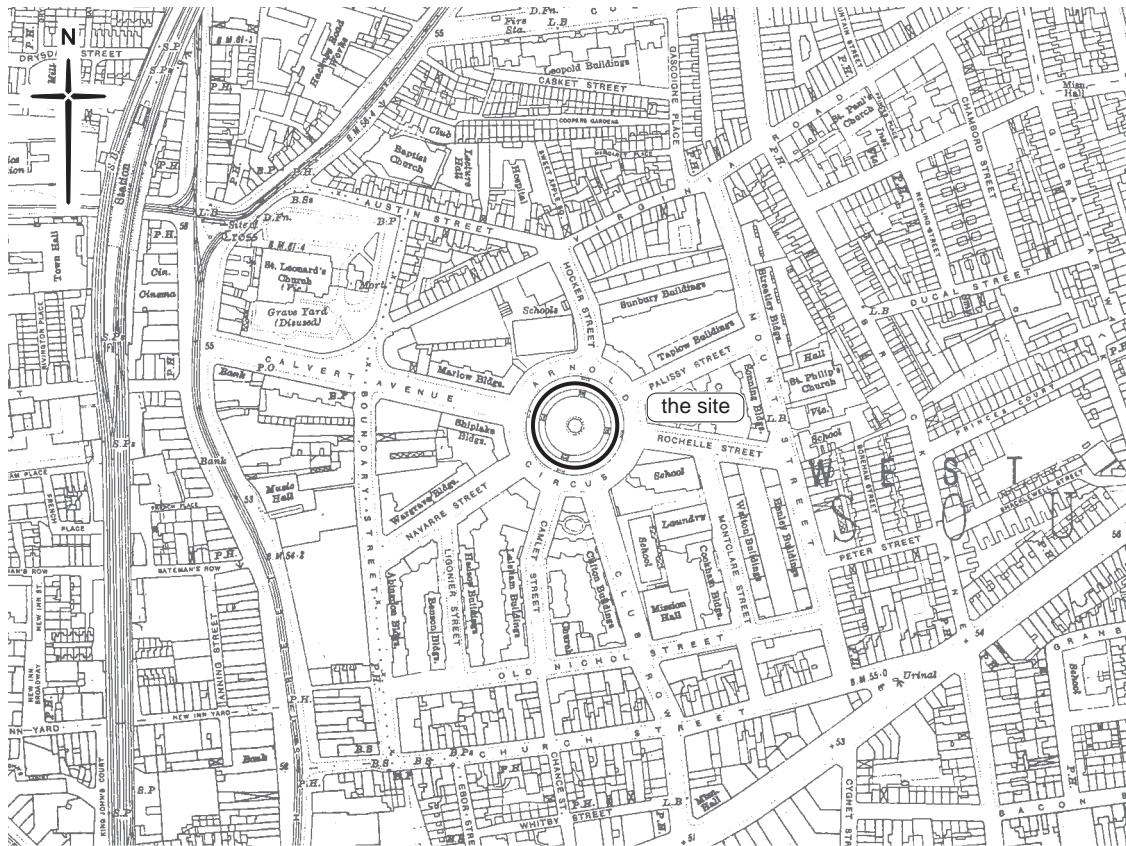


Fig 8 Ordnance Survey map from 1914, showing the area of the site

3 The evaluation

3.1 Methodology

Excavation of a single trench (Fig 2) was undertaken by MOLA between the 24th and the 26th June 2009, with the community 'dig' running from the 29th June to the 2nd July 2009 (Figs 10–15 and front cover). All archaeological excavation and monitoring during the fieldwork were carried out in accordance with the preceding *Method Statement* (MOLA, 2009) and the *Archaeological Site Manual* (MoLAS, 1994).

The slab/ground was broken out and cleared by contractors under MOLA supervision; the trench was also excavated by machine by the contractors, and monitored by a member of staff from MOLA.

The location of the evaluation trench was recorded by MOLA surveyors and plotted on to the Ordnance Survey grid. A written and drawn record of all archaeological deposits encountered was made in accordance with the principles set out in the MOLA site recording manual (MOLAS, 1994). Levels were obtained by a traverse from an Ordnance Datum located at the base of the mound (16.37m OD) to the south (opposite the northern end of Camlet Street).

The site has produced: one trench location plan; 14 context records; one section drawing at 1:20 (Fig 9) and 161 photographs. In addition, five boxes of finds were recovered from the site. The site finds and records can be found under the site code ADC09 in the MoL archive.

3.2 Results of the evaluation

For the location of the evaluation trench see Fig 2.

<i>Evaluation Trench 1</i>	
Location	To the north-east of the bandstand
Dimensions	5m (NE-SW) by 5m (SE-NW) by 1.20m depth
Top level of mound/top of tarmac	19.70m OD
Base of tarmac	19.65m OD
Depth of archaeological deposits seen	5.36m deep
Level of base of deposits observed and/or base of trench	14.29m OD
Natural observed	Natural not reached

Table 1 Summary of deposits from Evaluation Trench 1

The trench (Trench 1) was excavated by machine from 19.70m OD, down to 18.50m OD. A power auger was then employed in the northern corner of the trench, in order to produce a sequence of cores through the entire mound. Fig 9 illustrates the sequence of layers (contexts [1] to [14]). Although natural was not reached, the sequence recorded (to be read in conjunction with Fig 9) was as follows:

Context No	Height (OD)	Description	Interpretation
Excavated by machine:			
1	19.70m	tarmac	present surface
2	19.69m	tarmac	former (modern) surface*
3	19.67m	tarmac	former (modern) surface*
4	19.66m	tarmac	former (modern) surface*
5	19.65m	yellow-brown sandy gravel	?original Victorian surface
6	19.56m	brick rubble (mix 18th and 19th century bricks)	ground levelling prior to gravel
7	19.34m	mid brown sandy silt and rubble dump	general landfill containing household rubbish
Recorded from power auger cores:			
8	18.44m	mid yellow-brown sandy dump with brick and mortar flecks	general landfill
9	17.94m	dark grey silt dump with occasional wood and CBM flecks	general landfill
10	17.09m	yellow and grey mix mortar dump	general landfill
11	16.54m	mid grey silt dump with red CBM and yellow mortar flecks	general landfill
12	15.68m	mid grey clay silt with occasional CBM, mortar and chalk flecks	general landfill
13	14.98m	light brown sandy silt with occasional CBM flecks	general landfill
14	14.84m	dark grey silt with occasional coal flecks	general landfill
Base of final core reached a depth of 14.29m OD (ie base of [14] not reached)			

Table 2 Detailed descriptions of mound deposits

*Tarmac is a Victorian invention, although all of the layers of tarmac appeared to be extremely similar and were thought to be modern; CBM = ceramic building material

3.3 Assessment of the evaluation

GLAAS guidelines (English Heritage, 1998) require an assessment of the success of the evaluation 'in order to illustrate what level of confidence can be placed on the information which will provide the basis of the mitigation strategy'. In the case of this site, the evaluation trench and power auger enabled the recording of deposits through the entire core of the mound. This information will contribute towards the restoration process of the gardens on the mound.

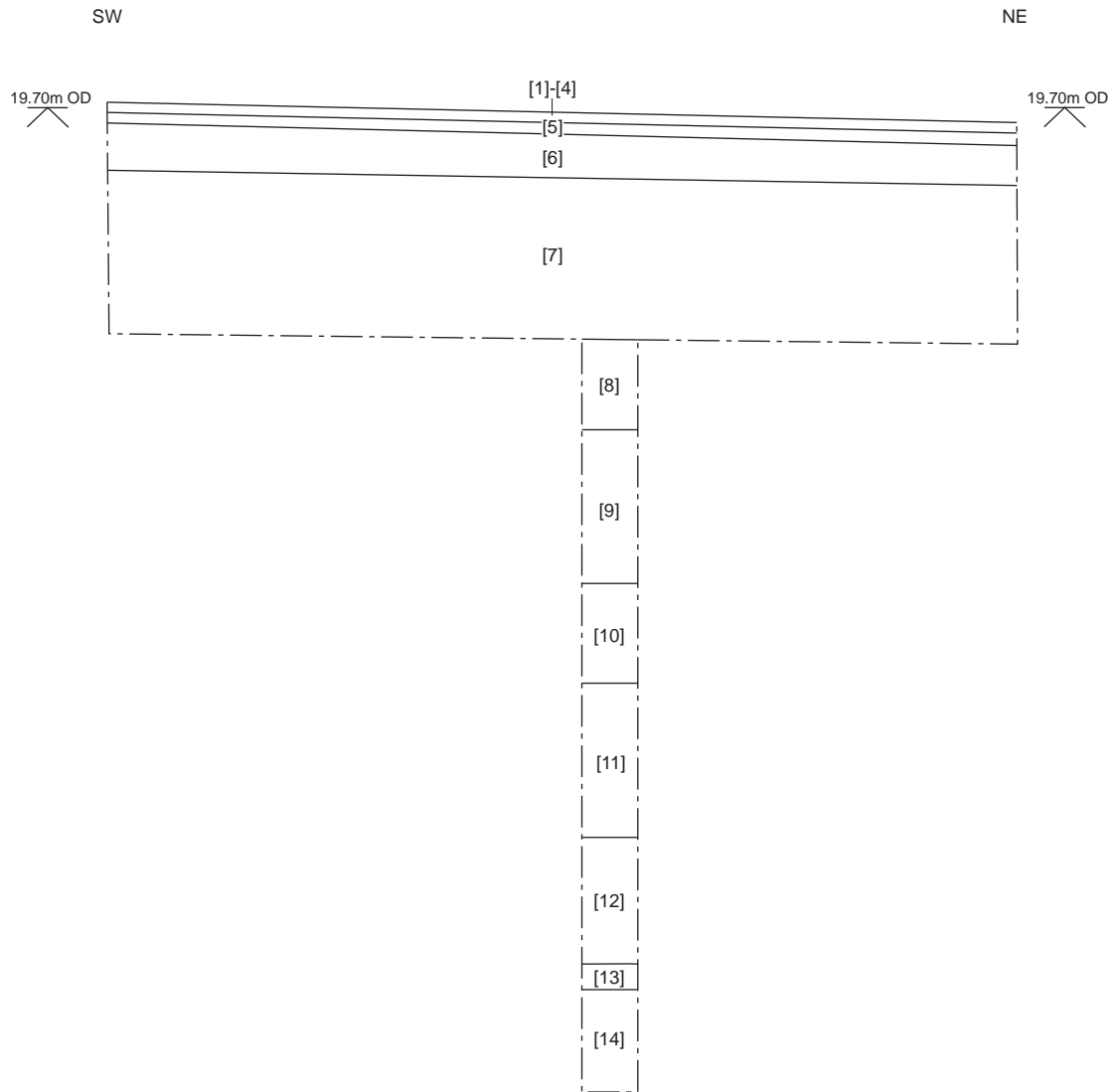


Fig 9 Section drawing, south-east facing



Fig 10 Photograph showing trench, facing north



Fig 11 Photograph showing St Hilda's East women's group, facing north



Fig 12 Photograph showing children from Virginia School, facing north-west



Fig 13 Photograph showing trays of finds from the evaluation



Fig 14 Photograph showing a selection of pipes from the evaluation



Fig 15 Photograph showing parts from shoes found during the evaluation

4 Archaeological potential

4.1 Realisation of original research aims

The following research aims and objectives were established in the *Method Statement* for the evaluation (Section 2.2, MOLA, 2009):

- What lies below the tarmac of the mound in the centre of Arnold Circus?

Immediately below the tarmac was a layer of yellow-brown sandy gravel, which may represent the original Victorian surface. There were four layers of tarmac; although tarmac was a Victorian invention, the layers appeared to be extremely similar (differences between 19th- and 20th-century tarmac involved the addition of either oil or coal, and the manner in which the tarmac was rolled) and are thought to be modern. With this in mind, the gravel would have provided a firm surface. Below the gravel were a number of different dumps, which are described in detail in section 3.2.

- Can the previous Victorian surface (tarmac/paving) be identified?

As stated above, a layer of yellow-brown sandy gravel below the tarmac was thought to have been the original Victorian surface.

- Can the nature and level of earlier archaeological deposits be reached and identified through the use of a power auger?

The power auger was able to reach a depth of 3.60m from the base of the evaluation trench, giving a total reach of 5.41m through the mound from the summit for recording. Below the tarmac, ten different dumps were identified. These contained varying amounts of brick fragments, ash and glass, suggesting general landfill deposits, rather than a concentration of building material purely from the Old Nichol slum. The recovery of 17th- and 18th-century pottery from the mound also implied a general rubbish tip, incorporating debris from domestic items that had survived into subsequent decades and centuries.

- What are the earliest deposits identified?

Natural deposits were not reached, although it is unlikely that they were far below the level reached by the power auger (14.29m OD). A previous evaluation at the western end of Calvert Street recorded natural brickearth at an average height of 14.20m OD.

- What are the latest deposits identified?

The latest deposit recorded below levelling for the sandy gravel and subsequent tarmac layers, consisted of a mid brown sandy silt and rubble dump. It contained a variety of household rubbish, and was the principal layer used to demonstrate digging techniques to community groups, as well as show examples of 18th- and 19th-century dress, tastes and activities. Several sherds of 17th-century pottery were also recovered from this dump (context [7]), suggesting the continued use of such crockery into later periods (see Figs 13–15 for photographs of some of the finds recovered from the fieldwork).

4.2 General discussion of potential

The evaluation has shown that the mound at the centre of Arnold Circus is made up of numerous dumps of silt, rubble and domestic rubbish from the post-medieval period (from the 17th to the 19th centuries). Potential for archaeological stratigraphy (eg cut features) was never really considered, and it is highly unlikely that the proposed restoration of the gardens/mound would damage anything of archaeological or historical value.

Pottery recovered from the evaluation is typical of everyday domestic crockery in London during the later 18th and early to mid 19th century. The presence of sugar-refining wares is the only indication of industry in the vicinity (see Appendix I). Pearl buttons and glass finds are also domestic items (Appendix V), of a kind found in most London deposits of this date.

Of interest was the recovery of 18th-century Delft tiles (Appendix II), however, which would have originated in upper class residences, but found their way into middle class properties by the end of the 18th century (pers comm Ian Betts). Their presence in the mound at Arnold Circus suggests the possibility that, by the 19th century, the tiles may have belonged to working class properties. This further suggests subtle differences of wealth/standing between various residents of the slum, which is borne out by extensive research on the history of the Old Nichol (Wise, 2008, 126). It is perhaps more likely, however, that the mound, standing open for some time, would have accrued an assortment of dumps from further afield, which were mixed in with debris from the Old Nichol. In addition, the significant lack of brick mass in this landfill suggests the likely retrieval and reuse of the bricks in development elsewhere.

Post-medieval dumps were recorded within the mound to a depth of 14.29m OD (modern pavement level near to the site lies at c 16m OD). The average depth of natural brickearth recorded at the western end of Calvert Street was 14.20m OD, and it is thought to be similar at the eastern end, below Boundary Gardens.

4.3 Significance

Whilst the archaeological remains are undoubtedly of local significance there is nothing to suggest that they are of regional or national importance.

5 Proposed development impact and recommendations

The proposed redevelopment at Boundary Gardens involves a restoration of the gardens themselves, a refurbishment of the grade II listed bandstand, with minimal structural impact to the mound itself. Any surviving archaeology in the immediate vicinity (such as below the base of the mound, or below the road surface of the circus) would be unaffected by such a scheme. It is thought that the results of the evaluation, however, may assist in devising a successful scheme for the restoration.

6 Acknowledgements

The Museum would like to thank the London Borough of Tower Hamlets for funding the evaluation and community dig, with particular thanks to Andrew McKenzie and Rosalind Brewer. The author would also like to thank the staff from the Rochelle School Canteen for their hospitality, with especial thanks to Antony from 'A Foundation', and Patrick; thanks also to Naseem Khan, Leila McAlister, Alix McAlister and Elena Jacinta from the Friends of Arnold Circus for local information and support; also to Gerard Huguenin, Neville Finnikin, Gregor Gziewiczwski and Perry from GEH Groundworks; to Kate Gooding, Eileen McEwan and Judy Cox from Virginia Primary School; Sabeha Miah and Eklas Mohammed Rahman from St Hilda's East Community Centre; Kate Sumnall, Jackie Keily and Meriel Jeaters from the Museum of London; Roy Stevenson, Dan Nesbitt and Glynn Davis from the LAARC; Mark Wiggins, Robert Hartle, Mary Ruddy, James Andrews, Catherine Drew, Gideon Simons and Sophie Jackson from MOLA; Sam, Rebecca Hampson; David Divers and Sarah Green from English Heritage; Counsellor Peter Herrington and author Sarah Wise; and Nilesh Patel from LDA Design. The project was managed by Jo Lyon from MOLA.

7 Bibliography

Cultural Heritage Committee of the Council of Europe, 2000 *Code of Good Practice On Archaeological Heritage in Urban Development Policies; adopted at the 15th plenary session in Strasbourg on 8-10 March 2000* (CC-PAT [99] 18 rev 3)

Department of the Environment, 1990 *Planning Policy Guidance 16, Archaeology and Planning*

English Heritage, 1991 *Exploring Our Past, Strategies for the Archaeology of England*

English Heritage, May 1998 *Capital Archaeology. Strategies for sustaining the historic legacy of a world city*

English Heritage, 1991 *Management of Archaeological Projects (MAP2)*

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*

<http://friendsofarnoldcircus.wordpress.com/history>

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, documentation conservation and research of archaeological materials*

LCC [London County Council], 1922 *Survey of London*, vol 8: *the parish of St Leonard, Shoreditch*
London Borough of Tower Hamlets: Boundary Estate Conservation Appraisals and Management Guidelines, 2007

London Borough of Tower Hamlets, 2009 *Unitary Development Plan*

Margary, ID 1955 *Roman roads in Britain*, vol 2

Miller, P, 1999 *St Leonard's church, 119 Shoreditch High Street, London E1... London Borough of Hackney: an archaeological assessment* (MoLAS report)

MOLA, 2009 *Boundary Gardens, Arnold Circus, Boundary Estate, London E2, Written Scheme of Investigation for an archaeological evaluation*, MOLA unpublished report

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

Museum of London, 2002 *A research framework for London archaeology 2002*

Thompson, A, Westman A, and Dyson, T (eds), 1998 *Archaeology in Greater London 1965-90: a guide to records of excavations by the Museum of London*, Archaeol Gazetteer Ser Vol 2, London

Wise, S 2008 *The Blackest Streets, The Life and Death of a Victorian Slum*, Vintage Books, London

Building material bibliography

Betts, I M, and Weinstein, R I, in prep, *Tin-glazed tiles from London*

Pluis, J, 1997 *The Dutch tile: designs and names*, Leiden

Ray, A, 1973 *English Delftware tiles*, London

Clay pipe bibliography

Atkinson, D R and Oswald, A, 1969 London clay tobacco pipes, *J British Archaeol Assoc* 32, 171–227

Davey, P 1997 *Clay pipes from Bolsover church*, unpub archive rep

Higgins, D A and Davey, P, 1994 *Draft guidelines for using the clay tobacco pipe record sheets*, unpub rep

Oswald, A, 1975 *Clay pipes for the archaeologist*, BAR 14, Oxford

Registered finds bibliography

Willmott H, 2002 *Early post-medieval vessel glass in England c. 1500–1670* CBA Res Rpt 132

Animal bone bibliography

Schmid, E, 1972 *Atlas of animal bones for prehistorians, archaeologists and Quaternary geologists*, London.

Conservation bibliography

English Heritage 1992 *Management of Archaeological Projects II*

Museum of London 2009 *General standards for the preparation of archaeological archives deposited with the Museum of London*

http://www.museumoflondonarchaeology.org.uk/English/ArchiveResearch/DeposResourc/Standards_2.htm

8 NMR OASIS archaeological report form

OASIS ID: molas1-66794

Project details

Project name	Arnold Circus
Short description of the project	Following the recommendations of English Heritage (GLAAS), one archaeological evaluation trench was excavated at the top of Boundary Gardens. The gardens adorn a two-tiered mound, located in the centre of Arnold Circus. The trees on the mound have a protection order, which was respected in locating the evaluation trench, the purpose of which was to provide information on the level and nature of the deposits which form the mound. After recording by MOLA staff, the excavation was made available for visits by the local community. Groups of school children were able to take part in a 'dig' on the site, under the supervision of the MOLA supervisor and members of staff from the LAARC (London Archaeological Archive Research Centre) and the Museum of London.
Project dates	Start: 24-06-2009 End: 02-07-2009
Previous/future work	No / No
Any associated project reference codes	ADC09 - Sitecode
Type of project	Field evaluation
Site status	Conservation Area
Site status (other)	Listed park and garden
Current Land use	Other 5 - Garden
Monument type	BANDSTAND Modern
Monument type	GARDENS Post Medieval
Significant Finds	DOMESTIC Post Medieval
Methods & techniques	'Augering','Documentary Search','Photographic Survey','Survey/Recording Of Fabric/Structure','Targeted

	Trenches', 'Visual Inspection'
Development type	Estate management (i.e. maintenance of existing structures and landscape by capital works and on-going maintenance)
Prompt	Planning condition
Position in the planning process	After full determination (eg. As a condition)

Project location

Country	England
Site location	GREATER LONDON TOWER HAMLETS TOWER HAMLETS Boundary Gardens, Arnold Circus
Postcode	E2
Study area	1965.00 Square metres
Site coordinates	TQ 33643 82548 51.5255136514 -0.07331807878010 51 31 31 N 000 04 23 W Point

Project creators

Name of Organisation	MoL Archaeology
Project brief originator	Greater London Archaeology Advisory Service
Project design originator	MoL Archaeology
Project director/manager	Jo Lyon
Project supervisor	Alison Telfer
Type of sponsor/funding body	London Borough of Tower Hamlets
Name of	London Borough of Tower Hamlets

sponsor/funding
body

Project archives

Physical Archive recipient LAARC

Physical Archive ID ADC09

Physical Contents 'Ceramics','Glass','Leather','Metal','Animal Bones'

Digital Archive recipient LAARC

Digital Archive ID ADC09

Digital Contents 'Animal Bones','Ceramics','Glass','Leather','Metal'

Digital Media available 'Images raster / digital photography','Survey','Text'

Paper Archive recipient LAARC

Paper Archive ID ADC09

Paper Media available 'Context sheet','Drawing','Matrices','Miscellaneous Material','Report','Section'

Project bibliography 1

Publication type Grey literature (unpublished document/manuscript)

Title Boundary Gardens, Arnold Circus, Boundary Estate, London E2, London Borough of Tower Hamlets, A report on the evaluation

Author(s)/Editor(s) 'Telfer, A.'

Date 2009

Issuer or publisher MoL Archaeology

Place of issue or publication London

Description A4, spiral bound

Entered by Alison Telfer (atelfer@museumoflondon.org.uk)

Entered on 5 November 2009

Table 3 NMR OASIS archaeological report form

APPENDIX I: Assessment of the pottery

Jacqui Pearce

A total of 51 sherds from a minimum of 45 vessels (2769 g) were recovered from context [7] and spot-dated in accordance with current MOL Archaeology procedure, using standard codes for fabric, form and decoration. The data were entered onto the Oracle database, with quantification by sherd count, estimated number of vessels (ENV) and weight in grams.

The pottery includes a wide range of fabrics that span the late 17th to late 19th centuries, with a TPQ of c 1860. Much of the material was made and used in the middle decades of the 19th century, although a handful of sherds of late 17th-century date provide the earliest evidence of activity in the finds collected. The pottery is very largely domestic in character, with two sherds from sugarloaf moulds and two syrup-collecting jars in London-area post-medieval redware (PMR), suggesting the possibility of sugar-refining in the vicinity at some point.

Utilitarian earthenwares for general kitchen and household use consist largely of PMR and Surrey-Hampshire border redware (RBOR), including sherds from bowls, a colander of deep rounded bowl form and a flowerpot in PMR, with part of a bowl and a chamber pot in RBOR. There are also sherds from two flanged dishes or platters in RBOR with trailed slip decoration, a long-lived and simple form of embellishment that was employed in the border industry from the 17th to 19th centuries. Other utilitarian pottery includes a complete bottle in London stoneware, marked with the stamp of the *Alborghetti* family firm, which had been located at 205 City Road (c 1881), about a kilometre to the west.

Also recovered was a fragment from another bottle in London stoneware (LONS: probably Fulham) and sherds from a bowl in yellow ware (YELL), as well as a jar lid in the same fabric with slip decoration in mocha style. Yellow ware was a durable, refined, near-stoneware fabric developed for kitchen and household forms in the 1820s, which grew rapidly in popularity from the 1830s onwards. Part of a bowl in Sunderland-type coarseware (SUND) represents another common type of 19th-century domestic pottery.

Decorative pottery used largely for serving was found in various fabrics and forms dating to the 18th and 19th centuries. Sherds of tin-glazed ware (TGW) include one from a mid 17th-century dish, and six from plates decorated in mid to late 18th-century style with blue-painted floral designs. Part of a small, shallow, straight-sided dish in plain TGW with a pale blue glaze has the remains of what appears to be a basket-type handle at the rim. The purpose of this form is unclear. There are also sherds from rounded bowls and a plate in Chinese blue and white porcelain (CHPO BW) typical of the later 18th to early 19th century. Sherds from a large cup or porringer and a plate in Staffordshire-type slipware (STSL) with feathered decoration date to c 1660–1730.

Factory-made refined earthenwares make up the rest of the collection, including a range of types popular in the 19th century. Amongst these, the main wares are refined white earthenware or pearlware with transfer-printed decoration (TPW and PEAR). Various different patterns are represented on a range of plates and bowls, including 'Eton College' and 'Asiatic Pheasants'. There is also part of a dinner plate decorated with a green transfer design of antique vases and part of a plate with mauve underglaze transfer-printed decoration and blue painted features overglaze. The base and foot of a probable tureen has a black transfer-printed pattern, with

added 'flow' effect. Part of a carinated bowl in creamware (CREA) with 'wormed' slip decoration probably dates to the late 18th to early 19th century, as does a plate in PEAR with blue shell edge rim, an extremely popular type at this date. The base of a cup in bone china (BONE) represents the top end of the wares included in this collection, although it is of poor quality, with crude overglaze painted decoration.

APPENDIX II: Assessment of the building material

Ian M. Betts

Three fragments of decorated tin-glazed 'Delft' tile were recovered from context [7]. These have been fully recorded and the information added to the Oracle database.

Context	Fabric	Type	Date
[7]	3064	Wall tile	1725–1760
[7]	3067	Wall tile	1700–1730
[7]	3086	Wall tile	c 1740–1760

Table 4 Summary of the Delft tiles from context [7]

The three tin-glazed tiles are all of different type. These are described in more detail below:

Context [7] <7>

Fabric: 3064

Place of manufacture: London

Date: 1725–1760

A corner area showing part of a blue on white landscape scene set in a powered purple octagonal border. The tile has quarter round 'Rosette corners' in blue on white. Similar tiles have been found on other London sites and various English examples are illustrated by Horne (1989, 21, no. 31, 23, nos 46 and 50) and Ray (1973, 133, nos 116 and 117).

The tile has a rather sandy fabric, which is more commonly associated with Dutch tin-glazed tiles, but the example from Arnold Circus was probably manufactured in London.

Context [7] <8>

Fabric: 3067

Place of manufacture: London?

Date: 1700–1730

Part of a blue on white landscape scene set in a circular border with corner decoration of common barred ox-head type. The tile is somewhat unusual in having the pattern outlined in thin black paint before the pattern was infilled in blue. The corner decoration and thickness (9mm) is similar to that found on certain London-made biblical tiles of 1700–1730 date, illustrated by Horne (1989, 93–94, nos 549, 552 and 557).

Context [7] <9>

Fabric: 3086

Place of manufacture: London? (or Dutch)

Date: 1740–1760

Part of a blue-on-white biblical tile with a circular border and barred ox-head corner decoration. The cross hatch pattern of the floor is a distinctive feature of biblical tiles, although it is uncertain what scene is present on this example. The corner decoration

is somewhat unusual, but it does have a passing resemblance to that found on a London biblical tile illustrated by Horne (1989, 79, no. 79) dated 1740–1760. The bright white tin-glaze, however, would suggest a possible Dutch origin.

Discussion

These tiles probably come from an early–mid 18th century fireplace surround, or perhaps a kitchen area. Delft tile fireplaces seem to have been a common occurrence in the 18th century, based on the volume of such tiles found in excavations in London. There are a few in situ tiled fireplaces of this period in London, but many others are of 19th century date (Betts and Weinstein in prep).

APPENDIX III: Assessment of the clay pipes

Tony Grey

Introduction/methodology

The clay tobacco pipe assemblage was recorded in accordance with current MoL Archaeology practice and entered onto the Oracle database. The English pipe bowls have been classified and dated according to the Chronology of London Bowl Types (Atkinson and Oswald 1969), with the dating of some of the 18th-century pipes refined where appropriate by reference to the Simplified General Typology (Oswald 1975, 37–41). The prefixes AO and OS are used to indicate which typology has been applied. Quantification and recording follow guidelines set out by Higgins and Davey (1994; Davey 1997).

Quantification

There is half a standard box of bulk and accessioned pipes. A total of 26 fragments were recovered from context [7]: a detailed breakdown of the assemblage is given in Table 5. This includes 14 pipe bowls, some of which were identifiable and some of which had identities inferred from heels. There are 12 stems which are undiagnostic and not closely datable. Twelve of the pipes were accessioned, with nine bearing makers' marks and eight bearing decoration, with five being both marked and decorated. There were no mouthpieces.

Total no. of fragments	26
No. of bowl fragments	14
No. of stem fragments	12
No. of mouthpieces	0
Accessioned pipes	12
Marked pipes	9
Decorated pipes	5
Imported pipes	0
Complete pipes	0
Wasters	0
Kiln material fragments	0
Boxes (bulk\accessioned)	Half box bulk/acc

Table 5 Clay tobacco pipe quantification

Condition

The assemblage is fragmentary. Few bowls are complete. Some identification has been inferred from heels and broken bowls. Most of the pipe bowls show evidence of smoking (some of heavy use). Several of the pipes are stained.

Provenance and dating of the clay pipes

The pipes range in date from 1730–1880. The assemblage is from context [7] consisting of landfill with household rubbish, silt and rubble dump. Only four of the 14 pipe bowl fragments have the upper date of 1840–80, while two date from 1820–60. Eight are residual at 1730–1820. The pipes are probably of local London manufacture, with the exception of <18>, a black clay pipe that may be French or Dutch dated c 1840–80. Several makers are depicted via initials or symbols such as a shamrock.

ED	1780	1800	1820	1860	1880	Total
1730	3					3
1740		3				3
1780			2			2
1820				2		2
1840					4	4
Total	3	3	2	2	4	14

Table 6 Chronological distribution of datable clay pipe bowls
(ED – earliest date)

Character of the pipe assemblage

The clay pipes are probably mostly of local London manufacture. The pipes range from c 1730–1880 in date. The pipe bowls generally show evidence of smoking. None are of a higher quality: there are no burnished examples. Several of the makers' initials have been poorly applied or using worn dies and so not clearly readable. Most of the clay pipes are fragmentary and from various sources and users and redeposited in landfill. Several of the pipes are stained. Only one of the pipes is a fancy Victorian type (thorn pipe <14>, AO29 1840–80) while <13> is a small fragment of a decorated 18th-century commemorative pipe.

Marked pipes

Moulded marks

All marks are moulded in relief on the sides of the heel except for <16>. Only clearly readable marks are listed

NH <11> possibly AO27 1780–1820. Maker: possibly Nathaniel Hebblewhite, 1763, Grays Inn Road

TS <12> AO26 1740-1800. Maker: possibly Thomas Smith, 1760–64, Booth Street, Spitalfields (or Thomas Sparepoint, 1758, Whitechapel)

Flower <16> stem and <18> AO29 1840–80 possibly French black pipe [7]

Shamrock <20>, <21> AO27 1780–1820

Stem fragments <16> have a partial moulded inscription H PE VARN PIER PI

Stamped pipes

Decorated pipes

Leaves down the seam(s) of the bowl <15> possible AO29 1840–1880 and <17> AO28 1820–60

Wheatears down the seam(s) of the bowl <19> possible AO28 1820–60 and <20> AO27 1780–1820

Ribbed and swags <18> a possibly French pipe of AO29 shape 1840–80

Ship <13> fragment of a possible AO26 pipe 1740–1800, possibly an Admiral Vernon commemorative (of taking of Portobello) pipe

Thorn <14> AO29 1840–80, Victorian fancy pipe

Imported pipes

<18> corresponds to London type AO29 1840–80, possibly French (see above)

Discussion

The clay pipes from the landfill rubble [7] represent a cross-section of 19th-century pipe use, with a variety of makers present, along with residual 18th-century pipes. The presence of the foreign pipe may suggest there was a variety of workmen and inhabitants, including immigrants from the continent. The rubble dump does not appear to represent a house clearance episode.

APPENDIX IV: Assessment of the leather

Beth Richardson

There is a small amount of leather from context [7]. A thick wide strap and soles from four boots or shoes are almost certainly contemporary with the rest of the finds from the context (mid to late 19th-century). A narrower worn fragment of strap has a row of diagonal diamond-shaped awl holes parallel to its outer edge; this form of decoration tends to be more characteristic of the earlier post-medieval period and it may be re-deposited or residual.

The wide leather strap, which is incomplete, is still attached to a square iron buckle. The strap has regularly spaced holes, about 2 mm apart, and two irregularly spaced perforations, added for extra tightening. It may have come from a saddle or horse harness. The boot or shoe soles are robustly constructed with thick insoles, mid soles and tread soles, held together with stitching and small iron nails. Two soles from women's boots have stacked leather heels about 4mm high and are curved at the back. The sole from a child's boot or shoe has a lower almost flat heel (1mm), also stacked leather; it is worn from use. It is difficult to date this footwear with precision because the uppers are missing, but the method of construction and the heels on the women's boots would suggest a late 19th-century date.

APPENDIX V: Assessment of the registered finds and bulk glass

Beth Richardson

There are eight registered finds from the site: a button, a button blank, a button or inlay from a piece of jewellery, an iron fitting, a bone handle, a coin and pieces from two glass vessels. They were all recovered from context [7].

Buttons

The button is made from pearl shell and is small and flat with a central hole (<S 1>). Buttons like this were mass-produced in the 19th century, and were used on virtually every element of male and female clothing, as well as decoratively (for example on the late 19th century 'pearly' outfits of London's East End). The button blank is a small slightly concave disc cut from a pearl shell but not drilled for sewing (<S 2>).

Buttons made from imported pearl oysters and marine snails (*Turbo mamoratus* and *Trochus niloticus*) were made with simple machinery in peoples' homes, workshops and factories, with the industry reaching its height in the mid to late 19th century. The other possible button from the site is made from white opaque glass, domed and faceted and painted with deep ruby-coloured enamel in a swirling marbled effect. It could be a button (painted glass buttons imported from Europe were common in the 19th century) or part of a piece of jewellery. Copper alloy corrosion on its back has obscured the fitting and attachment details.

Glass

The glass finds consist of fragments from a residual 17th-century globular jar decorated with optic-blown vertical ribs (<G 1>), and the base and handle from a deep green glass jug (<G 2>). Coloured glass vessels and ornaments were popular in the mid to late 19th century, and the jug is probably the same date as the other finds.

The bulk glass

There are pieces from three bottles. The double-string rim from an English wine bottle is 18th-century and residual. The rims and a base from the other two bottles are mid- to late 19th-century medicine or food product bottles, octagonal or square with chamfered corners and mould, and made from natural blue-green glass.

Copper

A copper halfpenny dates to 1861.

Bone

The remains of a bone handle were also recovered, although there was damage to the area which would have been attached to the metal of the tool.

Catalogue of registered finds

<S 1><3> [7] Flat shell button with central hole; diameter 11mm

<S 2> <4> [7] Slightly concave button blank, made from pearl-lined shell; diameter 12mm

<S 3> <5> [7] Glass button, domed and faceted with flat back; opaque white glass painted on all surfaces, including back, with deep ruby-coloured enamel in swirling marbled effect; diameter 15mm. Attachment method not clear.

<S 4> <6> [7] Rivet or fitting, possibly from door or furniture. Roughly trapezoid metal sheet (35X25mm) and convex oval plate (25X15mm) joined by short rod.

<G 1> <22> [7] Globular jar. Four pieces from everted rim and vertical neck of green-tinted glass jar, decorated with optic-blown vertical ribs. Early to mid 17th-century; Wilmott Type 32.1 (Wilmott 2002, 99-100).

<G 2> <23> [7] Jug. Three pieces from a deep green glass jug or other handled vessel; flat base with moulded foot ring, applied plain handle with circular section. 19th-century, possibly imported.

APPENDIX VI Assessment of the hand-collected animal bone

Dr James Morris

Introduction/methodology

This report identifies, quantifies and interprets the animal bone from context [7]. Hand-collected animal bone was recorded directly onto Excel spreadsheets; no animal bone was present from wet-sieved samples.

The context was described in terms of weight (kg), estimated fragment count, species, carcass-part, fragmentation, preservation, modification, and the recovery of epiphyses, mandibular tooth rows, measurable bones, complete long bones, and sub-adult age groups. The assemblage was not recorded as individual fragments or identified to skeletal element. All identifications referred to the MOLA reference collection; and Schmid (1972).

	Weight (g) fragments	No. fragments	No. boxes
Hand-collected bone	450	21	1

Table 7 Contents of animal bone archive

Preservation was recorded for the context as a whole on a categorical scale of 'poor', 'medium' and 'good'. 'Poor' indicates that most of the bones have suffered from a high degree of erosion and other taphonomic factors which inhibit the amount of information recoverable from the assemblage. Epiphyses counts are for each individual epiphysis present, therefore both the proximal and distal epiphyses from a complete long bone would be counted. Mammal fragments not identifiable to species or genus level were generally allocated to an approximate category, 'ox-sized', 'sheep-sized' or 'small mammal' (rat/mouse sized).

Each context and sample assemblage was then grouped with available dating and feature description.

Period	Context No	Taxon	Part	Age	State
post-medieval	7	s/g	upper limb		gnawed
post-medieval	7	s/g	toe		
post-medieval	7	s/g	vertebra		butchered
post-medieval	7	pig	upper limb		
post-medieval	7	pig	foot		
post-medieval	7	s/g	foot	juvenile	
post-medieval	7	cow	toe		
post-medieval	7	cow	lower limb	adult	

post-medieval	7	cow	upper limb		
post-medieval	7	cow	upper limb	juvenile	
post-medieval	7	sheep-sized	rib		
post-medieval	7	cow	vertebra		butchered
post-medieval	7	human	foot		
post-medieval	7	rabbit	upper limb	adult	

Table 8 Summary of the hand-collected animal bone groups

Summary

All the faunal remains from Arnold Circus were collected by hand from post-medieval context [7]. The majority of the remains came from adult or juvenile domestic mammals.

The bulk of the material consisted of cow, sheep/goat and pig elements. Cow remains consisted of vertebrae, upper limb, lower limb and toe elements. Butchery consisting of chop marks was present on one of the vertebra fragments. The sheep/goat remains consisted of vertebrae, upper limbs and toes. Again butchery was noted on one of the vertebra fragments. Canid gnawing was also noted on an upper limb fragment. The pig elements consisted of upper limb and foot elements. Sheep-sized ribs are also present.

In addition, a small number of rabbit upper limb elements are present. A human metatarsal was present within the faunal remains.

The preservation of the remains is classified as 'good'. Due to the small size, only a limited amount of further information is available. Ageing information is only available from long bone epiphysis data, with 17 epiphysis present. Metrical data is available from four elements, all of which are complete.

Discussion

Overall, the hand-collected animal bone is of local significance, particularly in terms of the meat diet. There is no wider significance or significance in terms of local habitats.

The origin of the human foot bone is unknown.

APPENDIX VII: Conservation note**Liz Goodman**

The following assessment of conservation needs for the accessioned and bulk finds from the excavation at Arnold Circus encompasses the requirements for finds analysis, illustration, analytical conservation and long term curation. Work outlined in this document is needed to produce a stable archive in accordance with MAP2 (English Heritage, 1992) and the Museum of London's Standards for archive preparation (Museum of London 2009).

	Material	No. accessioned	No. conserved	No. to be treated (see below)
Inorganic	Ceramic	15	0	0
	Glass	2	0	0
	Shell	2	0	0
Metals	Iron	1	0	0
Composite	Glass/copper	1	0	1
Organic	Leather	2	2 + bulk	0

Table 9 Summary of conservation work

The accessioned finds were assessed by visual examination of the objects. They were reviewed with reference to the finds assessments by Beth Richardson, Jacqui Pearce, Ian Betts and Tony Grey. The composite object [7] <5> was identified as requiring conservation input to investigate the materials present and if there is a loop present on the reverse.

The finds from this site are appropriately packed for the archive. No further work is necessary for transfer into the archive.