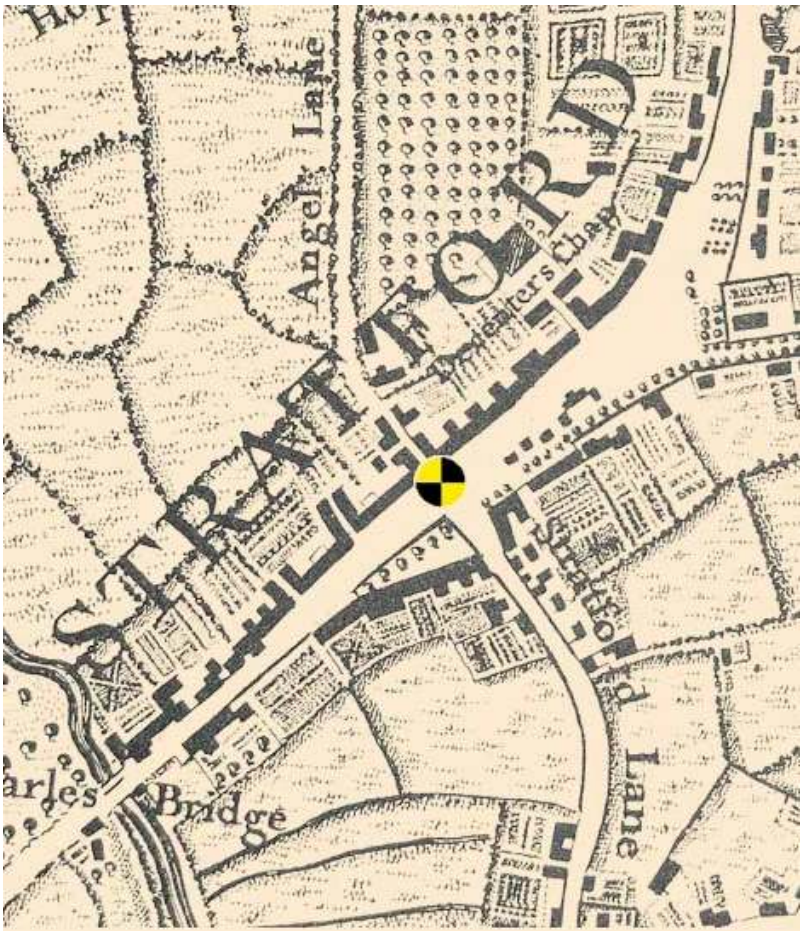
THAMES WATER UTILITIES
BROADWAY FLOOD ALLEVIATION SCHEME (6HDG)

SHAFT B4 THE BROADWAY
STRATFORD E15,
LONDON BOROUGH OF NEWHAM

AN ARCHAEOLOGICAL WATCHING BRIEF



Thames Water

COMPASS ARCHAEOLOGY

December 2010

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SHAFT B4 THE BROADWAY
STRATFORD E15
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AN ARCHAEOLOGICAL WATCHING BRIEF

SITE CODE: BBF08
SITE CENTRE NGR: TQ 38895 84340

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December 2010

Abstract

This report details the results of an archaeological watching brief carried out during the construction of a Thames Water shaft (B4) as part of the Thames Water Utilities Broadway Flood Alleviation Scheme on The Broadway, Stratford E15, London Borough of Newham. The site was approximately centred at NGR TQ 38895 84340. Archaeological monitoring was undertaken between 20th July and 1st September 2010.

Archaeological monitoring of trial pits excavated in advance of the main construction works exposed modern services and associated backfills to a depth of 1.2m below the existing ground level. Subsequent construction of the main shaft exposed made-ground to a depth of 3.5m, directly overlying truncated natural deposits of London Clay.

No archaeological finds or features were observed during the course of the archaeological watching brief.

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1. Introduction

1.1 This report details the results of an archaeological watching brief carried out during the construction of a Thames Water shaft in the Broadway, Stratford E15, London Borough of Newham between 20th July and 1st September 2010 (*cf*. Figure 1 below). The shaft (B4) forms one of a number of such features on the line of a new flood alleviation scheme, and will give access to a tunnelled pipeline.

1.2 The watching brief of the shaft area followed an initial watching brief carried out during trial works in March 2008[1] and subsequent advice from English Heritage. The site was considered to have potential for archaeological remains, and lay within an Archaeological Priority Area as defined by the London Borough of Newham Unitary Development Plan (UDP).

1.3 Archaeological monitoring was carried out by Rosie Cummings of Compass Archaeology, overall management of the project was undertaken by Geoff Potter. Construction and groundworks were carried out by Barhale Construction plc.

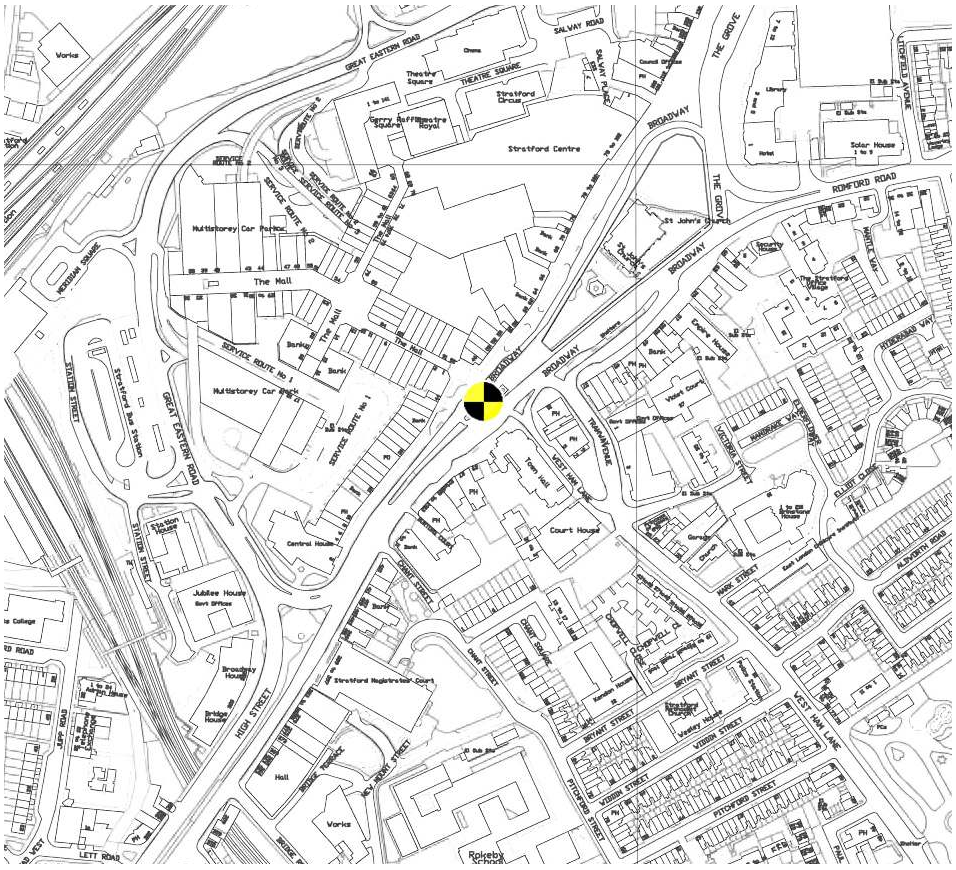

Figure 1: Site location based on the current Ordnance Survey map.

[1] Cummings, R. April 2008. 'Broadway Flood Alleviation Scheme, Trial Hole B4 Stratford, London Borough of Newham, An Archaeological Watching Brief' *Compass Archaeology Interim Report.*

1.4 Compass Archaeology would like to thank Thames Water Utilities for commissioning these works and the following individuals: Rebecca Dale (Ecology Advisor - Ecology and Heritage Team TWU) and Ovidiu Frunza, Simon Lewis and Shaun Schultz (Barhale Construction plc.) for their assistance with the on site work.

2. Site Location and Geology

2.1 The shaft is located on the northwestern side of the Broadway, approximately centred at NGR TQ 38895 84340. St John's Church (1834) lies a short distance to the northeast of the site and West Ham Lane immediately to the southeast (See Figure 1 above).

2.2 The British Geological Survey (North London *Sheet 256*, 1993) indicates that the site lies more or less at the junction between River Terrace Deposits of Taplow Gravel and overlying recent alluvium. The latter occupies a broad swathe of land to the west, some 1.6 km wide within the historic Lea floodplain and Stratford Marsh.

2.3 The site lies at *c* 6.0m OD and is relatively level, although the ground surface rises slightly to the north and east (*ie,* away from the Lea floodplain).

3. Archaeological and Historical Background

3.1 Some prehistoric finds are recorded in the locality; including a Palaeolithic hand axe and a pit containing late Neolithic/Bronze Age worked flint (*c* 100m to 200m to the northeast (SMR refs. MLO 24569 & 77209). Thus prehistoric evidence may be found, either *in situ* or residually in later deposits.

3.2 The Roman road from London to Colchester is thought to have run through Stratford after crossing the Lea valley from Old Ford. A gravelled surface that may be part of this road was found about 50m to the north of the present works (site code HW-AL94), and other sections are recorded *c* 80m to 280m to the northeast (SMR ref. MLO 22725 & site code WRR86). A secondary road to Great Dunmow may also have branched off to the northeast at this point, roughly on the line of Leytonstone Road. Remains of a Roman settlement might also be expected in Stratford. Although this has proved elusive there are references to pottery, building material and a ditch within 200 to 300m of the site.

3.3 The nature and extent of Saxon settlement is uncertain. However, Stratford is an Anglo-Saxon place-name, first recorded as *Straetforda* in the later 11th century. Moreover, archaeological investigation just to the north of the present site (code HW-AL94) produced post-Roman dumped deposits and a cultivation soil.

3.4 A significant settlement at Stratford may only have developed after the construction of bridges and a causeway across the Lea and Channelsea in the early 12th century. Later documents indicate that the medieval village centred on a large triangular green that stretched from the Broadway northeastwards to The Grove. There seems little doubt that the present site lies close to the centre of settlement, on the main thoroughfare and opposite the junction leading to the old manorial seat of West Ham (*cf*. Figure 4).

There is no evidence for medieval activity close to the site. However, pottery, rubbish/ quarry pits and ditches have been recorded from previous evaluations to the south and northeast (site codes WRR86; NMS01 & GVE01).

3.5 Earlier post-medieval records (*e.g.* The Epping & Hainault Forest map of the 1630s) suggest that Stratford had not grown much beyond its medieval boundaries. However, considerable growth is recorded from the early 18th century (*cf.* Daniel Defoe, 1722) and is indicated by Rocque's survey of 1746, with further expansion in the early 19th century evident from Clayton's map of 1821 (*cf*. Figures 2 and 3). A number of other maps have also been consulted and show the same general picture, with surrounding buildings and the present site location in a wide thoroughfare (*e.*g. the manorial surveys of 1787 and 1803, the surveyors' drawings of 1799 for the 1st Edition Ordnance Survey, Milne's land use map of 1800).

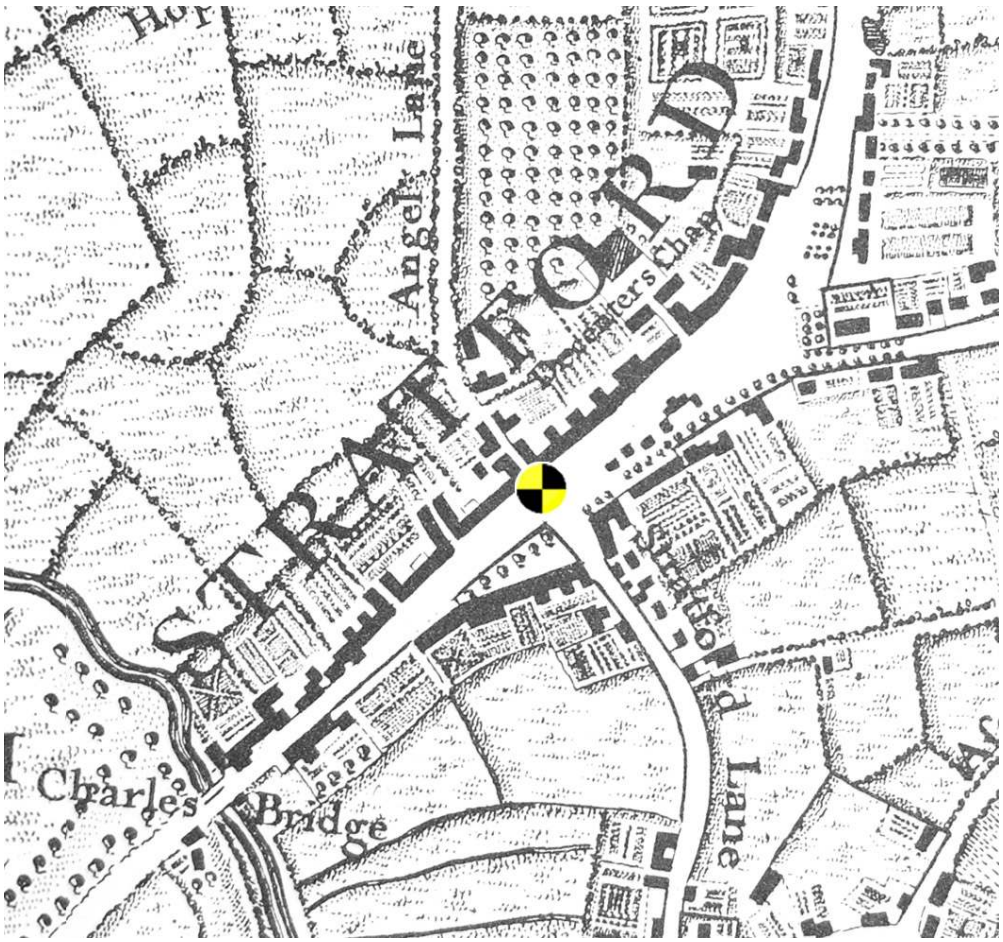

Figure 2: Extract from Rocque's survey of *c* 1746, showing the approximate shaft location (not to scale).

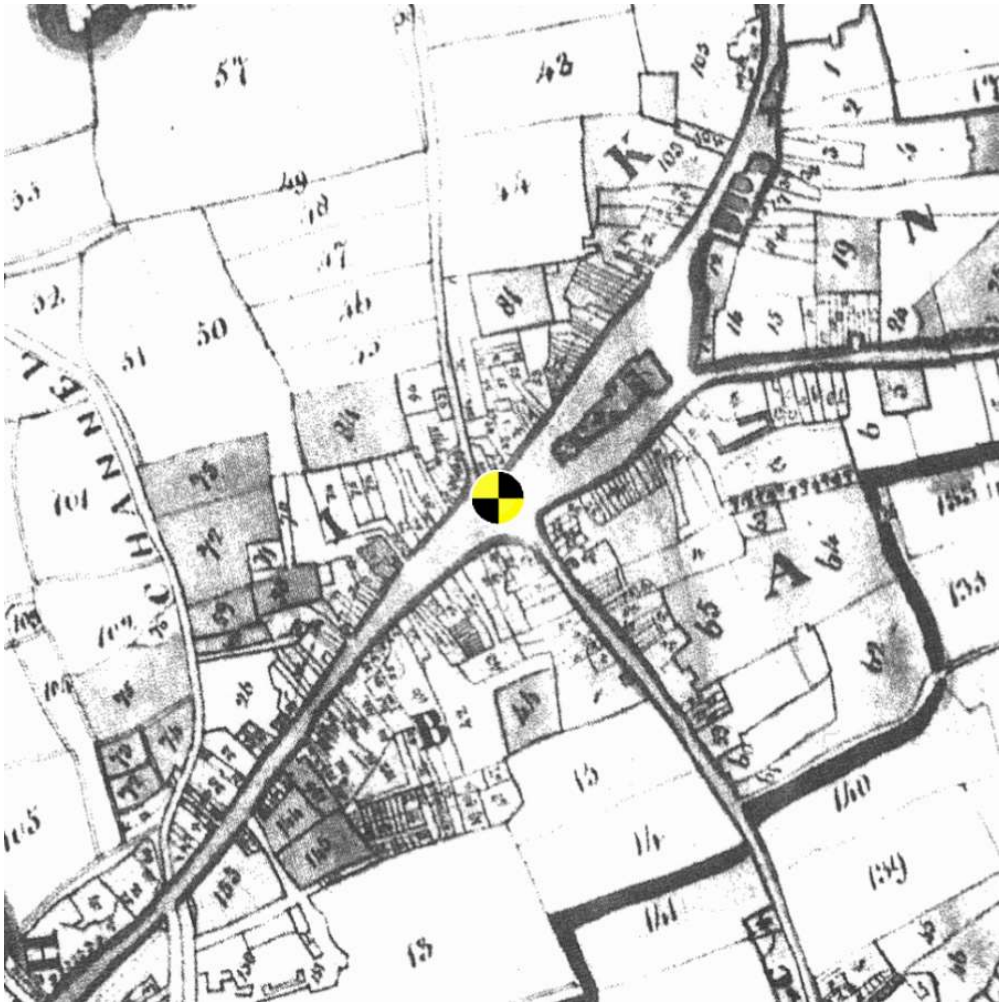

Figure 3: Extract from Clayton's map of 1821, showing the approximate shaft location.

3.6 The site can be accurately located on the Ordnance Survey 1st Edition 25-inch map of 1867 (Figure 4). Wyld's survey of 1848 and the Tithe map of 1853, albeit less detailed, show a similar picture.

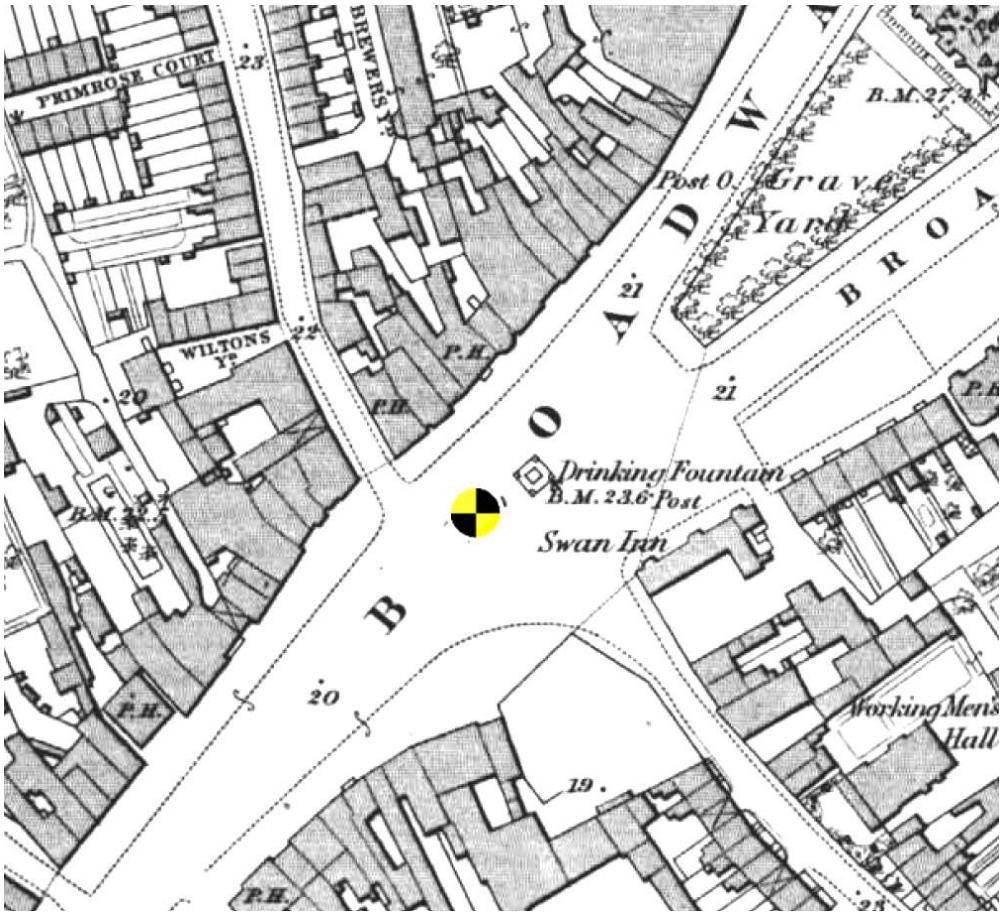

Figure 4: Shaft B4 location (to scale) in relation to the OS 1st Edition 25-inch map of 1867.

3.7 In March 2008 an archaeological watching brief took place during excavation of trial trenches on the site (Site Code BBF 08). Two trenches were excavated, respectively 18m and 20m in length and orientated northeast-southwest and northwest-southeast across the site of the shaft (Figure 5). These were excavated to a depth of *c* 1.5m below the existing road surface, but exposed only modern made ground plus services and associated backfill[2].

Consequently the potential survival and nature of any archaeological remains or features could not be established. The base of the modern deposition was not found, and it is not known whether this overlies or truncates earlier deposits.

[2] Cummings, R. April 2008. 'Broadway Flood Alleviation Scheme, Trial Hole B4 Stratford, London Borough of Newham, An Archaeological Watching Brief *Compass Archaeology Interim Report.*

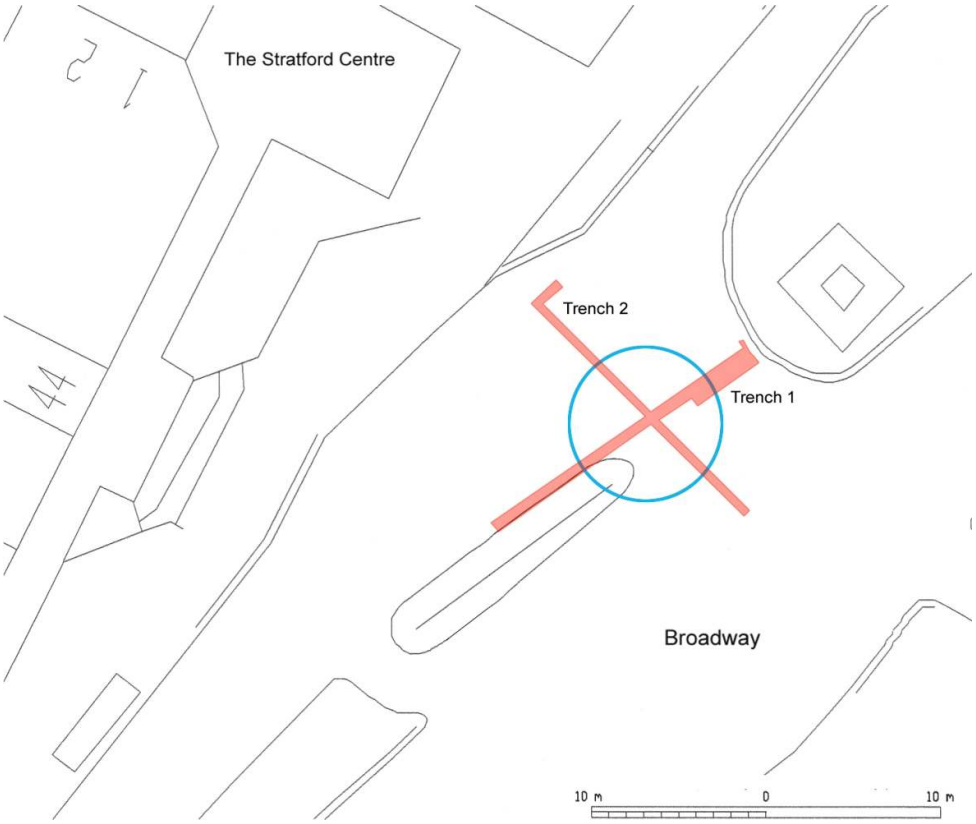

Figure 5: Location of the shaft (blue) and 2008 trial trenches (red) based on Thames Water Utilities Engineering Drg No: 6HDG-A1-05002-EX.

3.8 A borehole was excavated about 20m to the northeast of the shaft location (Fugro Engineering Services 2008; *Report No: WAL070176*, BH606). The borehole revealed up to 3.9m of apparently recent made ground, overlying a slightly gravely sandy clay with pockets of silty fine sand that was interpreted as the top of the London Clay Formation.

3.9 Past map evidence indicates that the site has remained consistently within the open road and has not otherwise been developed. However the work described above indicated that there might have been considerable disturbance, perhaps localised extraction of the River Terrace Gravels or services. It is understood that a deep sewer (*c* 5-6m below ground level) runs near the site, and this may well have been laid within an open-cut trench.

3.10 The archaeological watching brief (site code BBF08)

In March 2008 an archaeological watching brief took place during excavation of trial trenches on the site. Two trenches were excavated, respectively 18m and 20m in length and orientated northeast-southwest and northwest-southeast across the are of the proposed shaft (Figure 5). These were excavated to a depth of *c* 1.5m below the existing road surface, but exposed only modern made ground plus services and associated backfill.

Consequently the potential survival and nature of any archaeological remains or features could not be established. The base of the modern deposition was not found, and it is not known whether this overlies or truncates earlier deposits[3].

4. Archaeological Research Questions

The site presented an opportunity to address several research questions. These included:

- What is the natural geology of the site? In particular: are the Terrace Gravels present, and is there any evidence that these are overlain by alluvium from the floodplain of the Lea?
- Is there any evidence for prehistoric activity, and is this *in situ* or represented by residual material?
- Is there any evidence for Roman activity, and in particular for the Roman road or associated features such as roadside ditches?
- Is there any evidence for Saxon or medieval activity? Can the nature of this be defined –*e.g.*, occupation or agriculture – and does it shed any light on the historic settlement?
- What evidence is there for post-medieval activity, and does this add anything to what is known from cartographic sources?
- Is there evidence for the deep truncation indicated by the nearby borehole, and if so what is the date of this and what does it relate to?

5. The Archaeological Programme

5.1 Standards

The field and post-excavation work was carried out in accordance with English Heritage guidelines (in particular, *Standards and Practices in Archaeological Fieldwork, Guidance Paper 3*). Works also conformed to the standards of the Institute for Archaeologists (*Standard and Guidance for Archaeological Watching Briefs*). Overall management of the project was undertaken by a full Member of the Institute.

The recording system followed the procedures set out in the Museum of London recording manual. By agreement the recording and drawing sheets used were directly compatible with those developed by the Museum.

5.2 Fieldwork

The basic watching brief involved one archaeologist on site to monitor the contractor's groundworks and to investigate and record any remains.

Adequate time was allowed for investigation and recording, although every effort was made not to disrupt the contractors' programme.

[3] *Ibid.*

English Heritage were advised of the start date of groundworks. Both the Client and Heritage were kept advised of the progress of the fieldwork.

5.3 Methodology

Archaeological remains were investigated and recorded in stratigraphic sequence, with the application of additional techniques where appropriate.

All strata, deposits and features were recorded as appropriate on *pro-forma* sheets by written and measured description, and drawn in plan and/or section (generally at scales of 1:10 or 1:20). The investigations were recorded on a general site plan and related to the Ordnance Survey grid. The fieldwork record was supplemented as appropriate by photography (digital/ 35mm).

6. Post-Excavation Work

6.1 Finds and samples

No finds or samples were recovered from the watching brief, but provisions were in place for any finds or samples to be treated in accordance with the appropriate guidelines, including the Museum of London 's *'Standards for the Preparation of Finds to be permanently retained by the Museum of London'*. Finds and artefacts would have been retained and bagged with unique numbers related to the context record, although building material may have been discarded following assessment. Appropriately qualified staff would have undertaken assessment of finds and samples.

6.2 Report Procedure

The fieldwork was followed by processing of data, assessment of the site record and compilation of this report, and by ordering of the archive.

Copies of the report will be supplied to the Client, English Heritage, local planning authority and the local studies library.

A short summary of the fieldwork will be appended using the OASIS Data Collection Form, and in paragraph form suitable for publication within the 'excavation round-up' of the *London Archaeologist*.

7. The site archive

The records will be ordered, *etc*., in line with MoL *Guidelines for the Preparation of Archaeological Archives* and will be deposited in the Museum of London Archaeological Archive. The integrity of the site archive should be maintained, and the landowner will be urged to donate any archaeological finds to the Museum.

8. The Archaeological Watching Brief

Archaeological monitoring was undertaken in two phases. Initially the archaeological monitoring involved the recording of three small trial pits in the area of the main shaft in which several shallow services and related deposits were exposed (*cf.* Section 8.1 below). This work commenced on 20th July 2010. The second phase of monitoring was undertaken during the excavation of the main shaft and construction of the collars. Works were observed to the depth of undisturbed natural deposits (*cf.* Section 8.2 below) and were completed by 1st September 2010.

8.1 Trial Pits

Three trial pits were excavated in the area of the main shaft prior to major excavation works. The dimensions and basic observations are recorded in Table 1 below and should be read in conjunction with the following Figures. All the pits exposed concrete hardcore to varying depths between 0.3m and 0.9m below the existing ground surface. Modern services and related backfill deposits were exposed in all pits; no archaeological finds or features were observed.

Pit	Dimensions (m)			Observations
	Length	Width	Depth	
A	1.9	1.2	1.1	Concrete and service backfills, iron pipes and ducts.
B	1.0	0.9	0.75	Concrete over sand and shingle with small service cable.
C	2.0	0.8	1.2	Street light cable and two ceramic cased cable of unknown use/origin (possible related to the former tramlines).

Figure 6: Locations of trial pits outside the Stratford Centre (July 2010). Trial pit A is to the left of the scale, Test pit B is just to the right of the scale (by the wooden board) and Test pit C is in the foreground to the right of the image.

Figure 7: Trial pit A (1m scale).

Figure 8: Trial pit B (1m scale).

Figure 9: Trial pit C (1m scale) showing modern imported sand deposits.

8.2 Main Shaft Excavation

Excavation of the main shaft was observed on during September 2010. The shaft had an internal diameter of 6m with 1m concrete collars and was excavated from the outside using a long-armed mechanical excavator (*cf*. Figure 10 below). The shaft excavations were observed to the depth of undisturbed natural London Clay deposits, *c*. 3.9m below the existing ground level. The heavily truncated natural deposits were overlain by a series of modern made-ground deposits for the full 3.5m depth. These deposits consisted of bands of redeposited orange-brown gravels, imported sand and gravel ballast and dark-brown/black gravels and sands. A large area of modern concrete, presumably service related, was observed in the northwest facing section and a section of modern red-brick ashlar man-hole shaft was observed in the southeast facing section. No major services or modern intrusions were observed to account for the depth of modern backfills and ground makeup. It is possible that the shaft lies within the extent of modern sewer set within a wide cut trench. No archaeological finds or features were observed during the course of the shaft excavation.

Figure 10: The main shaft outside the Stratford Centre.

Figure 11: Inside the shaft during excavation showing mixed layers of modern made-ground.

Figure 12: Banded layers of probable redeposited natural orange sand and gravels with modern dark-brown/black made-ground and lighter brown deposits.

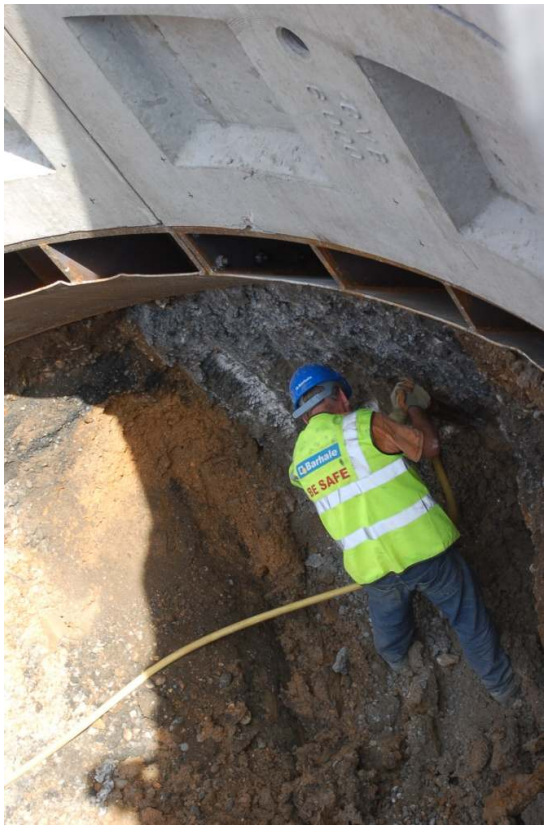

Figure 13: Excavation of the concrete in the southeast corner using a mechanical drill.

9. Summary and Conclusions

9.1 Excavations prior to, and during the construction of Shaft B4 on the Broadway, Stratford as part of the Thames Water Flood Alleviation Scheme exposed modern services, associated deposits and made-ground to a depth of 3.5m below the existing ground surface. Services were exposed in the upper levels (up to *c*. 1.2m in depth) during the excavation of initial trial holes. Excavation of the main shaft exposed bands of redeposited sand and gravels, imported ballast and modern made-ground deposits; modern concrete and red-brick were observed in section. No archaeological finds or features were observed during the course of the archaeological watching brief.

9.2 Archaeological Research Questions

- What is the natural geology of the site? In particular: are the Terrace Gravels present, and is there any evidence that these are overlain by alluvium from the floodplain of the Lea?
  Natural London Clay was observed at c. 3.5m below the existing ground level. No evidence for in-situ gravels or alluvial deposits was recorded. However, the area was heavily truncated and redeposited gravels and sand were observed in modern made-ground layers.

- Is there any evidence for prehistoric activity, and is this *in situ* or represented by residual material?
  No evidence for prehistoric activity was observed.

- Is there any evidence for Roman activity, and in particular for the Roman road or associated features such as roadside ditches?
  No evidence for Romon activity was observed.

- Is there any evidence for Saxon or medieval activity? Can the nature of this be defined –*eg*, occupation or agriculture – and does it throw any light on the historic settlement?
  No evidence for Saxon or medieval activity was observed.

- What evidence is there for post-medieval activity, and does this add anything to what is known from cartographic sources?
  No evidence for post-medieval activity was observed.

- Is there evidence for the deep truncation indicated by the nearby borehole, and if so what is the date of this and what does it relate to?
  A similar level of deep truncation was observed in the main shaft area (to a depth of c. 3.5m). However, no evidence for the date or nature of this truncation was recorded.

10. Sources Consulted

Cummings, R. April 2008. 'Broadway Flood Alleviation Scheme, Trial Hole B4 Stratford, London Borough of Newham, An Archaeological Watching Brief *Compass Archaeology in-house Interim Report.*

King, G. 7th May 2010. 'Thames Water Utilities: 6HDG – Broadway Flood Alleviation Scheme Stratford E15, London Borough of Newham. Shaft B4: Written Scheme of Investigation for an Archaeological Watching Brief During Construction *'Compass Archaeology In-house document.*

APPENDIX I: OASIS Data Collection Form

OASIS ID: compassa1-83597

Project details

Project name	Thames Water Utilities Broadway Flood Alleviation Scheme, Shaft B4: An Archaeological Watching Brief
Short description of the project	An archaeological watching brief carried out during construction of a Thames Water shaft as part of the Broadway Flood Alleviation Scheme, Stratford E15, London Borough of Newham.
Project dates	Start: 20-07-2010 End: 01-09-2010
Previous/future work	Yes / No
Any associated project reference codes	BBF08 - Sitecode
Type of project	Recording project
Site status	Local Authority Designated Archaeological Area
Current Land use	Transport and Utilities 1 - Highways and road transport
Monument type	N/A None
Significant Finds	N/A None
Investigation type	'Watching Brief'
Prompt	Water Act 1989 and subsequent code of practice

Project location

Country	England
Site location	GREATER LONDON NEWHAM STRATFORD Thames Water Utilities Broadway Flood Alleviation Scheme, Shaft B4
Postcode	E15
Study area	28.25 Square metres
Site coordinates	TQ 38895 84340 51.5403480141 0.00305627119151 51 32 25 N 000 00 11 E Point

Project creators

Name of Organisation	Compass Archaeology
Project brief originator	English Heritage/Department of Environment
Project design originator	Compass Archaeology
Project director/manager	Geoff Potter
Project supervisor	Rosie Cummings
Type of sponsor/funding body	Thames Water Utilities
Name of sponsor/funding body	Thames Water Utilities

Project archives

Physical Archive Exists?	No
Digital Archive recipient	Museum of London archive
Digital Contents	'none'
Digital Media available	'Images raster / digital photography'
Paper Archive recipient	Museum of London Archive
Paper Contents	'none'
Paper Media available	'Report','Unpublished Text'

Project bibliography 1

Publication type	Grey literature (unpublished document/manuscript)
Title	Thames Water Utilities Broadway Flood Alleviation Scheme, Shaft B4: An Archaeological Watching Brief
Author(s)/Editor(s)	Cummings, R
Date	2010
Issuer or publisher	Compass Archaeology
Place of issue or publication	5-7 Southwark St
Description	22-page bound report

Entered by	Rosie Cummings (mail@compassarchaeology.co.uk)
Entered on	30 October 2010

APPENDIX II: London Archaeologist Summary

Site Address:	Shaft B4, Broadway Flood Alleviation Scheme, Stratford E15, London Borough of Newham.
Project type:	Watching brief
Dates of Fieldwork:	20th July – 1st September 2010
Site Code:	BBF08
Supervisor:	Rosie Cummings
NGR:	TQ 38895 84340
Funding Body:	Thames Water Utilities

Trial pits excavated in advance of the main construction works exposed modern services and associated backfills to a depth of 1.2m below the existing ground level. Subsequent construction of the main shaft exposed made-ground to a depth of 3.5m, directly overlying truncated natural deposits of London Clay. No archaeological finds or features were observed during the course of the watching brief.