

61 Southwark Street, London Borough of Southwark: An Archaeological Evaluation and Geotechnical Borehole Monitoring Report

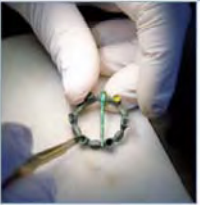
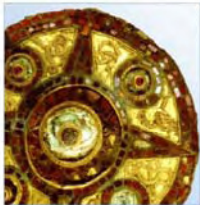
Planning Reference No: 14/AP/3204

National Grid Reference Number: 532194, 180153

AOC Project No: 32839

Site Code: SWS15

Date: March 2015



61 Southwark Street, London Borough of Southwark: An Archaeological Evaluation and Geotechnical Borehole Monitoring Report

On Behalf of: RPS Planning and Development
14 Cornhill
London
EC3V 3ND

National Grid Reference (NGR): 532194, 180153

AOC Project No: 32839

Date of Fieldwork: 9th – 16th March 2015

Prepared by: Tony Walsh

Illustration by: Lesley Davidson

Date: March 2015

This document has been prepared in accordance with AOC standard operating procedures.

Author: Tony Walsh	Date: March 2015
Approved by: Melissa Melikian	Date: March 2015
Draft/Final Report Stage: Draft	Date: March 2015

Enquiries to: AOC Archaeology Group
Unit 7
St Margarets Business Centre
Moor Mead Road
Twickenham
TW1 1JS

Tel. 020 8843 7380
Fax. 020 8892 0549
e-mail. london@aocarchaeology.com



www.aocarchaeology.com

Contents

Page

List of Illustrations	ii
List of Plates	ii
1. Introduction.....	4
2. Historical and Archaeological Background	4
3. Strategy	7
4. Results	8
5. Conclusion	11
6. Publication and Archive Deposition	12
7. Bibliography.....	12
Appendix A – Context Register.....	18
Appendix B – OASIS Form	19
Appendix C – Borehole Monitoring	20

List of Illustrations

- Figure 1: Site Location
- Figure 2: Detailed Site Location and Trench Plan
- Figure 3: Trench Plans and Sections

List of Plates

- Plate A: Base of Trench looking south
- Plate B: Surface (102) during excavation, looking west
- Plate C: Section above concrete surface (102), looking north

Non-Technical Summary

An archaeological evaluation and geotechnical borehole monitoring was undertaken by AOC Archaeology Group, between 9th and 16th March 2015, in advance of proposed redevelopment at 61 Southwark Street, London Borough of Southwark (NGR 532194, 180153).

The evaluation consisted of the excavation of one trench, measuring 10m by 2.0m at base. The machining of the trench was carried out under constant archaeological supervision. Two site investigation boreholes were undertaken using a cable percussion rig; one was in proximity to the trench, the other at the front of the building. In order to clarify the nature of the sub-surface stratigraphy, in particular the presence and thickness of alluvium (including peat) across the site, and to evaluate the potential of the sedimentary sequences for reconstructing the environmental history of the site, and its environs, one of the two geotechnical boreholes at the site was monitored and a programme of deposit modelling undertaken.

The geoarchaeological investigations and subsequent deposit modelling have demonstrated that the site lies on the southern margin of the Bankside Channel. In borehole BH1 the sequence of Holocene sedimentation overlying the Shepperton Gravel is similar to that recorded elsewhere within the Bankside Channel, incorporating a horizon of lower, sandy alluvium, peat and clayey upper alluvium, overlain by made ground. The peat however is significantly higher, than sites in the area, recorded at between 0.6 and 0.9m OD. It is possible that the higher elevation of the peat represents upslope migration of the peat surface; alternatively it may represent a separate, later episode of peat accumulation. No peat was seen in BH2.

The earliest context identified in the trench was a grey sand which was covered by brown alluvial clay. No evidence was found for a continuation of the nearby Roman cemetery excavated at America Street into the development area. Above this was a layer of dark silt, which may represent the early post-medieval ground level. The later deposits were two phases of concrete slab with associated make up and levelling layers 1.25m deep. The earlier concrete was present at 0.8m below the current ground level. At the west end of the trench was a substantial foundation c2.2m high constructed of brick upon a sandstone footing. This probably represents the outer wall of the 'Hop Warehouse' recorded by the late 19th century Ordnance Survey mapping.

Due to the lack of archaeological deposits, other than the forthcoming watching brief, no further field or laboratory work is recommended. The results will be summarised for inclusion in the London Fieldwork Round-Up and published via the Archaeological Data Service (ADS) website. On completion of the project, the archive, consisting of paper records, drawings and digital photographs, will be deposited with the London Archaeological Archive and Research Centre.

1. Introduction

1.1 Site Location

- 1.1.1 This document details the results of an archaeological evaluation and geotechnical borehole monitoring, in advance of proposed redevelopment and monitoring of site investigation boreholes at 61 Southwark Street, London Borough of Southwark; National Grid Reference 532194, 180153 (Figure 1).
- 1.1.2 The site is located within the London Borough of Southwark at the south-east corner of the junction between Southwark Street and Great Guildford Street. The site is currently occupied by a nine storey building constructed in the early 1960's and the evaluation trench was located in a service yard to the rear accessed from Great Guildford Street (Figure 2). Two boreholes were excavated at the site; one in proximity to the trench, the other at the front of the building (Figure 2).

1.2 Planning Background

- 1.1.3 The local planning authority is the Southwark Council. Archaeological advice to the council is provided by Dr Chris Constable.
- 1.1.4 The site lies within the Borough, Bermondsey and Rivers Archaeological Priority Zone as designated by Southwark Council. This is the largest Archaeological Priority Zone in the borough and incorporates the Roman and medieval settlement and the historic settlement areas of Bankside, Bermondsey and Rotherhithe.
- 1.1.5 The application site does not contain any previously designated or recorded heritage assets. There are no Scheduled Ancient Monuments, Registered Battlefields, Registered Park and Gardens or World Heritage Sites within close proximity to the site.
- 1.1.6 A desk-based assessment was undertaken by RPS (RPS 2014a) which provides a detailed archaeological background. In discussion with Dr Constable it was recommended that the most appropriate next phase of works would be a single archaeological trial trench within the current open car park (to establish the presence/absence of Roman burials) and archaeological monitoring of two site investigation boreholes being undertaken.
- 1.2.5 A written scheme of investigation (WSI) (RPS 2014b) was prepared as a method statement for the trial trench evaluation, monitoring of the boreholes and also a watching brief on areas of basement extension, which was approved by the archaeological advisor prior to the start of work on site.

1.3 Geology and Topography

- 1.3.1 Geological mapping for the area indicates that the geology underlying the application site comprises London Clay overlain by Kempton Park Gravel and Alluvium (BGS Sheet 256).
- 1.3.2 The underlying topography of the area is formed of alluvial clays over sand and gravel islands (eyots) separated by alluvially filled channels. North Southwark has experienced land reclamation from the Roman periods and after, with intermittent riverine inundation until river side embankments were constructed in the 14th century (Heard 1990). To the immediate south of the site excavations at America Street (AOC 2002; Melikian 2007) found natural sand at 1.1m OD.

2. Historical and Archaeological Background

- 2.1 The following information has been drawn from the desk-based assessment and WSI produced by RPS for the proposed development (RPS 2014a and 2014b) and nearby work carried out by AOC (AOC2002, 2014a and Melikian 2007).

2.1 Prehistoric Periods (c.500,000 BC – AD 43)

- 2.1.1 The northern half of the modern day Borough of Southwark lies within the historic floodplain of the River Thames. The type and range of any past human activity in the Southwark area would have been influenced by the naturally changing ground and climatic conditions created by the river; the course and level of which has fluctuated throughout the period of human habitation in this area (which began some 12,000 years ago during the Mesolithic period - c. 10000 to 4000 BC).
- 2.1.2 Topographic studies have suggested that during the Mesolithic period, the Thames was a multi-channelled course running further southwards than its current route; creating small sand and gravel eyots / islands where the land remained topographically higher than the surrounding river and flood plain (Sidell et al. 2002). By c. AD 50 the Thames is likely to have comprised a broad channel over 100m wider than today (Yule 1988) and much of the area of north Southwark was still formed of a series of gravel and sand eyots, separated by braided river channels and mudflats (Sidell *et al.* 2002).
- 2.1.3 It is likely that the nature of these eyots remained generally consistent from the early prehistoric through to the early Roman periods; although the area of exposed, useable, land would differ depending upon sea level change and the point of the tidal head (PCA 2000). The more substantial and permanent forms of any settlement activity would have been largely restricted to those areas of higher, dryer land; whilst the lower lying areas would have most likely been used for seasonal, agricultural or ritual activities (AOC 2012).
- 2.1.4 Evidence for prehistoric activity within the study area is primarily from residual findspots which are rarely found *in-situ* a crouched burial to the west of Great Guildford Street might be of prehistoric date (C. Constable pers comm.).
- 2.1.5 Late Bronze Age pottery from a pit and prehistoric peat deposit were recorded at the Courage Brewery site to the north-east.

2.2 Roman Period (AD 43 – AD 410)

- 2.2.1 The focus of Roman settlement in Southwark was located in the area of the sand and gravel eyots extending between the southern head of the Roman bridge (approximately, modern day London Bridge / Bermondsey High Street) and the point of convergence of Watling Street (modern Old Kent Road), which lead to Dover, and Stane Street, which lead to Chichester (AOC 2009a; 2010).
- 2.2.2 By the end of the 1st century AD, expansion around the bridge and port facilities had increased the wealth and population of the settlement (Cowan et al. 2009) with Roman Southwark reaching the peak of development by the late 3rd century (AOC 2014b). During the 4th century, changing river levels caused a decline in the port facilities and increased the number of flooding episodes, leading to the decline and abandonment of many of the settlements, buildings and facilities (AOC 2013).
- 2.2.3 A complex Roman cemetery was excavated to the immediate south between America Street and Keppel Row (AOC 2002; Melikian 2007) with natural surface at a depth of c.2.9m (c.1.1m OD). Its northern extent was clearly extending north beyond America House and it was thought that burials were likely to extend beneath the southern area of 61 Southwark Street site (RPS 2014a, p23).
- 2.2.4 At 51-53 Southwark Street to the east and north-east were found bankside revetment of the Southwark Street Channel waterfront, associated with Roman buildings placed on reclaimed land. It was thought that the revetment could extend beneath the present site to the north of the cemetery.

2.3 Early Medieval (AD 410 – AD 1066) and Medieval Periods (AD 1066 – AD 1536)

- 2.3.1 The *Burghal Hidage* of c. AD 915 contains the first documentary reference to Southwark; here it is recorded as '*Suthringa Geweorc*' or '*Sud Geweorc*', with the Anglo-Saxon place name translating as 'the fort or defence work of the people of Surrey' (Watson 2009). Further historical sources document Southwark in the 9th, 10th and 11th centuries and include reference to a number of battles in the area, such as the destruction of the bridge by Olaf the Norwegian in 1014, along with the siege of London by the Danish King Cnut in 1016 (Malden 1912).
- 2.3.2 Southwark is recorded in the Domesday Survey of 1086 as a relatively prosperous settlement with a dock, herring fishery and 50 houses in the possession of 11 manorial landowners (Tames 2001). Domesday also mentions a *monasterium* (minster) but no additional documentary sources or archaeological remains have yet been discovered to support this reference or postulate a location (Reilly & Marshall 2001). At the time of Domesday, the population of Southwark is estimated to have been no more than a few hundred.
- 2.3.3 The population and settlement of Southwark expanded during the medieval period to cover an area around nine acres in size by the mid 13th century. In the 13th century the demand for land exceeded the available dry ground provided by the natural topography of the area and land began to be reclaimed for the first time since the Roman occupation. The riverfront and land to the south, including the site; was owned by the Bishops of Winchester, who had embankments constructed to control the river and ditches dug to drain the land (Reilly & Marshall 2001; RPS 2014a).
- 2.3.4 As the Southwark area developed during the medieval period it became an attractive 'up-market' residential area, which housed over a dozen religious and secular houses and palaces, including homes of the Bishops of Winchester and Rochester; the Abbots of Hyde, Battle, Beaulieu, Waverley and St. Augustine (Canterbury) and the Priors of Lewes, St. Swithin's and Winchester. However, by the early 16th century the affluent residences had begun to give way to more industry and commercial properties, such as inns and taverns and were sold off into smaller tenements and dwellings (Tames 2001).
- 2.3.5 The desk-based assessment (RPS 2014a) indicated that the site had low potential for Saxon or medieval remains, excepting alluvium of low significance.

2.4 The Post-Medieval (AD 1536 – AD 1900) and Modern (AD 1900 – Present) Periods

- 2.4.1 The post-medieval period in Southwark was characterised by an increasing population, settlement expansion and an emergence of industry. By the end of the reign of Queen Elizabeth I, Southwark's population had increased significantly to around 19,000, with this figure continuing to rise despite outbreaks of plague, reaching around 32,000 by 1680 (Tames 2001).
- 2.4.2 The map regression carried out for the assessment indicated that the site lay within agricultural land until the 19th century and the development of Southwark Street. In 1879 the Ordnance Survey shows the majority of the site is covered by 'Hop Warehouses', these were operated by Wigan Richardson and Co in 1924, when surveyed for the Goad fire insurance map. The warehouses were five stories high with a basement (RPS 2014a).
- 2.4.3 The WWII bomb damage map shows that significant damage occurred to the site during the Second World War, although the buildings in northwest of the site were repairable, those in the southwest part and to the south suffered 'total destruction' (ibid).

2.4.4 In the 1960's the site was redeveloped with the construction of the present 61 Southwark Street; consisting of a large concrete building of 5-6 storeys and a basement, and a service yard to the rear accessed from Great Guildford Street.

3. Strategy

3.1 Aims of the Archaeological Investigation

Trial Trench

3.1.1 The general aims of the archaeological evaluation were defined as being:

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

3.1.2 The specific aims of the archaeological evaluation were defined as being:

- To establish whether the Roman burial ground between America Street and Keppel Row extends into the present site.
- To provide information on density as well as presence of archaeological remains which will enable a view to be taken on potential impact from remaining piles.

Borehole Monitoring

3.1.3 The general aim of monitoring the boreholes was:

- To review the sediment sequences from an archaeological and geo-archaeological perspective and assist a final decision on whether a more detailed sequence of sediments should be extracted for scientific analysis as a form of mitigation for piling.
- To inform current deposit modelling for the Bankside and Southwark Street Channels (Cowan et al 2009; Killock 2005).

3.2 Methodology

3.2.1 Work was undertaken as set out in the written scheme of investigation (RPS 2014b). All work was carried out in accordance with local and national guidelines (ClfA 20014, EH 2008 & 2009) as required by the WSI, Section 6 (RPS 2014b). Fieldwork procedures followed the Museum of London Archaeological Site Manual (MoL 1994).

3.2.2 The proposed works outlined the excavation of one evaluation trench, measuring 10m by 2.0m at base. The trench was shored to reach the required depth. The machining was carried out using a 5 tonne and a 2.5 tonne 360 degree tracked excavators with a smooth bladed ditching bucket, under the constant supervision of the archaeological Project Supervisor.

3.2.3 Two site investigation boreholes were undertaken by Geotechnical and Environmental Associates Limited (GEA) using a cable percussion rig; one was in proximity to the trench, the other at the front

of the building (Figure 2). In order to clarify the nature of the sub-surface stratigraphy, in particular the presence and thickness of alluvium (including peat) across the site, and to evaluate the potential of the sedimentary sequences for reconstructing the environmental history of the site, and its environs, one of the two geotechnical boreholes at the site was monitored by Quaternary Scientific and a programme of deposit modelling undertaken. The data from both boreholes was compared to that recovered from nearby investigations, including at 65 Southwark Street (Batchelor et al., 2011b), Surrey House (Batchelor et al., 2012), Bear House (Young et al., 2010) and Bear Lane (Tan, 2008), towards the northern edge of the Bankside Channel (ca. 300m to the west).

- 3.2.4 A unique site code for the project (**SWS15**) was assigned to the project and was used as the site identifier. The Museum of London were notified of the project prior to the fieldwork.
- 3.2.5 The evaluation was conducted by Tony Walsh and Catherine Edwards under the overall management of Melissa Melikian, AOC Operations Director. Rob Masefield at RPS was the consultant. The site was monitored by Dr Chris Constable, Archaeological Advisor for Southwark Council.

4. Results

4.1 Trench 1 (Figure 3)

Table of the stratigraphic sequence

Context No	Depth	Height of Deposit (mOD)	Description/Interpretation
(100)	0.10m	3.38m – 3.28m	Concrete surface, current yard level.
(101)	0.60m	3.28m – 0.68m	Made ground. Demolition rubble including iron windows, and girders.
(102)	0.20m	2.68m – 2.48m	Concrete surface with thin tarmac skim, previous yard
(103)	0.30m	2.48m – 2.18m	Made ground, brick rubble.
(104)	0.30m	2.18m – 1.88m	Dark clay silt, post-medieval cultivation soil.
(105)	0.90m	1.88m – 0.98m	Brown clay, alluvial deposit.
(114)	0.12m	0.98m – 0.86m	Mixed orange and grey sand, natural deposit.
(106)	Not exc	0.98m – +	Grey sand, natural deposit.

- 4.1.1 The trench was orientated generally east-west within the southeast part of the site, measuring 10m x 2.0m at base (Figure 2).
- 4.1.2 The trench was shored and dug to a depth of 2.70m at the east end and in the centre. At the west end excavation was restricted by the presence of a 19th century wall.
- 4.1.3 Natural geology (106); grey sand with small flint stones, was revealed at 2.7m below ground level, 0.98mOD (Figure 3, Section 1; Plate A). In the central part of the trench this was overlain by (114) mixed grey and orange sand 0.14m thick, also interpreted as a naturally formed deposit.
- 4.1.4 Above (114) and (106) across the whole trench was brown alluvial clay (105) 0.90m thick, at 1.88mOD. A residual abraded sherd of Roman pottery was recovered from the base of this layer.

- 4.1.5 Above (105) was a (104) dark clay silt, 0.35m thick. This was interpreted as post-medieval cultivation soil. Finds recovered from this layer included fragments of domestic pottery dating from the 19th century.



Plate A: Base of Trench looking south

- 4.1.6 At the west end of the trench the cultivation soil (104) and brown clay (105) was truncated by the construction cut [112] for a substantial foundation for a wall [108] (Figure 3 Plate). The wall was based upon a cut sandstone foundation (upper surface 1.2m AoD) and constructed of nine stepped courses of red brick, and six vertical courses below a cut sandstone kerb (107) at 2.68mOD. At this level the kerb formed the east edge of an area of paving (109) which occupied the west end of the trench. The paving was bounded to the west by a parallel brick wall [110] exposed in the west section of the trench. It is possible that the two walls and paving represent an internal corridor of the nineteenth century warehouse building, with the exposed wall [108] being the outside wall facing onto the yard space.
- 4.1.7 Abutting the kerb (107) to the west was a levelling layer of brick rubble (103) 0.3m thick, which extended for the full length of the trench. This was the level sub-base for a concrete surface with a skim of tarmac (102) 0.20m thick, at 2.68mOD (Plate C). The finds recovered from layer (103) were tin-glazed earthenware of mid 17th to early 18th century date; that is earlier than the finds recovered from the cultivation soil (104) below, which suggests the rubble and make up was brought from elsewhere.
- 4.1.8 Above this concrete/tarmac surface (102) was a layer of rubble and demolition waste (101), 0.60m thick, which contained large metal fragments including parts of iron 'crittal' type windows and lengths of riveted iron girders (Plate C). This probably represents demolition of the Hop Warehouse, and suggests it was of similar construction to standing buildings nearby (i.e. the metal box factory opposite on Great Guildford Street). The current concrete yard (100) was laid upon (101), 0.10m thick, at 3.38mOD on its upper surface.



Plate B: Surface (102) during excavation, looking west



Plate C: Section above concrete surface (102), looking north

4.2 Borehole Monitoring

- 4.2.1 In borehole BH1 the sequence of Holocene sedimentation overlying the Shepperton Gravel is similar to that recorded elsewhere within the Bankside Channel, incorporating a horizon of lower, sandy alluvium, peat and clayey upper alluvium, overlain by made ground (Appendix C). The basal unit at the site is a horizon of sand and gravel, the surface of which within the area of the site is recorded at -0.35 (BH1) and 0.90m OD (BH2). Within the general sequence although the peat at 61 Southwark Street was relatively thin (0.3m) it is significantly higher than found elsewhere, recorded at between 0.6 and 0.9m OD.
- 4.2.2 It is possible that the higher elevation of the peat at 61 Southwark Street represents upslope migration of the peat surface; alternatively it may represent a separate, later episode of peat accumulation, at the interface between the wetland and dryland edge, than that recorded to the west.
- 4.2.3 No peat was identified in BH2 and this area appears to have been located on higher gravels.

4.3 Finds

- 4.3.1 During the course of this archaeological investigation seven sherds of pottery were identified from contexts [103] and [104] representative of different periods. The sherds in context [103] are mid 17th to early 18th century examples of tin-glazed earthenware vessels, the earliest being a mid 17th-century charger (TGW A) with polychrome pomegranate decoration. Other tin-glazed ware vessels in context [103] are a plain white glazed (TGW C) ointment pot and mid 17th-century plate (TGW D) decorated with a simple cobalt blue floral band around the rim (TGW D). One sherd of post-medieval red earthenware (PMR) also fits this mid 17th-century date for context [103]. The Creamware (CREA) eggcup in context [104] is of mid 18th to early 19th -century date and is found with a sherd of post-medieval fine red earthenware (PMFR), an Essex product of similar date. Context [103] also produced three fragments of post-medieval roofing tile.
- 4.3.2 A single abraded sherd of possible Roman date recovered from the base of context [105] which may be residual.

5. Conclusion

- 5.1 The geoarchaeological investigations and subsequent deposit modelling have demonstrated that the site lies on the southern margin of the Bankside Channel, where the gravel surface is recorded at -0.35m OD in the north-western area of the site, rising to 0.9m OD in the southeast. In borehole BH1 the sequence of Holocene sedimentation overlying the Shepperton Gravel is similar to that recorded elsewhere within the Bankside Channel, incorporating a horizon of lower, sandy alluvium, peat and clayey upper alluvium, overlain by made ground. The peat however is significantly higher, than sites in the area, recorded at between 0.6 and 0.9m OD. It is possible that the higher elevation of the peat represents upslope migration of the peat surface; alternatively it may represent a separate, later episode of peat accumulation. No peat was seen in BH2.
- 5.2 The evaluation successfully characterised both the stratigraphic sequence and the archaeological potential of the site. The geology of the site appears to be grey sand, which was observed at the base of the trench, 2.7m below current ground level (0.98m OD). The grey sand was covered by a thin layer of dark silt clay and a deep deposit of brown alluvial clay. This may be a buried soil which was overlain by a deposit generated through the presence of naturally silting water. It is unclear why the cemetery at America Street does not extend onto the site. It may be that there was some physical demarcation in the locality and the cemetery did not extend towards the area of the channel.

- 5.3 The area was clearly in use by the early post-medieval period, sealed by a dark silt which was general across the trench in the early post-medieval period, interpreted as cultivation soils. At the west end of the trench deposits were heavily truncated by a massive foundation. This was interpreted as the outside wall of the 'Hop Warehouse' recorded by the Ordnance Survey 1879 (RPS 2014a Figure 4). The deposits in the trench were overlain by two phases of modern levelling for concrete surfaces. This represents the demolition of the 19th century warehouse and the construction and use of the current 1960's building.
- 5.4 Due to the lack of archaeological deposits, other than the forthcoming watching brief, no further field or laboratory work is recommended. The final decision in regards to the requirement for further archaeological fieldwork lies with Dr Chris Constable, Southwark Council.

6. Publication and Archive Deposition

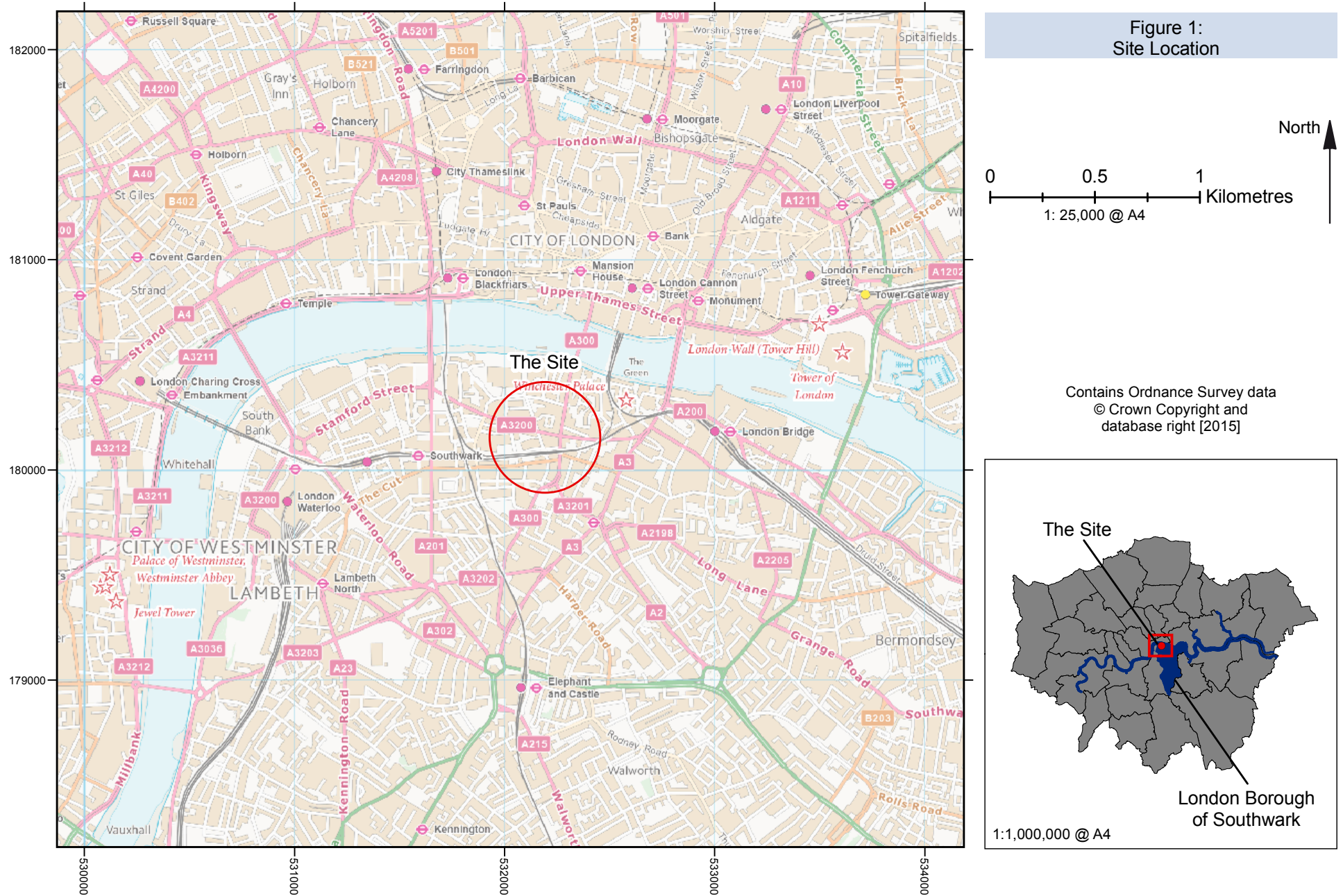
- 6.1 Due to the nature of the results at this stage of the archaeological investigation, publication is expected to be limited to a summary in the London Archaeologist Fieldwork Round-Up and publication via the Archaeological Data Service (ADS) (Appendix B).
- 6.2 On completion of the project, the site archive will be deposited with LAARC. Until this time the archive will be retained at AOC's premises.

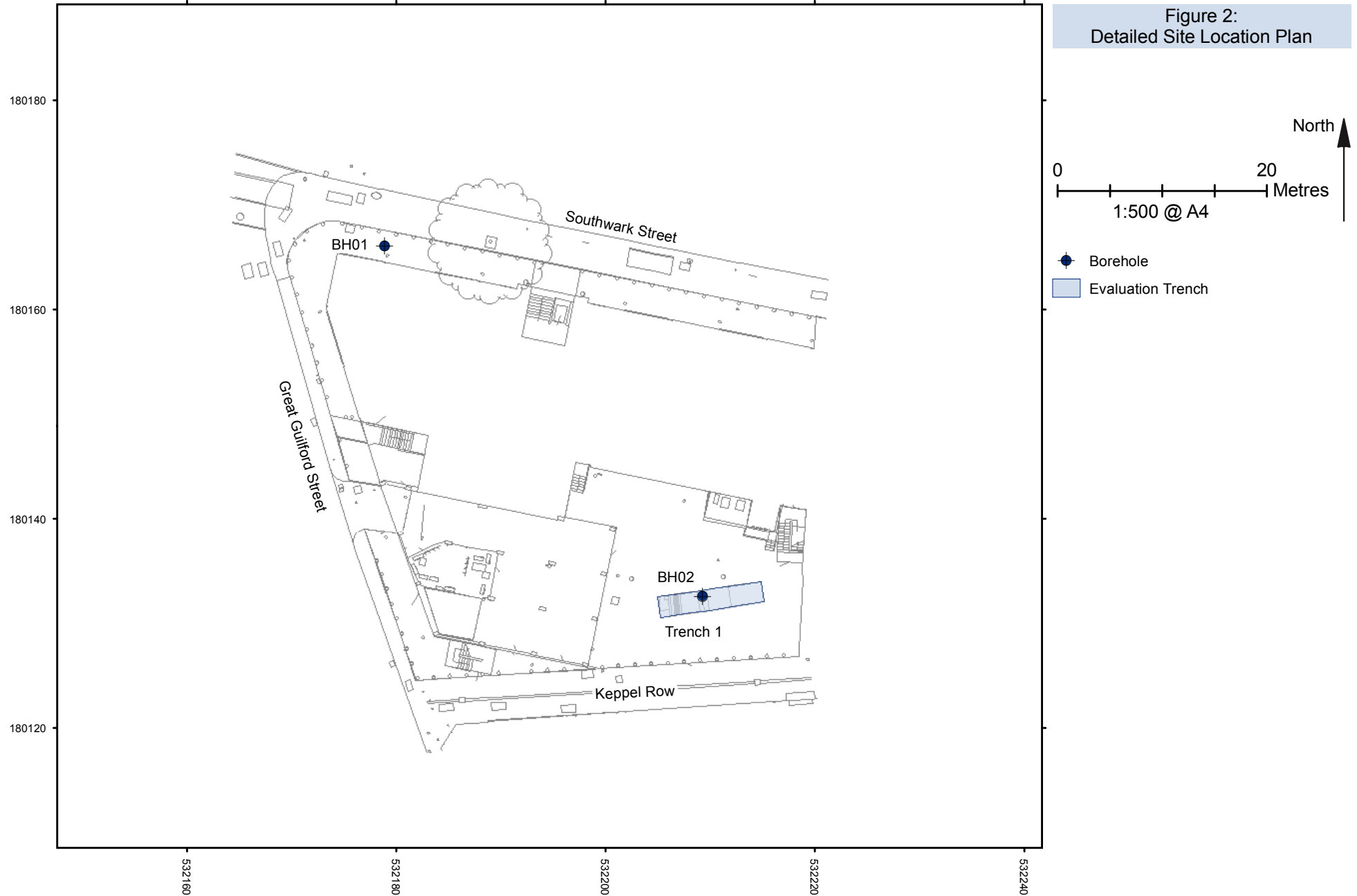
7. Bibliography

- AOC Archaeology (2002) *Post-Excavation Assessment of an Archaeological Excavation: 2 America Street*, London Borough of Southwark
- AOC Archaeology (2012) *89 – 93 Newington Causeway, London Borough of Southwark: An Archaeological Evaluation and Watching Brief Report*
- AOC Archaeology (2014a). *87 Newington Causeway, London Borough of Southwark: Archaeological Desk-Based Assessment*.
- BGS, 2006, 1:50,000 Series. North London. England & Wales Sheet 256
- Cowan, C, Seeley, F, Wardle, A, Westman, A & Wheeler, L, 2009, *Roman Southwark: settlement & economy*. MoLA Monograph 42
- DCLG (2012). *National Planning Policy Framework*.
- English Heritage (1991). *Management of Archaeological Projects*.
- English Heritage (2006). *Management of Research Projects in the Historic Environment*.
- English Heritage (2009a) *Archaeological Guidance Paper 2: Standards and Practices for Written Schemes of Investigation. English Heritage London Region*.
- English Heritage (2009b). *Archaeological Guidance Paper 3: Standards and Practices in Archaeological Fieldwork. (English Heritage London Region)*.
- English Heritage (2009c). *Archaeological Guidance Paper 4: Standards and Practices in Archaeological Reports. (English Heritage London Region)*.
- English Heritage (2011). *Environmental Archaeology: A guide to the theory and practice of methods, from sampling and recovery to Post-excavation*
- Heard K, Sheldon, H, and Thompson P, 1990 Mapping Roman Southwark, *Antiquity* **64**

- Hinton, P, (Ed), 1988 *Excavations in Southwark 1973-6 and 1973-9*, London Middlesex Archaeological Society and Surrey Archaeology Society joint publication **3**, London
- Institute for Archaeologists (IfA 2014) *Code of Conduct*
- Institute for Archaeologists (IfA 2014a) *Standards and Guidance and Guidelines for Finds Work*
- Institute for Archaeologists (IfA 2014b) *Standards and Guidance for Archaeological Watching Briefs*
- Institute for Archaeologists (IfA 2014c) *Standards and Guidance for Archaeological Field Evaluations*
- Killock, D. 2005. "Roman river bank use and changing water levels at 51-53 Southwark Street, Southwark, London". In Transactions of the London and Middlesex Archaeological Society **56**. P27-44.
- Museum of London (1994). *Archaeological Site Manual (3rd ed)*.
- Melikian. M & Sayer, K, 2007, 'Recent Excavations in the 'Southern Cemetery' of Roman Southwark' in. Zakrzewski S,R & White W (eds) Proceedings of the Seventh Annual Conference of the British Association for Biological Anthropology and Osteoarchaeology. BAR International Series **1712**, 2007
- RESCUE & ICON (2001). *First Aid for Finds. (3rd ed)*.
- RPS 2014a *61 Southwark Street, London Borough of Southwark, An archaeological Appraisal*
- RPS 2014b *61 Southwark Street, London Borough of Southwark, Written Scheme of Investigation for Archaeological Evaluation, Geotechnical Borehole Monitoring and Watching Brief.*
- Sidell *et al.* 2002 The prehistory and topography of Southwark and Lambeth, MoLAS Monograph 14, Museum of London / English Heritage
- Society of Museum Archaeologists (1993). *Selection, Retention and Dispersal of Archaeological Collections.*
- United Kingdom Institute for Conservation (1983). *Conservation Guidelines No 2.*
- United Kingdom Institute for Conservation (1990). *Guidance for Archaeological Conservation Practice.*
- Yule B, 1988 *The natural topography of north Southwark*, in Hinton 1988

61 SOUTHWARK STREET, LONDON BOROUGH OF SOUTHWARK:
AN ARCHAEOLOGICAL EVALUATION AND GEOTECHNICAL BOREHOLE MONITORING REPORT





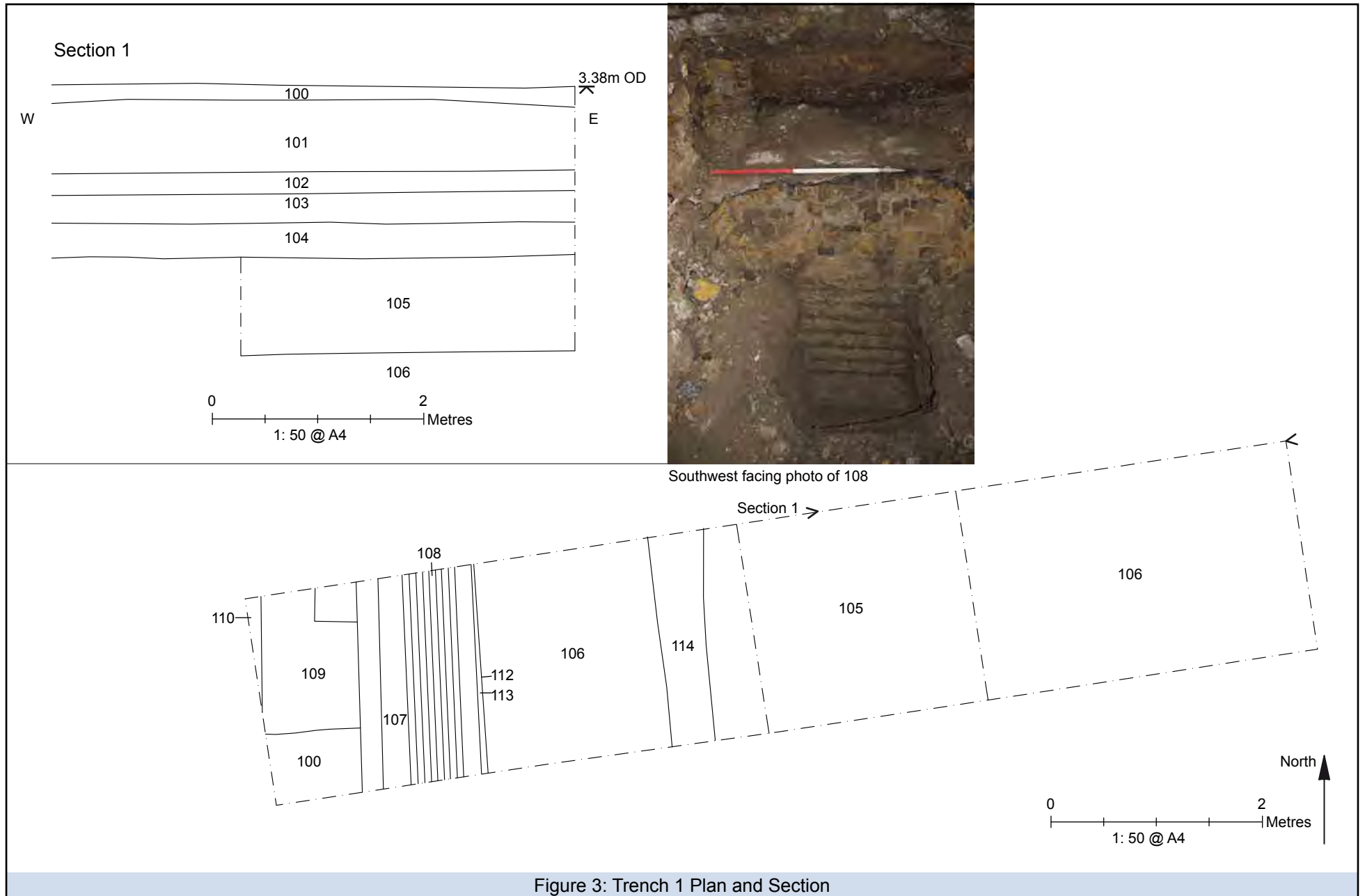


Figure 3: Trench 1 Plan and Section

Appendices

Appendix A – Context Register

Context	Context Description	Length	Width	Thickness
100	Concrete, current car park.	-	-	0.10m
101	Brick rubble – made ground. Consists of three parts: upper grey, mid brown and lower mortar rich rubble; including frequent large metalwork/ frame-gated girders.			0.60m
102	Concrete with 15mm tarmac surface.			0.20m
103	Brick rubble, leveling layer for concrete (102).			0.30m
104	Dark clay silt containing brick fragments, glazed pottery. Cultivation soil.			0.30m
105	Brown silt clay, alluvial deposit			0.90m
106	Grey sand with small flint stones. Natural geology			Not exc.
107	Sandstone kerb.			0.10m
108	Wall under (107). North-south oriented brick wall; 6 vertical courses over 9 stepped course foundation, with sandstone base. Outside wall of warehouse to yard.	Width of trench	1.8m+	1.38m
109	Paving to west of wall (108) and kerb (107).	Width of trench		0.05m
110	Wall at west edge of trench. Three courses visible below (101).	1.6m+	Not visible	Exposed, not excavated
111	Stone slab below layer of paving.	Not exc.		=
112	Cut of foundation to wall (108) visible at 2.2m below ground level.	Width of trench	0.05m	Not exc
113	Fill of [112] foundation trench of wall (108). Natural sand in second excavation area 2.70m below ground level.	Width of trench	0.05m	Not exc.
114	Mixed grey and orange sand. Natural geology.	Width of trench	0.50m	0.12m

Appendix B – OASIS Form

OASIS ID: aocarcha1-207649

Project details

Project name	61 Southwark Street
Short description of the project	Evaluation (1 x 10m) and monitoring of boreholes.
Project dates	Start: 09-03-2015 End: 16-03-2015
Type of project	Field evaluation
Site status	Local Authority Designated Archaeological Area
Current Land use	Industry and Commerce 2 - Offices
Monument type	BURIED SOIL HORIZON Post Medieval

Project location

Country	England
Site location	GREATER LONDON SOUTHWARK SOUTHWARK 61 Southwark Street
Postcode	SE1 0HL,
Site coordinates	TQ 32194 80153 51.5043304192 -0.0950936711065 51 30 15 N 000 05 42 W Point

Project creators

Name of Organisation	AOC Archaeology
Project brief originator	Southwark Council
Project design originator	RPS
Project director/manager	Melissa Melikian
Project supervisor	Tony Walsh
Type of sponsor/funding body	Developer
Name of sponsor/funding body	RPS
Entered by	Tony Walsh (tony.walsh@aocarchaeology.com)
Entered on	30 March 2015

Appendix C – Borehole Monitoring

61 SOUTHWARK STREET, LONDON BOROUGH OF SOUTHWARK (SITE CODE: SWS15): GEOARCHAEOLOGICAL FIELDWORK AND DEPOSIT MODEL REPORT

D.S. Young

Quaternary Scientific (QUEST), School of Human and Environmental Sciences, University of Reading, Whiteknights, PO Box 227, Reading, RG6 6AB, UK

INTRODUCTION

This report summarises the findings arising out of the geoarchaeological investigations undertaken by Quaternary Scientific (University of Reading) in connection with the proposed development at 61 Southwark Street, London Borough of Southwark (National Grid Reference: TQ 321 801; Site Code: SWS15; Figure 1). The site is projected as being located on the southern margin of the Bankside Channel, a large and well documented palaeochannel aligned broadly NE to SW from Bankside towards Waterloo alongside the River Thames (Dunwoodie, 2006), and on the north-western bank of a low-lying gravel island (Cowan *et al.* 2009). The site is also mapped as lying at the confluence of the Southwark Street Channel and the Bankside (Dicks, 2010), and approximately 150m to the northeast of where the Borough Channel joins the Bankside.

To the south and west of the present site the general cross sectional form of the Bankside Channel can be made out. At the 65 Southwark Street site (Batchelor *et al.*, 2011), immediately to the west of the present site (see Figure 1), the gravel surface was recorded at -1.60m OD and below -1.99m OD, whilst to the west of here at Surrey House (Batchelor *et al.*, 2012) the Gravel was recorded at between ca. -2.6 and -4.5m OD. At the South Point site on the Blackfriars Road, in the presumed axis of the channel, the surface of the Shepperton Gravel falls to -3.49m OD (Branch *et al.*, 2002) and at nearby sites in Joan Street and Union Street (Sidell *et al.*, 2000) this surface is between -2.00m and -3.00m OD. However at Great Suffolk Street (Green & Young, 2011), only ca. 75m to the south and east of the Union Street site, the gravel surface is at 1.10m OD, and to the north of this locality in sites beside Bear Lane (Young *et al.* 2010), the gravel surface rises northward from -2.70m to -0.60m OD. Further north again in Blackfriars Road (Batchelor *et al.*, 2008) the gravel surface rises northward from 0.00m to 2.67m OD.

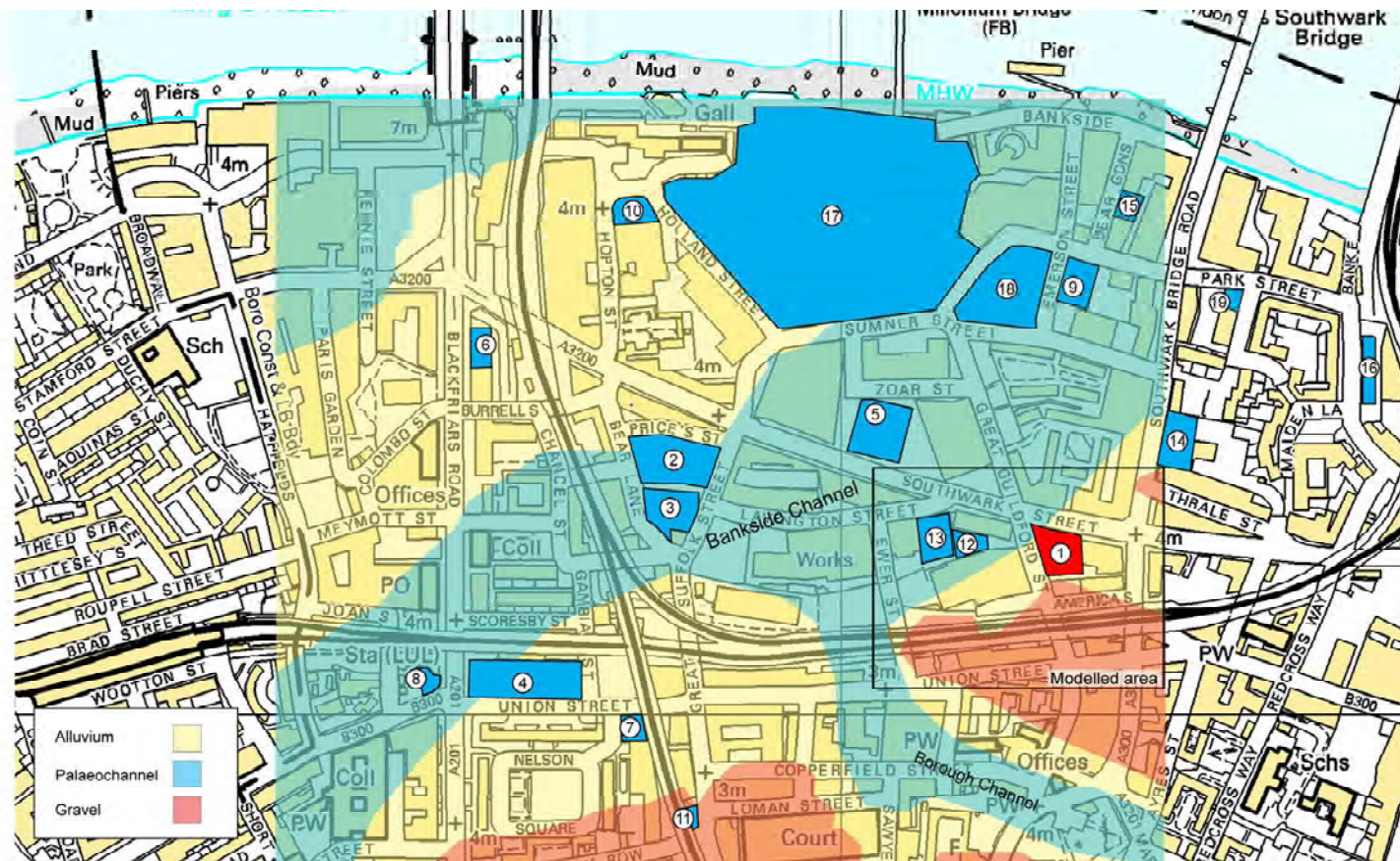
At Anchor Terrace (Thompson *et al.*, 1998), to the northeast of the present site, the surface of the Shepperton Gravel at -3.64m OD is probably close to the axis of the Bankside Channel. However, less than 100m to the south of the present site the gravel surface is at 0.66m OD in Skinmarket Place (Thompson *et al.*, 1998) and at 0.8m OD at 97-101 Union Street (Capon, 2006).

The present site at 61 Southwark Street appears therefore to lie on the southern margin of the Bankside Channel. The Holocene sediment sequence within the Bankside Channel includes in most places a peat horizon. In the axis of the channel a thickness of over 3.0m of peat has been recorded (Branch *et al.*, 2002), but towards the edges of the channel the peat thins to less than 0.5m, e.g. at the northern end of the Bear Lane site (Young *et al.*, 2010), where 0.45m of peat was recorded.

Investigations at Bear House (Young *et al.*, 2010) and Bear Lane (Tan, 2008) indicate that towards the northern edge of the Bankside Channel the peat deposits accumulated from at least 4820-4570 to 3140-2870 cal BP (Late Neolithic to Late Bronze Age). At sites towards the middle of the projected course of the Bankside Channel such as St Christopher House (ca. 100m northeast of the site; London Archaeologist, 2004) radiocarbon dating indicate that the channel dated from at least 10,650-10,250 cal BP and included both peat and alluvial deposits (London Archaeologist, 2004), whilst historic records indicate it had infilled by the Late 17th Century (Turner, 2009). At 65 Southwark Street (Batchelor *et al.*, 2011) peat was identified within the Alluvium in thicknesses of up to 0.84m and present at elevations between -0.62 and -1.46m OD. Subsequent radiocarbon dating demonstrated that the peat accumulated from at least 5610-5480 to 4290-4090 cal BP (Middle to Late Neolithic). At Surrey House (Batchelor *et al.*, 2012) up to 2m of peat was recorded at elevations between ca. -4 and -1m OD, either lying directly on the gravel surface or separated by a thin layer of alluvium. Here, radiocarbon dating demonstrated that peat accumulation began earlier at 7410-7250 cal BP (Mesolithic) and continued until at least 4840-4640 cal BP (Neolithic).

This previous work in this area of the Bankside Channel therefore suggests that there is potential at the 61 Southwark Street site to obtain a sequence that may incorporate sediments dating from the Mesolithic through to Post-Medieval cultural periods. Furthermore, at St Christopher's House, three timber structures dated to 3450-3240 cal BP (2 structures) and 2750-2350 cal BP (1 structure) were recorded within the channel's sedimentary sequence (London Archaeologist, 2004). Whilst at two sites located on a gravel eyot further the north of the site (44-47 Hopton Street, London Archaeologist, 2001; 245 Blackfriars Road, Thompson *et al.*, 2008), various artefacts reflective of occupation dating from the Neolithic cultural period onwards have been recorded. The sedimentary sequence at 61 Southwark Street therefore also has good potential to provide evidence of prehistoric and historic human activity on both the wetland and dryland surfaces adjacent to the site, which should be compared with existing evidence.

The aim of the geoarchaeological investigations at the site was to (1) clarify the nature of the sub-surface stratigraphy, in particular the presence and thickness of Alluvium (including Peat) across the site, and (2) to evaluate the potential of the sedimentary sequences for reconstructing the environmental history of the site and its environs. In order to achieve this aim, one of two geotechnical boreholes at the site was monitored by Quaternary Scientific and a programme of deposit modelling undertaken, incorporating borehole records from other nearby geoarchaeological investigations and British Geological Survey (BGS) archive borehole records (www.bgs.ac.uk/opengeoscience).



- | | | | |
|---------------------------------------------------------------|------------------------------------------------------------------|-----------------------------------------------------------------|----------------------------------------------------|
| ① 61 Southwark Street | ⑥ 231-241 Blackfriars Rd (BFX08; Batchelor <i>et al.</i> , 2008) | ⑩ 44-47 Hopton St (HNT94; London Archaeologist, 2001) | ⑮ Empire Warehouse (EWH08; Mackinder, 2008) |
| ② Bear House (BJH10; Batchelor <i>et al.</i> , 2011a) | ⑦ Jubilee Line, Union St (UNL08; Sidell <i>et al.</i> , 2000) | ⑪ Great Suffolk Street (GUF10; Batchelor <i>et al.</i> , 2011c) | ⑯ 28 Park Street (PKZ07; Turner, 2007) |
| ③ Bear Lane (BLZ07; Batchelor <i>et al.</i> , 2011a) | ⑧ Joan St (JOA91; Sidell <i>et al.</i> , 2000) | ⑫ 65 Southwark Street (SOU11; Batchelor <i>et al.</i> , 2011b) | ⑰ Transforming Tate Modern (TMB09; Daykin, 2009) |
| ④ South Point (BKA02; Branch <i>et al.</i> , 2002) | ⑨ 135 Park Street (PKP09; Batchelor and Young, 2009) | ⑬ Surrey House (LVI11; Batchelor <i>et al.</i> , 2012) | ⑱ 185 Park Street (PKE14; Batchelor & Young, 2014) |
| ⑤ St. Christopher's House (SCH03; London Archaeologist, 2004) | | ⑭ Southwark Rose Hotel (SDZ11; Young <i>et al.</i> , 2011) | ⑲ Anchor Terrace (Thompson <i>et al.</i> , 2008) |

Figure 1: Location of 61 Southwark Street and other nearby sites of geoarchaeological interest. The projected areas of the Bankside and Borough Channels, as indicated by Dunwoodie *et al.* (2006) and adapted after Young *et al.* (2010), are also shown

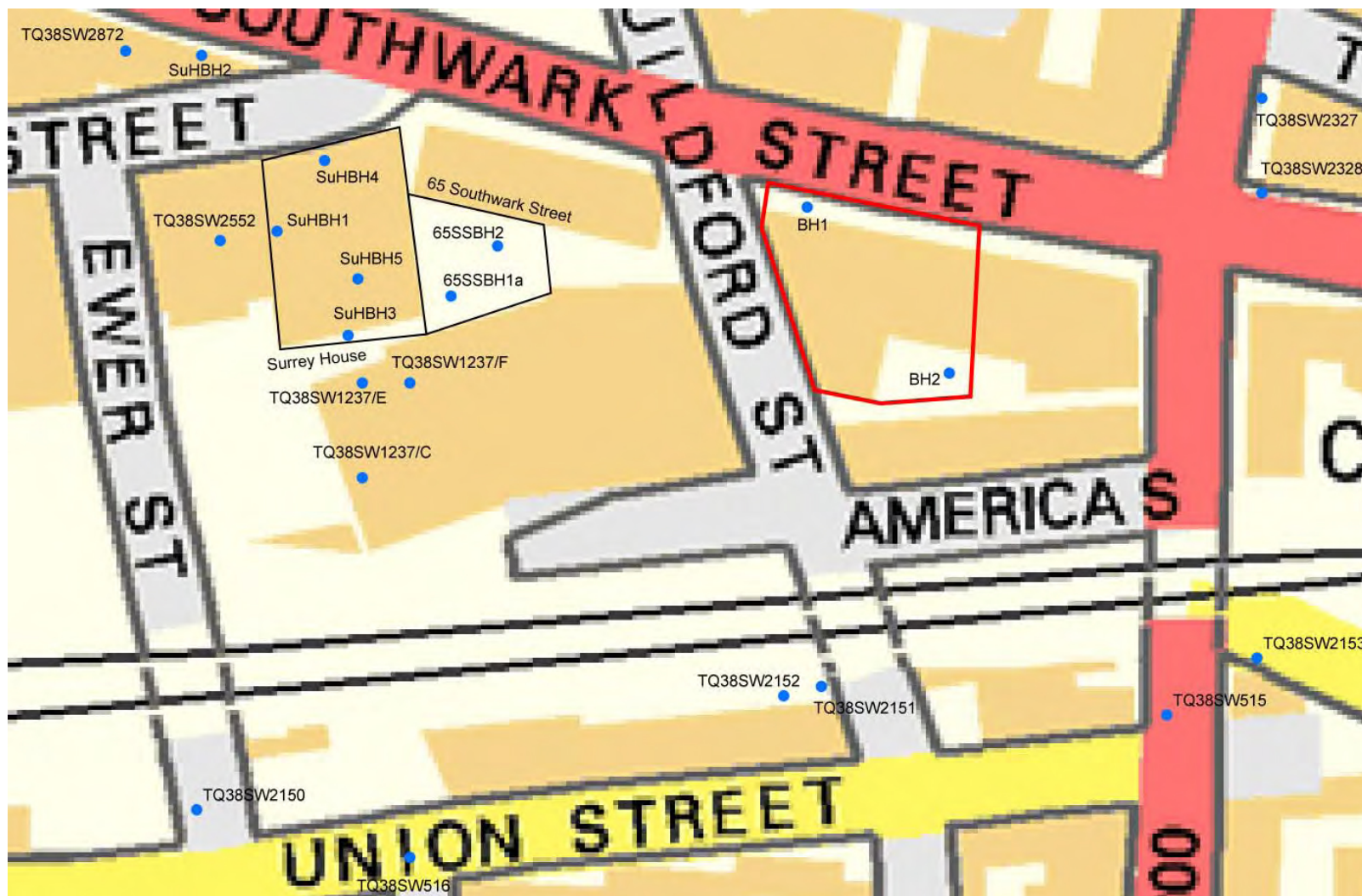


Figure 2: Location of the two new geotechnical boreholes (BH1 and BH2) at 61 Southwark Street, London Borough of Southwark. Geotechnical/geoarchaeological boreholes from 65 Southwark Street (65SS; Batchelor *et al.*, 2011) and Surrey House (SuH; Batchelor *et al.*, 2012) also shown. BGS archive boreholes (www.bgs.ac.uk/opengeoscience) used in the deposit model also shown.

METHODS

Field investigations

Two geotechnical boreholes were put down at the site by Geotechnical and Environmental Associates Limited (GEA) using a cable percussion rig (BH1 and BH2). Of these, BH1 was monitored by Quaternary Scientific for geoarchaeological description. The lithostratigraphy of this borehole was described using standard procedures for recording unconsolidated sediment and organic sediments, noting the physical properties (colour), composition (gravel, sand, clay, silt and organic matter) and inclusions (e.g. artefacts) (Tröels-Smith, 1955). The procedure involved: (1) examining grab samples from the geotechnical borehole where possible; (2) recording the physical properties, most notably colour using a Munsell Soil Colour Chart; (3) recording the composition; gravel (*Grana glareosa*; Gg), fine sand (*Grana arenosa*; Ga), silt (*Argilla granosa*; Ag) and clay (*Argilla steatoides*); (4) recording the degree of peat humification and (5) recording the unit boundaries e.g. sharp or diffuse. The spatial attributes of the boreholes used in the deposit model are shown in Table 1 and in Figure 2.

Table 1: Borehole attributes for the records used in the deposit model at 61 Southwark Street, London Borough of Southwark.

Borehole	Easting	Northing	Elevation (m OD)
<i>61 Southwark Street (present investigation)</i>			
BH1	532184	180167	3.90
BH2	532214	180132	3.40
<i>65 Southwark Street (Batchelor et al., 2011)</i>			
65SSBH1a	532108.77	180148.30	2.86
65SSBH2	532118.59	180158.86	2.88
<i>Surrey House (Batchelor et al., 2012)</i>			
SuHBH4	532082	180177	1.40
SuHBH5	532089	180152	2.80
SuHBH1	532072	180162	3.00
SuHBH2	532095	180165	3.08
SuHBH3	532087	180140	3.00
<i>BGS archive boreholes</i>			
TQ38SW2872	532040	180200	2.44
TQ38SW2327	532280	180190	2.08
TQ38SW2328	532280	180170	1.10
TQ38SW2552	532060	180160	3.10
TQ38SW1237/E	532090	180130	4.20
TQ38SW1237/F	532100	180130	4.20
TQ38SW1237/C	532090	180110	4.20
TQ38SW2153	532279	180072	3.88
TQ38SW515	532260	180060	4.20
TQ38SW2152	532179	180064	3.30
TQ38SW2151	532187	180066	3.33
TQ38SW2150	532055	180040	3.08
TQ38SW516	532100	180030	3.22

Deposit modelling

The deposit model was based on a review of the two new geotechnical borehole records, two boreholes from 65 Southwark Street (Batchelor *et al.*, 2011), five boreholes from Surrey House (Batchelor *et al.*, 2012) and 13 BGS archive boreholes from around the area of the site. Sedimentary units from the boreholes were classified into four main groups: (1) Gravel; (2) Lower Alluvium; (3) Peat; (4) Upper Alluvium, and (5) Made Ground. The classified data for groups 1-5 were then input into a database with the RockWorks 16 geological utilities software. Models of surface height (using a nearest neighbour routine) were generated for the Gravel and Upper Alluvium (Figures 3 and 5), with thickness models for the Peat, total Alluvium (incorporating the Lower Alluvium, Peat and Upper Alluvium), and Made Ground (Figures 4, 6 and 7) (also using a nearest neighbour routine).

How effectively Rockworks portrays the relief features of stratigraphic contacts or the thickness of sediment bodies depends on the number of data points (boreholes) per unit area, and the extent to which these points are evenly distributed across the area of interest. The portrayal is also affected by the significance assigned to these data points, in terms of the extent of the area around the point to which the data are deemed to apply. This can be predetermined for each data set, and in the present case the value chosen for each data point (borehole) is equivalent to an area of 50m radius around each borehole.

Although the boreholes are well distributed at the present site, the boreholes are not uniformly distributed over the area of investigation and the reliability of the models is variable. Reliability is also affected by the quality of the stratigraphic records which in turn are affected by the nature of the sediments and/or their post-depositional disturbance during previous stages of land-use on the site. Quality is also affected where boreholes have been put down at different times and recorded using different descriptive terms and subject to differing technical constraints in terms of recorded detail including the exact levels of the stratigraphic boundaries. Of the records used in the deposit model, the cores from the boreholes monitored by Quaternary Scientific represent the most detailed record of the sediment sequences. Finally, because of the 'smoothing' effect of the modelling procedure, the modelled levels of stratigraphic contacts may differ slightly from the levels recorded in borehole logs.

RESULTS AND INTERPRETATION OF THE LITHOSTRATIGRAPHIC DESCRIPTIONS AND DEPOSIT MODELLING

The geoarchaeological investigations have permitted a programme of deposit modelling of the surface elevation and thickness of each major stratigraphic unit (Figures 3 to 7). The basal unit at the site is a horizon of sand and gravel, the surface of which within the area of the site is recorded at -0.35 (BH1) and 0.90m OD (BH2). The sand and gravel is interpreted as the Shepperton Gravel of Gibbard (1985), deposited within a high energy braided river environment, the network of channels and gravel bars in this area having formed during the final stages of aggradation during the Late Devensian (10-

15,000 years before present). The surface of this unit falls westwards within the site, and in the area of the wider deposit model; in the area of the 65 Southwark Street and Surrey House sites, and towards the axis of the Bankside Channel, it is recorded at between -1.6 and -4.55m OD. In the eastern half of the present site and to its east, and to the south of 65 Southwark Street and Surrey House, the Gravel surface is recorded at above 0.0m OD, rising to 0.9m OD in BH2, 0.86m OD in TQ38SW2327 and 1.46m OD in TQ38SW1237/C. The Gravel surface falls towards the southeast of the modelled area, to -0.2m OD in TQ38SW2152, -2.07m OD in TQ38SW2151 and -2.16m OD in TQ38SW515.

Within the model it is therefore possible to make out the relief of the Bankside Channel, the southern margin of which probably lies within or close to the 61 Southwark Street site, and the Borough Channel, where the Gravel surface falls towards the southwest of the modelled area (to -0.57m OD in TQ38SW2150). The depression in the Gravel surface towards the southeast of the modelled area might represent an eastwards extension of a small 'inlet' from the Bankside shown in this area by Cowan *et al.* (2009). There is no indication in the deposit model of a depression in the Gravel surface associated with the Southwark Street Channel, mapped as lying to the north of the modelled area (not shown in Figure 1); however, insufficient boreholes are available to map this feature accurately.

The Gravel is overlain in borehole BH1 by a horizon of silty or gravelly silty sand between 0.60 and -0.35m OD, typical of deposition within a moderate- to low-energy fluvial environment. These deposits are similar in nature to the Lower Alluvium recorded elsewhere in the Lower Thames Valley and its tributaries, the sediments of which were deposited during the Early to Mid-Holocene, as the energy of flow decreased and the Thames and Bankside probably became confined to single meandering channels. The Lower Alluvium is overlain by a horizon of silty clayey Peat between 0.90 and 0.60m OD. Significantly, the Peat horizon is indicative of a transition towards a semi-terrestrial environment, supporting the growth of wetland vegetation and which may have been utilised by prehistoric people. No Peat was recorded in borehole BH2, where the Gravel surface (0.9m OD) lies at the same elevation as the surface of the Peat in BH1. The wider deposit model of the Peat thickness (Figure 4) indicates that the Peat is confined to the area of the Bankside Channel and its margins, being recorded at its thickest in the area of Surrey House (1.65 to 2.5m) and 65 Southwark Street. The Peat is recorded at its thinnest within the 61 Southwark Street site (0.3m).

The Peat is overlain in borehole BH1 by a horizon of sandy, silty clay, similar to the silty clay recorded overlying the Gravel in BH2. The surface of this unit is recorded at 1.50m OD in BH1 and 1.2m OD in BH2. This horizon is similar in character to the Upper Alluvium frequently recorded in the Lower Thames Valley and its tributaries, indicative of inundation of the Peat surface and sediment accumulation on the floodplain at a distance from any active channels. In the deposit model (Figure 5) the surface of this unit is generally recorded at between 0.5 and 1.5m OD. Greater thicknesses of the combined Holocene Alluvium (incorporating the Lower Alluvium, Peat and Upper Alluvium) are

recorded in areas of lower Gravel topography (Figure 6), in the area of the Bankside Channel and where it meets the Borough Channel, and where the 'inlet' is mapped. The Alluvium is overlain by variable thicknesses of Made Ground (Figure 6), recorded at 2.4 (BH1) and 2.2m thick (BH2) within the 61 Southwark Street site.

Table 2: Lithostratigraphic description of Borehole BH1, 61 Southwark Street, London Borough of Southwark (site code: SWS15)

Depth (m OD)	Depth (m bgl)	Description
3.90 to 3.60	0.00 to 0.30	Tarmac over concrete (Made Ground)
3.60 to 1.90	0.30 to 2.00	Made Ground of concrete, brick rubble and mortar in a matrix of brown sandy clay.
1.90 to 1.50	2.00 to 2.40	Made Ground brown sandy clay with concrete, brick rubble and mortar.
1.50 to 0.90	2.40 to 3.00	As2 Ga1 Ag1; grey sandy silty clay with some fragments of charcoal. Worm and root hollows with iron staining. Diffuse contact in to:
0.90 to 0.60	3.00 to 3.30	Sh2 Ag1 As1; humo. 3; brown well humified silty clayey Peat. Diffuse contact in to:
0.60 to -0.10	3.30 to 4.00	Ag2 Ga2 Gg+; brown sand and silt with occasional gravel clasts. Diffuse contact in to:
-0.10 to -0.35	4.00 to 4.25	Ga2 Gg1 Ag1; brownish grey gravelly silty sand. Diffuse contact in to:
-0.35 to -1.10	4.25 to 5.00	Gg3 Ga1; orangey brown sandy gravel. Clasts mainly flint, up to 45mm in diameter, sub-angular to sub-rounded.

61 SOUTHWARK STREET, LONDON BOROUGH OF SOUTHWARK:
AN ARCHAEOLOGICAL EVALUATION AND GEOTECHNICAL BOREHOLE MONITORING REPORT

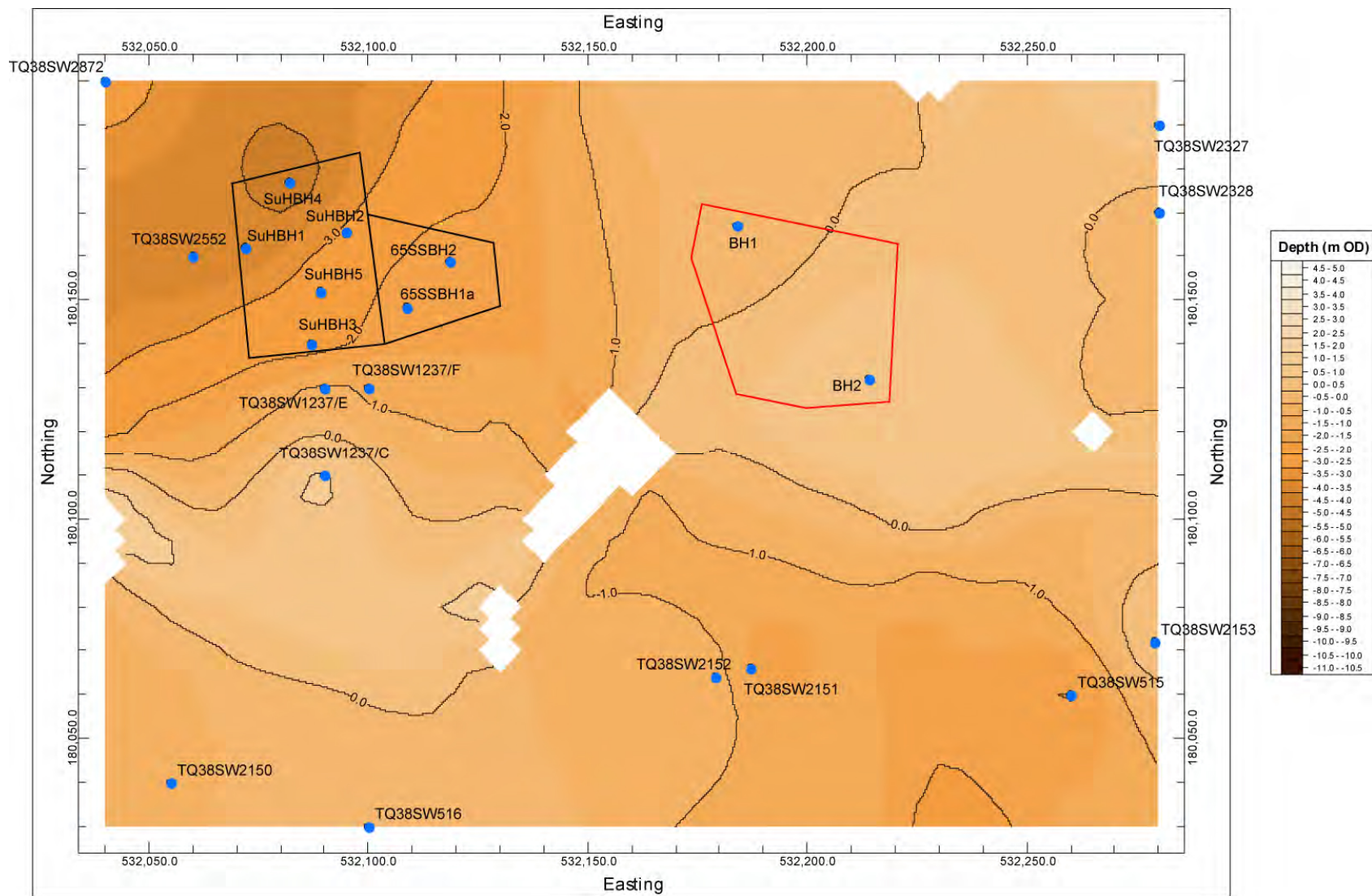


Figure 3: Top of the Gravel (m OD).

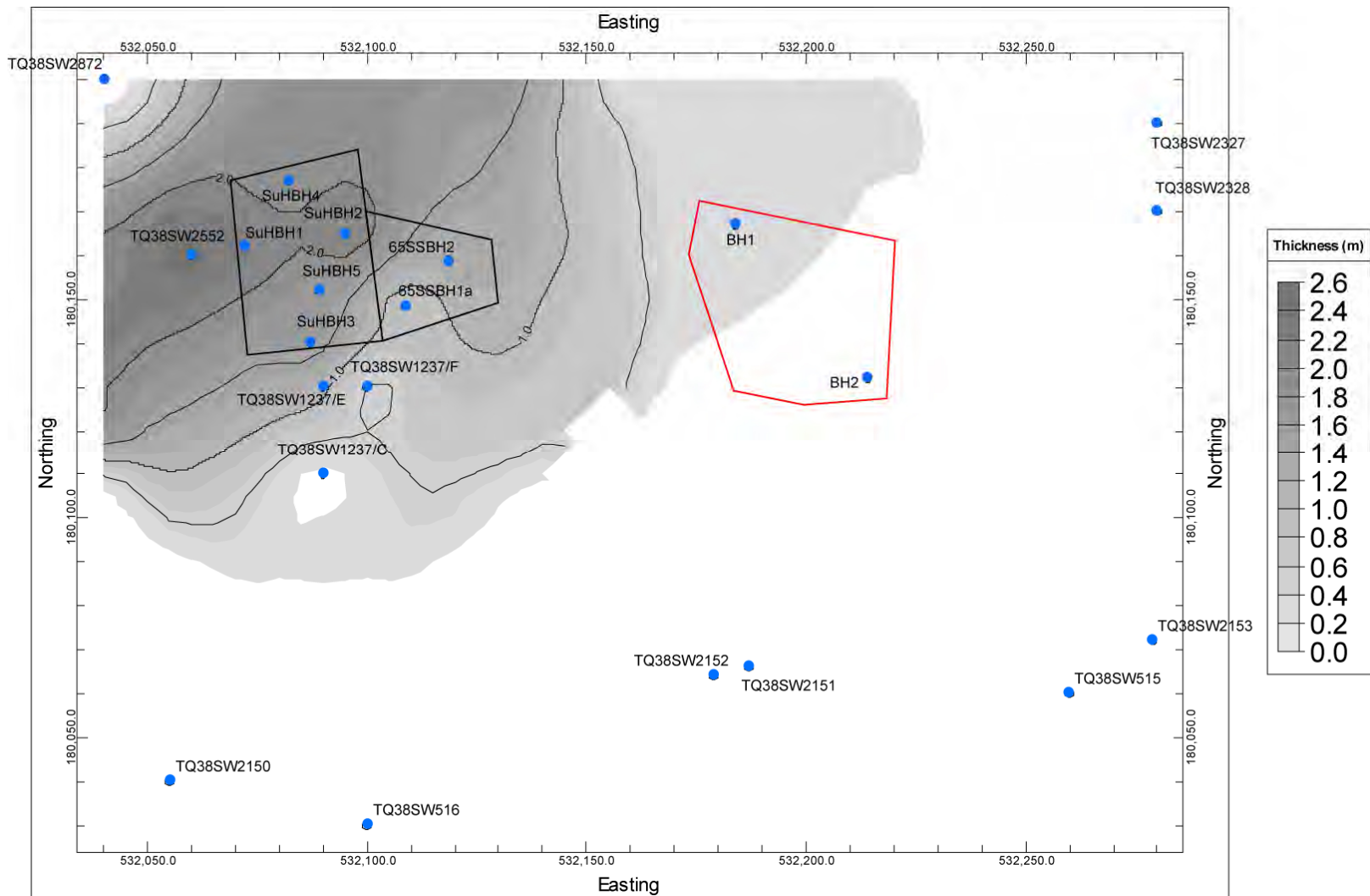


Figure 4: Thickness of the Peat (m).

61 SOUTHWARK STREET, LONDON BOROUGH OF SOUTHWARK:
AN ARCHAEOLOGICAL EVALUATION AND GEOTECHNICAL BOREHOLE MONITORING REPORT

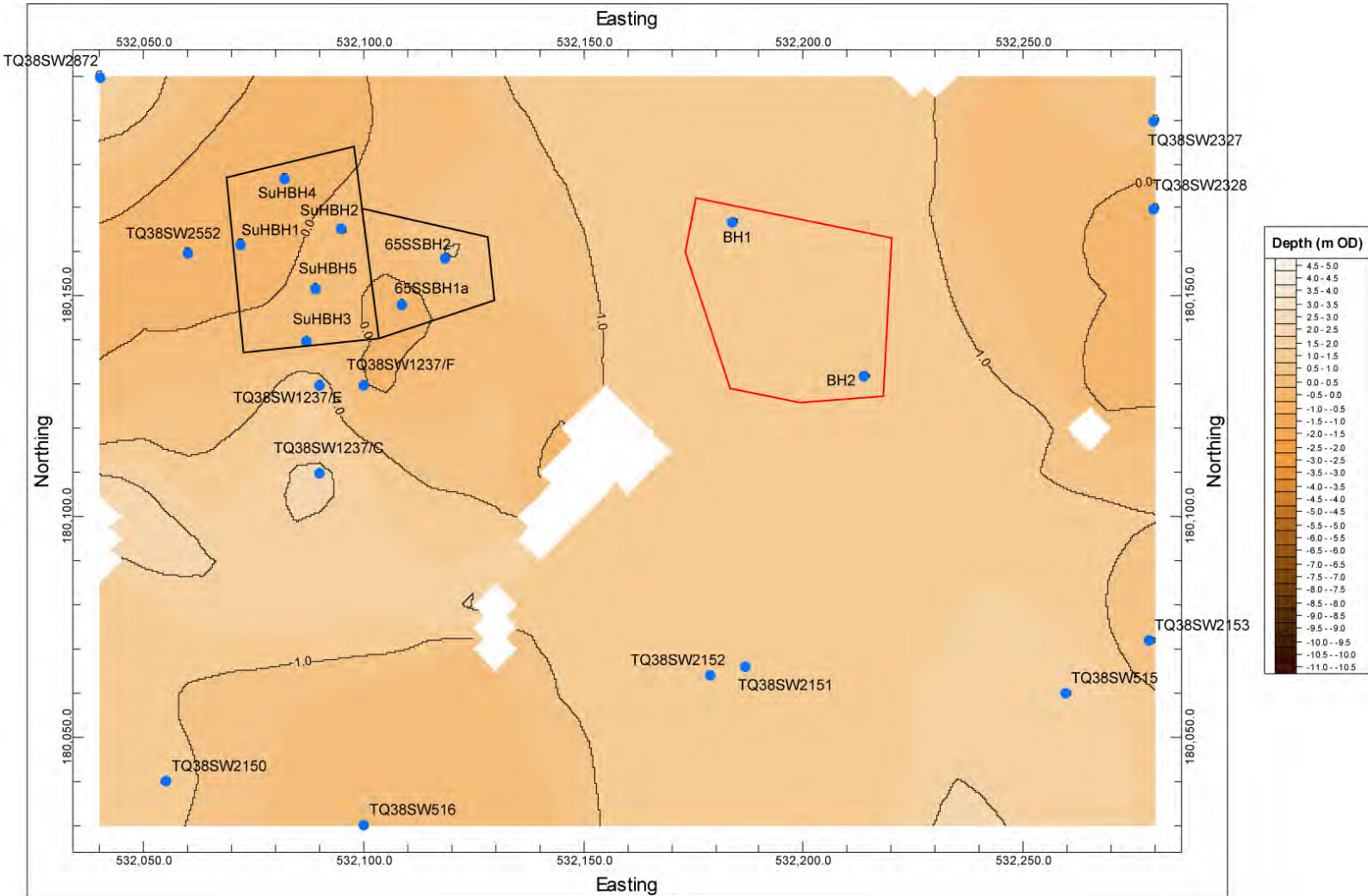


Figure 5: Top of the Alluvium / Base of the Made Ground (m OD).

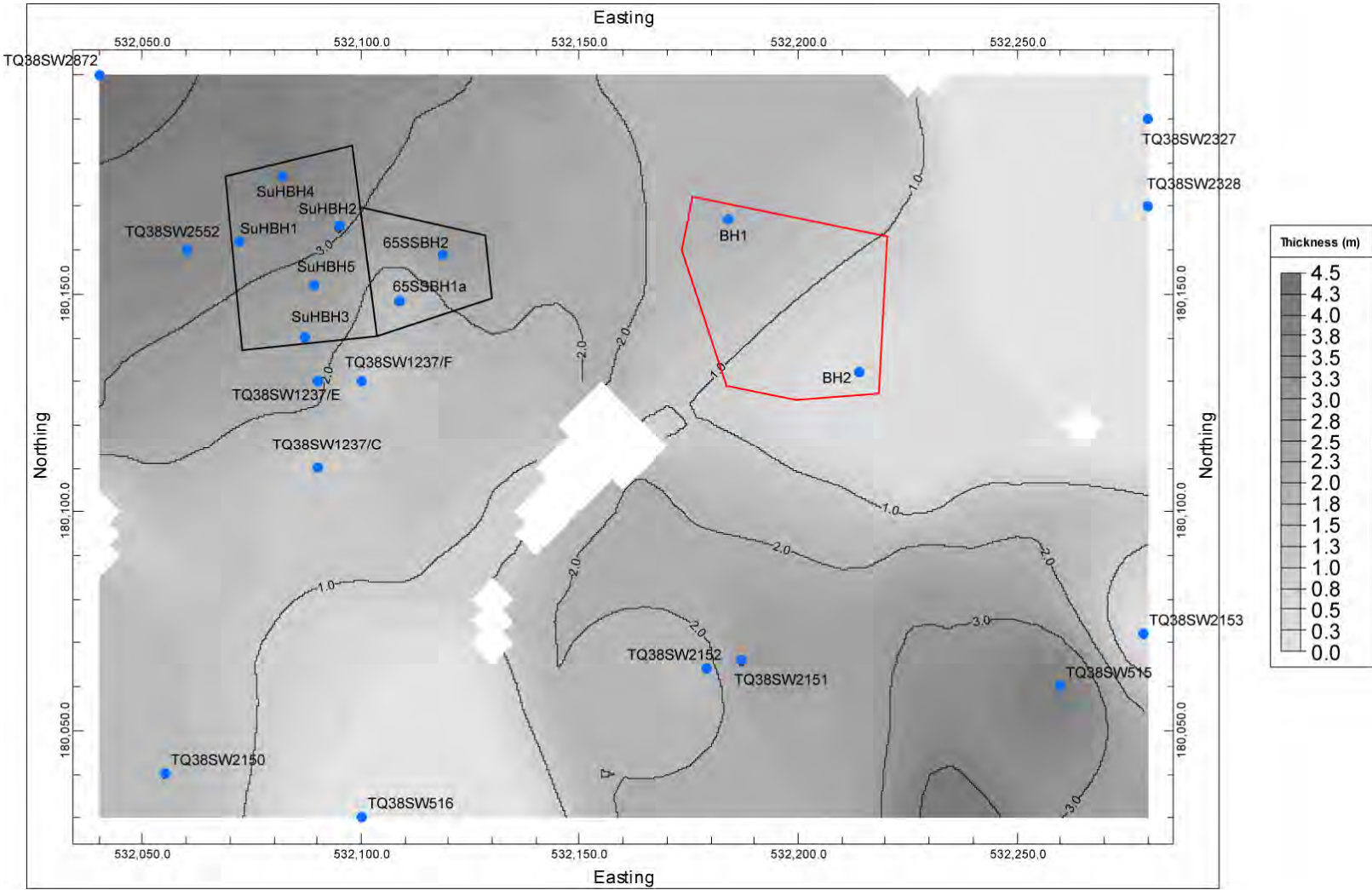


Figure 6: Thickness of the Alluvium (m).

61 SOUTHWARK STREET, LONDON BOROUGH OF SOUTHWARK:
AN ARCHAEOLOGICAL EVALUATION AND GEOTECHNICAL BOREHOLE MONITORING REPORT

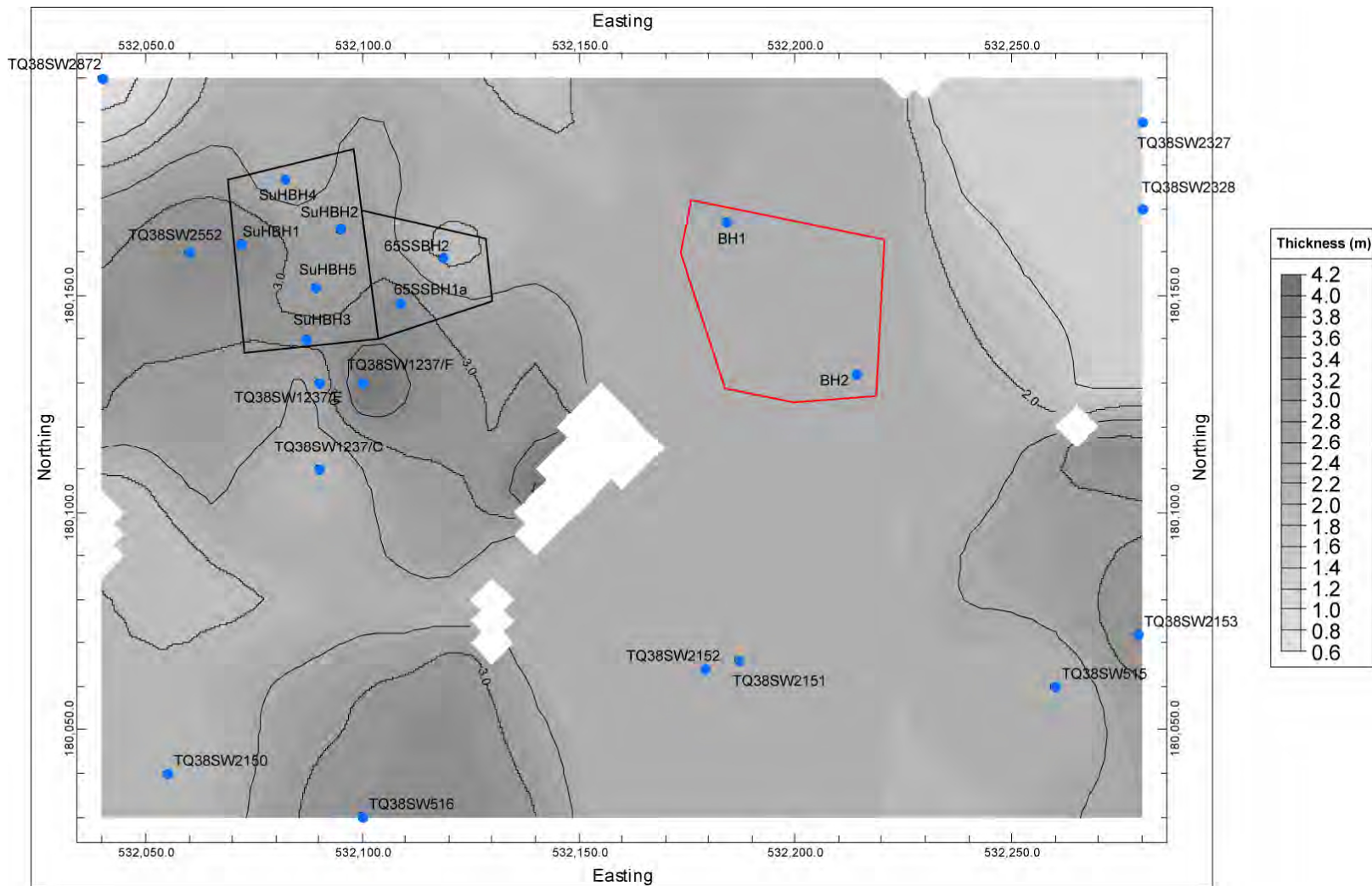


Figure 7: Thickness of the Made Ground (m).

DISCUSSION, CONCLUSIONS & RECOMMENDATIONS

The aim of the geoarchaeological investigations at the site was to (1) clarify the nature of the sub-surface stratigraphy, in particular the presence and thickness of Alluvium (including Peat) across the site, and (2) to evaluate the potential of the sedimentary sequences for reconstructing the environmental history of the site and its environs. In order to achieve this aim, one of two geotechnical boreholes at the site was monitored by Quaternary Scientific and a programme of deposit modelling undertaken.

The geoarchaeological investigations and subsequent deposit modelling have demonstrated that the 61 Southwark Street site lies on the southern margin of the Bankside Channel, where the Gravel surface is recorded at -0.35m OD in the north-western area of the site, rising to 0.9m OD in the southeast. Within the wider deposit model it is possible to make out the relief of the Bankside Channel, where the Gravel surface falls to as low as -4.55m OD in the area of the Surrey House site, and where the Bankside meets the Borough Channel (towards the southwest of the modelled area), where it falls to -0.57m OD. A depression in the Gravel surface towards the southeast of the modelled area might represent an eastwards extension of a small 'inlet' from the Bankside, shown in approximately this area by Cowan *et al.* (2009).

In borehole BH1 the sequence of Holocene sedimentation overlying the Shepperton Gravel is similar to that recorded elsewhere within the Bankside Channel, incorporating a horizon of lower, sandy Alluvium, Peat and clayey Upper Alluvium, overlain by Made Ground. At the present site however the Peat is significantly higher, recorded at between 0.6 and 0.9m OD; at 65 Southwark Street (Batchelor *et al.*, 2011b) it was recorded at elevations between -0.62 and -1.62m OD, whilst at Surrey House (Batchelor *et al.*, 2012) it was recorded at between -4 and -1m OD. It is possible that the higher elevation of the Peat at 61 Southwark Street represents upslope migration of the Peat surface; alternatively it may represent a separate, later episode of Peat accumulation. At 65 Southwark Street (Batchelor *et al.*, 2011b) radiocarbon dating of the Peat demonstrated that it accumulated from at least to 5610-5480 to 4290-4090 cal BP (Middle to Late Neolithic), whilst at Surrey House (Batchelor *et al.*, 2012) Peat accumulation began significantly earlier at 7410-7250 cal BP (Mesolithic) and continued until at least 4840-4640 cal BP (Neolithic). At Bear House (Young *et al.*, 2010) and Bear Lane (Tan, 2008), towards the northern edge of the Bankside Channel (*ca.* 300m to the west) Peat deposits recorded at elevations between -0.1 and -1.84m OD accumulated from at least 4820-4570 to 3140-2870 cal BP (Late Neolithic to Late Bronze Age).

REFERENCES

Batchelor, C.R., Branch, N.P., Green, C.P., Young, D., Elias, S., Austin, P. and Cameron, N. (2008) 231-241 *Blackfriars Road, London Borough of Southwark: Environmental Archaeological Assessment (Site Code: BFX08)*. ArchaeoScape Unpublished Report.

Batchelor, C.R. & Young, D.S. (2009) *135 Park Street, London Borough of Southwark (Site Code: Pkp09): Environmental Archaeological Assessment*. Quaternary Scientific (QUEST) Unpublished Report October 2009; Project Number 080/09.

Batchelor, C.R. & Young, D.S. (2014) 185 Park Street, London Borough of Southwark (Site Code: PKE14): *Geoarchaeological Fieldwork Report*. Quaternary Scientific (QUEST) Unpublished Report April 2014; Project Number 234/14.

Batchelor, C.R., Cameron, N., Young, D.S., Green, C.P., Allott, L., Austin, P. & S. Elias (2011a) *Bear House, Bear Lane, Southwark, London, SE1 (site codes: BJH10 and BLZ07): Environmental archaeological analysis report*. Quaternary Scientific (QUEST) Unpublished Report July 2010; Project Number 028/10.

Batchelor, C.R., Young, D.S. Cameron, N. Green, C.P. & Allott, L. (2011b) *65 Southwark Street, London Borough of Southwark (site code: SOU11): Geoarchaeological analysis report*. Quaternary Scientific (QUEST) Unpublished Report May 2011; Project Number 158/10.

Batchelor, C.R., Green, C.P., D.S. Young and Cameron, N. (2011c) *70 Great Suffolk Street, London Borough of Southwark (Site Code: GUF10): Environmental archaeological analysis report*. Quaternary Scientific (Quest) Unpublished Report March 2011; Project Number 152/10.

Batchelor, C.R., Green, C.P. Young, D.S., Walker, T. and Allott, L. (2012) *Surrey House, 20 Lavington Street, London Borough of Southwark, SE1 0NZ (Site Code: LVI11): Environmental Archaeological Analysis Report*. Quaternary Scientific Unpublished Report, May 2012; Project Number 018/11.

Branch, N.P., Swindle, G.E. and Williams, A.N. (2002) *Middle Holocene Environmental History of South Point, Blackfriars Road, Southwark, London*. ArchaeoScape Unpublished Report.

Capon, L. (2006) Excavations at 97-101 and 103 Union Street, Southwark. *London Archaeologist*, 10, 157-162.

Cowan, C. Seeley, F., Wardle, A., Westman, A, and Wheeler, L. (2009) *Roman Southwark settlement and economy, excavations in Southwark 1973-91*, MoLA Monograph 42.

Daykin, A. (2009) *Transforming Tate Modern, Bankside, London, SE1, London Borough Of Southwark: an archaeological evaluation and watching brief report*. Museum Of London Archaeology Unpublished Report.

Dunwoodie, L. (2006) *Bear House, Bear Lane, London, SE1, London Borough of Southwark: archaeological desk based assessment*. MoLAS unpublished report.

Gibbard, P.L. (1994) *The Pleistocene History of the Lower Thames Valley*. Cambridge University Press, Cambridge.

Green, C.P. & D.S. Young (2011) *70 Great Suffolk Street, London Borough of Southwark (Site Code: GUF10) Quaternary Scientific (Quest) Unpublished Report* January 2011; Project Number 152/10.

Mackinder, T. (2008) *Empire Warehouse, Bear Gardens, London, SE1, London Borough of Southwark: an archaeological evaluation report*. Museum Of London Archaeology Unpublished Report.

Sidell, J., Wilkinson, K., Scaife, R. & Cameron, N. (2000) *The Holocene Evolution of the London Thames: MoLAS Unpublished Report*.

Tan, M., Branch, N.P., Batchelor, C.R., Young, D. (2008) *Bear Lane, London Borough of Southwark: environmental archaeological assessment (site code: BLZ07) ArchaeoScape Unpublished Report*.

Thompson, A., Westman, A., Dyson, T. (eds.) (1998). Archaeology in Greater London 1965 - 1990: a guide to records of excavations by the Museum of London. *The Archaeological Gazetteer Series, 2*. London: Museum of London.

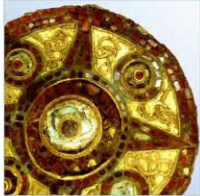
Trøels-Smith, J. (1955) Karakterisering af løse jordarter (Characterisation of unconsolidated sediments), *Danm. Geol. Unders., Ser IV 3*, 73.

Turner, S. (2007) *28 Park Street, Southwark, SE1, London Borough of Southwark: an archaeological evaluation report*. Museum Of London Archaeology Unpublished Report.

Turner, A. (2009) *An archaeological evaluation of land at Bear Lane, London*. Pre-Construct Archaeology unpublished report

Young, D.S., Batchelor, C.R., Green, C.P., Allott, L., Cameron, N., Austin, P. & Elias, S. (2010) *Bear House, Bear Lane, Southwark, London SE1 (site code: BJH10): Environmental archaeological assessment*. Quaternary Scientific (QUEST) Unpublished Report July 2010; Project Number 028/10.

Young, D.S. & Batchelor, C.R., Green, C.P., Austin, P. & Elias, S. (2011) *Southwark Rose Hotel, London Borough of Southwark (Site Code: SDZ11): Geoarchaeological Assessment Report*. Quaternary Scientific (QUEST) Unpublished Report September 2011; Project Number 078/11.



AOC Archaeology Group, Unit 7, St Margarets Business Centre, Moor Mead Road, Twickenham TW1 1JS
tel: 020 8843 7380 | fax: 020 8892 0549 | e-mail: london@aocarchaeology.com

www.aocarchaeology.com