

**Archaeological Evaluation Report
Silwood Estate, Rotherhithe
South Bermondsey
London SE1**

**NGR TQ 35660 78400
TQ 535660 178400**

Planning Ref: 2011-AP-0139

**ASE Project No: 5059
LAARC Site Code: SWE 12**

**ASE Report No. 2012054
OASIS id: archaeol6-122920**

By Andrew Margetts

**With contributions from Lucy Allott, Rob Batchelor
Karine Le Hégarat and John Whittaker**

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Abstract

Archaeology South-East was commissioned by CgMs Consulting Ltd, on behalf of their client, to undertake an archaeological evaluation in advance of the construction of new residential units at the location of the former Silwood Estate.

No archaeological features were encountered during the evaluation and only a single flint core of Middle Neolithic or earlier date was recovered. The evaluation did however encounter an interesting geoarchaeological sequence, including a peat formation in the south-east corner of the site. Overlying the peat was alluvium probably formed in a brackish channel which silted over time. Evidence for a probable gravel bar was also found to the north of the site.

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1.0 INTRODUCTION

1.1 Site Background

1.1.1 Archaeology South-East (ASE), the contracting division of The Centre for Applied Archaeology at the Institute of Archaeology, University College London, were commissioned by CgMs Consulting Ltd on behalf of their client to undertake an archaeological evaluation in advance of the construction of new residential units at the location of the former Silwood Estate, hereafter referred to as 'the site' (centred NGR TQ 3523 7858), (Fig. 1).

1.2 Geology and Topography

1.2.1 The geological background to the site is discussed in detail in the Archaeological Desk-Based Assessment prepared for submission with the planning application (MoLA 2010). The details below are reproduced from the preceding Written Scheme of Investigation (CgMs 2011) with due acknowledgement.

1.2.2 The site lies c.1.4km south and west of a meander of the River Thames, where it loops round the Rotherhithe peninsula. The site is located on the alluvial floodplain of the river Thames. This consists of a series of minerogenic and organic sediments which have accrued since the beginning of the Holocene epoch (i.e. the last 10,000 years) within a diverse range of fluvial and wetland environments. The underlying deposits consist of the Pleistocene Shepperton gravels. These were deposited within a 'braided' river environment comprising a network of channels during the last major cold climate stage between 18,000 and 15,000 years ago. These deposits mark the base line for deposits of archaeological and palaeoenvironmental potential. The solid geology consists of cretaceous chalk.

1.2.3 The alluvial sediments are predominantly made up of clays, sands and silts, deposited during periods of inundation as a result of rising sea level (marine transgressions), and peat and organic silts formed during lowered sea and river levels (marine regressions), allowing the development of fen and marsh.

1.2.4 The results of geotechnical investigations by RSA Geotechnics Ltd in 2007 suggest that, in the western and extreme northern parts of the site, modern truncation has removed deposits of potential archaeological and/or palaeoenvironmental significance. In the southern and eastern part of the site, however, floodplain sands and gravels are overlain by organic deposits which indicate the development of wet woodland environments from the late-Bronze Age onwards. Such deposits may contain evidence of past human activity, as well as indicators of the changing environment.

1.2.5 The deposits overlying the gravels vary, but generally consist of a lower sand deposit, overlain by peats and/or organic clays. The lower sand unit is likely to represent the early Holocene bedload of the low-energy braided river. As the climate ameliorated, discharge rates and flow capacity dropped, resulting in the Thames carrying a finer-grained bedload within fewer multiple channel threads. Above these sands, organic clays and peats were noted. Within BH2 this peat measures up to 1m in thickness.

- 1.2.6 These organic deposits and peats are likely to represent the formation of wetland alder carr and sedge fen environments which evolved in response to rising river levels and the waterlogging of previous dry land surfaces.
- 1.2.7 Within the site, ground levels vary from c.1.9m Above Ordnance Datum (AOD) in the north-west, to c.1.6m AOD in the east although, around the electricity sub-station in the western part of the site, the ground is at c.1.18–1.4m AOD. The surface of Debnams Road, which extends into the north-western part of the site, is at c.1.3m AOD, and Corbett's Lane to the north of the site is at c.2m AOD. Street level on Corbett's Lane, at the south-eastern corner of the site, is 1.4m AOD. These variations were thought to reflect previous building disturbance and the presence of made ground within the site (MoLA 2010).

1.3 Planning Background

- 1.3.1 The proposed scheme comprises the demolition of all existing buildings and the construction of buildings between 3 and 6 storeys in height, rising to 8 storeys at the corner of Silwood Street and Corbett's Lane, to provide 127 residential units together with associated landscaping, parking and amenity space.
- 1.3.2 The development involved grubbing out of existing foundations and excavations for pile caps, ground beams and service runs and piling. Pile caps locations and ground beams required excavations of up to 1.8m from the existing ground level, which had the potential to impact on prehistoric dry land surfaces.
- 1.3.3 Due to its archaeological potential, a schedule of planning conditions was issued. Condition's 15-18 require that:

Condition 15

Before any work (excluding demolition) hereby authorised begins, the application shall secure the implementation of a programme of archaeological evaluation works, in accordance with a written scheme of investigation, shall be submitted to and approved in writing with the local planning authority.

Reason: In order that the applicants supply the necessary archaeological information to ensure suitable mitigation measures and/or foundation design proposals be presented in accordance with saved policy 3.19 of the Southwark Plan 2007.

Condition 16

Before any work (excluding demolition) hereby authorised begins, the applicant shall secure the implementation of a programme of archaeological mitigation works in accordance with a written scheme of investigation, which shall be submitted to and approved in writing by the Local Planning Authority.

Reason: In order that the details of the programme of works for the archaeological mitigation are suitable with regard to the impacts of the proposed development and the nature and extent of archaeological remains on site in accordance with saved policy 3.19 of the Southwark Plan (July 2007).

Condition 17

Within six months of the completion of the archaeological site works, an assessment report detailing the proposals for post-excavation works, publication of the site and preparation of the archive shall be submitted to and approved in writing by the Local Planning Authority. The works detailed in this assessment report shall not be carried out otherwise than in accordance with any such approval given.

Reason: In order that the archaeological interests of the site are secured with regard to the details of the post-excavation works, publication and archiving to ensure the preservation of archaeological remains by record in accordance within saved policy 3.19 of the Southwark Plan (July 2007).

Condition 18

Before any work hereby authorised begins, a detailed scheme showing the complete scope and arrangement of the foundation design and all ground works shall be submitted to and approved in writing by the Local Planning Authority and the development shall not be carried out than in otherwise than in accordance with any such approval given.

Reason: In order that details of the foundations, ground works and all below ground impacts of the proposed development are detailed and accord with the programme of archaeological mitigation works to ensure the preservation of archaeological remains by record and in situ in accordance with saved policy 3.19 of the Southwark Plan (July 2007).

The above conditions were placed under advice from Chris Constable, Senior Archaeology Officer at Southwark Council, in accordance with the Statement of Standards and Practices appropriate for archaeological fieldwork in the London Borough of Southwark.

- 1.3.4 A Written Scheme of Investigation (CgMs 2011) relating to the archaeological evaluation was prepared and approved in advance of the fieldwork. All works were carried out in accordance with this document and with the guidance set out in the *PPS 5 Historic Environment Planning Practice Guide* (2010), the *IfA Standard and Guidance for Field Evaluation* (2008) and the *London Borough of Southwark Statement of Standards and Practices* appropriate for archaeological fieldwork.

1.4 Aims and Objectives

1.4.1 The general aims and objectives of the archaeological investigation as set out in the Written Scheme of Investigation (CgMs 2011) were:

- To determine, the presence or absence of archaeological features, structures, deposits, artefacts or ecofacts. In addition, if such remains are present, to define their character, extent, quality and preservation to enable an assessment of their significance in a local, national or international context, as appropriate.
- To augment the archaeological desk-based assessment and provide all parties, particularly the Local Planning Authority, with sufficient material information upon which to base an informed decisions regarding mitigation.

1.4.2 The specific aims and objectives of the evaluation included:

- To determine if possible the date of the earliest human activity in this area and the subsequent sequence of occupation.
- To determine the palaeotopography of the site.
- To determine the environmental potential of the site.
- To determine the presence or absence of prehistoric activity.
- To establish the extent of past post-depositional impacts on the archaeological resource.
- To test the findings of the desk-based assessment.

1.5 Scope of Report

1.5.1 This report outlines the results of the evaluation, undertaken by Andrew Margetts (Senior Archaeologist), John Cook (Surveyor) and Cat Douglas (Assistant Archaeologist) at intermittent periods from the 21st of February to the 1st of March 2012. The project was managed by Andy Leonard (fieldwork) and Dan Swift (post-excavation).

2.0 ARCHAEOLOGICAL BACKGROUND

2.1 Introduction

- 2.1.1 A full archaeological background of the site was outlined in a preceding Desk Based Assessment (MoLA 2010). An assessment of the potential of the site to preserve archaeological remains is reproduced from this document with due acknowledgement.

2.2 Geoarchaeology

- 2.2.1 Ground investigations were carried out within the site by RSA Geotechnics Ltd in 2007. A total of ten geotechnical boreholes and window samples were excavated. The site was assessed to have high potential for the preservation of geoarchaeological remains because the geotechnical data indicates the survival of Holocene floodplain deposits in the southern and eastern part of the site; modern truncation down to the level of the floodplain gravels appears to have largely removed deposits of archaeological/ palaeoenvironmental significance to the north and west so the remainder of the site was thought to have low potential.

- 2.2.2 The overlying organic deposits indicate the development of Bronze Age wet woodland environments across former dry land surfaces. Wetland deposits have the potential to preserve a range of palaeoenvironmental indicators, including plant macro fossils, pollen, and invertebrate remains which could be utilised to reconstruct past landscapes and map the evolving floodplain geomorphology and palaeoecology of the Thames floodplain. The site was thought unlikely to preserve any Late Glacial lake deposits similar to those recorded on Bramcote Green, but was considered to have potential to preserve a palaeoenvironmental record stretching from the Bronze Age into the historic period.

2.2 Prehistoric

- 2.2.1 The southern and eastern part of the site was thought to have moderate potential to contain archaeological remains dated to the prehistoric period; because of significant modern truncation, the remainder of the site was assessed to have low potential. The site is situated across high floodplain gravels which probably remained as dry land into the Late Neolithic period and it was thought that evidence for occupation or activity from the Mesolithic to Neolithic periods might occur on the surface of the gravel and sand. The subsequent wet woodland environment represented by the overlying organic deposits, and the Bermondsey Lake to the south, would have provided a wide range of subsistence resources. There is local evidence of timber structures and trackways constructed to access and traverse the wetlands, at Bramcote Grove, c. 500m south-west of the site (Thomas & Rackham 1996). The trackways were orientated roughly north-south, linking the Kempton Park terrace to the Bermondsey Eyot. There was thought to be potential for similar structures to occur in the organic and peat deposits on site.

2.3 Roman and Later Remains

- 2.3.1 The site was generally thought to have low potential to contain archaeological remains dated to the Roman and medieval periods. The site probably lay in open land prone to flooding and at some distance from known roads or centres of settlement. Corbett's Lane and its associated drainage ditch or ditches in the eastern part of the site may however, have originated in the later medieval period, and there was thought to be some potential for evidence of their construction and maintenance.
- 2.3.2 There was thought to be high potential for post-medieval remains to be preserved, including cellars or foundations of mid to late-19th century houses and industrial buildings. It was not known how comprehensively these were cleared prior to redevelopment in the post-Second World War period, but in many such cases, demolition was limited to upstanding structures.

3.0 ARCHAEOLOGICAL METHODOLOGY

3.1 Excavation

- 3.1.1 Six trial trenches, five measuring 8m x 1.5m and one measuring 13m x 1.5m were excavated (see Fig. 2). Trench excavations were maintained in a safe condition at all times. Due to the depth of the excavated trenches all trenches were stepped with a maximum width of 4m at the top. The maximum excavated depth below the existing ground surface was 3.2m (Trench 4).
- 3.1.2 A Risk Assessment and Method Statement was produced and agreed with CgMs prior to the commencement of the work.
- 3.1.3 All undifferentiated material of recent origin (defined as nineteenth century and later) was removed using a machine fitted with a standard toothless ditching bucket, under the supervision of an archaeologist
- 3.1.4 Archaeological excavation proceeded only until significant archaeological levels had been reached and was sufficient to allow the nature and extent of these to be identified. The levels at which all excavations ceased were determined by on-site consultations between CgMs and the Southwark Archaeological Advisor.
- 3.1.5 Excavation of archaeological deposits was carried out by hand except for the removal of homogeneous and 'low-grade' layers where it could reasonably be argued that more detailed attention would not produce information of value, and where their removal gave a 'window' onto underlying levels.
- 3.1.6 In addition to the excavation of archaeological deposits, some assessment of 'naturally deposited' levels was necessary, especially when these were organically preserved and laid down within archaeological timescales; for example alluvial or peat deposits.
- 3.1.7 Archaeological features and deposits were initially only sampled sufficiently to characterise and date them. However, at least 25% (by plan area) of pits, postholes, structural features, and domestic/industrial features and 10% (by plan area) of linear features were excavated and all terminals and intersections were investigated. All discrete features were cleaned sufficiently to enable identification and recording.

3.2 Recording and Archive

- 3.2.1 All archaeological features and deposits were recorded using the standard Archaeology South-East context record sheets. All context numbers were prefixed by the relevant trench number.
- 3.2.2 Plans and sections were drawn on drafting film at 1:10 or 1:20 scale as appropriate. A photographic record was made of all archaeological features.
- 3.2.3 Archaeology South-East informed the LAARC in advance that the fieldwork would be taking place and that an archive would be generated. The archive has been assigned the site code SWE12 and will be deposited on completion

of all stages of fieldwork and reporting. The archive is quantified in Table 1

Number of Contexts	26
No. of files/paper record	1
Plan and section sheets	1
Bulk Samples	3
Column Samples	1
Photographs	12 digital images
Registered finds	N/A

Table 1: Quantification of site archive

4.0 EVALUATION RESULTS (Fig. 2)

4.1 Introduction

4.1.1 The trenches encountered variable degrees of disturbance due to modern intrusions. All trenches were stepped to facilitate safe machining. The natural gravels/sands that marked the extent of excavations were encountered at between 1.20m and 3.20m below ground level.

4.2 Trench 1

4.2.1 Trench 1 measured c.8m in length x 1.5m wide at the base and was orientated on a roughly north-south alignment. The trench was excavated to the natural horizon; a sondage was excavated to greater depth at the northern end to ensure that natural geology had been reached.

Context No	Type	Description	Max. Length	Max. Width	Max Deposit Thickness	Height m.AOD
1/001	Deposit	Hardcore	Tr.	Tr.	0.40m	1.60
1/002	Deposit	Made Ground	Tr.	Tr.	0.68m	1.20
1/003	Deposit	Alluvium	Tr.	Tr.	0.40m	0.52
1/004	Deposit	Gravels	Tr.	Tr.	-	0.12

Table 2: Context Register, Trench 1

4.2.2 Natural deposit [1/004], a compact, mid-light orange yellow sandy gravel was overlain by [1/003], a firm mid orange brown silty clay. This weathered alluvium contained occasional sub-rounded pebbles and was disturbed by modern tree roots. It was overlain by [1/002], a firm mid-dark grey brown silty clay. This made ground/demolition deposit contained frequent modern debris and was disturbed by modern tree roots. It was overlain by [1/001], a modern hardcore/demolition deposit.

4.3 Trench 2

4.3.1 Trench 2 measured c.8m in length x 1.5m wide at the base and was orientated on a roughly north-south alignment. The trench was excavated to the natural horizon.

Context No	Type	Description	Max. Length	Max. Width	Max Deposit Thickness	Height m.AOD
2/001	Deposit	Hardcore	Tr.	Tr.	0.50m	1.60
2/002	Deposit	Made Ground	Tr.	Tr.	0.45m	1.10
2/003	Deposit	Alluvium	Tr.	Tr.	0.49m	0.75
2/004	Deposit	Sand	Tr.	Tr.	-	0.26

Table 3: Context Register, Trench 2

4.3.2 Natural sand, [2/004], comprised a compact, mid-light orange yellow sand with occasional sub-rounded pebble inclusions. A prehistoric platform core was retrieved from the surface of this deposit. It was overlain by [2/003], a firm mid orange brown silty clay. This weathered alluvium contained

occasional sub-rounded pebbles and was disturbed by modern tree roots. It was overlain by [2/002], a firm mid-dark grey brown silty clay. This made ground/demolition deposit contained frequent modern debris and was disturbed by modern tree roots. It was overlain by [2/001], a modern hardcore/demolition deposit.

4.4 Trench 3

4.4.1 Trench 3 measured c.13m in length x 1.5m wide at the base and was orientated on a roughly north-south alignment. The trench was excavated to the natural horizon.

Context No	Type	Description	Max. Length	Max. Width	Max Deposit Thickness	Height m.AOD
3/001	Deposit	Hardcore	Tr.	Tr.	0.42m	1.60
3/002	Deposit	Made Ground	Tr.	Tr.	0.80m	1.18
3/003	Deposit	Alluvium	Tr.	Tr.	1.05m	0.38
3/004	Deposit	Gravel	3m	Tr.	-	-0.87
3/005	Deposit	Sand	10m	Tr.	-	- 0.87
3/006	Deposit	Peat	10m	Tr.	0.20m	-0.67

Table 4: Context Register, Trench 3

4.4.2 Natural deposit [3/004] consisted of compact, mid-light orange yellow sand and gravels and was only encountered in the northern end of the trench. The remainder of the 'natural horizon' comprised natural sand [3/005], a compact, mid-light orangeish yellow sand with occasional sub-rounded pebble inclusions. This was overlain by [3/006], a thin firm dark blackish brown layer of peat that was fairly homogenous but did contain occasional noticeable organic inclusions. Both column and bulk samples were obtained from this deposit along with a wood sample. The location of the column sample is shown on Figure 3.

4.4.3 All of the natural deposits were overlain by [3/003], a firm-compact mid brown grey silty clay. This alluvial deposit contained occasional sub-rounded pebbles and moderate rootlets. Both column and bulk samples were obtained from this deposit. It was overlain by [3/002], a firm mid-dark grey brown silty clay. This made ground/demolition deposit contained frequent modern debris. It was overlain by [3/001], a modern hardcore/demolition deposit.

4.5 Trench 4

4.5.1 Trench 4 measured c.8m in length x 1.5m wide at the base and was orientated on a roughly north-south alignment. The trench was excavated to the natural horizon. This proved to be the deepest of the six trenches and, although thick deposits of peat were encountered and the trench was stepped, the deep and unstable sides made column sampling unsafe.

Context No	Type	Description	Max. Length	Max. Width	Max Deposit Thickness	Height m.AOD
4/001	Deposit	Hardcore	Tr.	Tr.	0.50m	1.82
4/002	Deposit	Made Ground	Tr.	Tr.	0.90m	1.32
4/003	Deposit	Alluvium	Tr.	Tr.	0.80m	0.42
4/004	Deposit	Peat	Tr.	Tr.	1.00m	-0.38
4/005	Deposit	Sand	Tr.	Tr.	-	-1.38

Table 5: Context Register, Trench 4

4.5.2 Natural deposit [4/005] comprised a compact, mid-light orange yellow sand with occasional sub-rounded pebble inclusions. This deposit was overlain by [4/004], a thick firm dark blackish brown layer of peat that was fairly homogenous but contained occasional noticeable organic inclusions. A single bulk sample was obtained from this deposit during machining along with a sample of preserved wood from the base of the deposit. It was overlain by [4/003], a firm-compact mid brown grey silty clay. This alluvial deposit contained occasional sub-rounded pebbles and moderate rootlets. It was overlain by [4/002], a firm mid-dark grey brown silty clay. This made ground/demolition deposit contained frequent modern debris. It was overlain by [4/001], a modern hardcore/demolition deposit.

4.6 Trench 5

4.6.1 Trench 5 measured c.8m in length x 1.5m wide at the base and was orientated on a roughly northwest-southeast alignment. The trench was excavated to the natural horizon. A deep modern footing or service trench disturbed the trench.

Context No	Type	Description	Max. Length	Max. Width	Max Deposit Thickness	Height m.AOD
5/001	Deposit	Hardcore	Tr.	Tr.	0.36m	1.77
5/002	Deposit	Made Ground	Tr.	Tr.	0.70m	1.41
5/003	Deposit	Alluvium	Tr.	Tr.	0.80m	0.71
5/004	Deposit	Peat	Tr.	Tr.	0.20m	-0.09
5/005	Deposit	Sand	Tr.	Tr.	-	-0.29

Table 6: Context Register, Trench 5

4.6.2 Natural sand [5/005] comprised a compact, mid-light orangeish yellow sand with occasional sub-rounded pebble inclusions. This deposit was overlain by [5/004], a thin firm dark black brown layer of peat that was fairly homogenous but contained occasional noticeable organic inclusions. This thin layer of peat was dished in profile and may relate to a shallow silted palaeochannel. It was overlain by [5/003], a firm-compact mid brownish grey silty clay. This alluvial deposit contained occasional sub-rounded pebbles and moderate rootlets. It was overlain by [5/002], a firm mid-dark grey brown silty clay. This made ground/demolition deposit contained frequent modern debris. It was overlain by [5/001], a modern hardcore/demolition deposit.

4.7 Trench 6

4.7.1 Trench 6 measured c.8m in length x 1.5m wide at the base and was orientated on a roughly northwest-southeast alignment. The trench was excavated to the natural horizon.

Context No	Type	Description	Max. Length	Max. Width	Max Deposit Thickness	Height m.AOD
6/001	Deposit	Made Ground	Tr.	Tr.	0.36m	1.39
6/002	Deposit	Sand	Tr.	Tr.	0.70m	0.33

Table 7: Context Register, Trench 6

4.7.2 Natural deposit [6/002] comprised compact, mid-light orange yellow sand with occasional sub-rounded pebble inclusions. This deposit was overlain by [6/002] a firm-loose dark black brown layer of sandy silt that contained frequent charcoal inclusions and modern debris.

5.0 THE FINDS

5.1 The Flintwork by Karine Le Hégarat

- 5.1.1 The evaluation produced a single struck flint weighing 92g. The artefact consists of a single platform flake core. It exhibited slight post depositional edge damage. The raw material is a fine-grained dark brown flint with a large cherty inclusion and a thin abraded outer surface. It was most probably obtained from local gravel deposits. The core was used for the removal of small flakes and although it is not chronologically diagnostic it is most likely to be earlier than the Middle Neolithic in date.

6.0 THE ENVIRONMENTAL EVIDENCE

6.1 The Microfauna by John Whittaker

6.1.1 Introduction

Six subsamples from a 92 cm column sample <4> were submitted for analysis. Two subsamples were taken from each of the three contexts through which the column cuts, these being in descending order: [3/003], [3/005] and [3/006]. The interval covered was 3.5cm down to 87.0cm from the top of the column. The purpose of this analysis was to assess the environment of deposition of the sediments using the microscopic organic remains, especially the ostracods and foraminifera, which they may contain.

6.1.2 Background

The Silwood Estate site lies between the Bermondsey and Rotherhithe eyots (gravel islands) within what was once a much wider Thames with extensive mudflats between (this at least as recent as Roman times and perhaps even later, into the Medieval period). Heard (1996, Fig. 2) provides a map which shows the topography of Roman Southwark. On it the Silwood Estate and present day Southwark Park would lie more or less in what is labelled a The Mill Stream, a creek between these two islands. How much of it was tidal is said to be conjectural.

A previous microfaunal assessment for MOLA (Whittaker 2010) from St Michael's School, John Felton Road, to the west, was associated with the former Bermondsey and Horsleydown eyots. Here a near-3m section had proven freshwater throughout with good ostracod retrieval. The channel here, saw at best slow-flowing water fed by springs perhaps emanating from the gravel eyot close by, and often became well vegetated, overgrown and a virtual swamp (with peats).

6.1.3 Methodology

Context/Subsample processed	Depth in Column 4	Weight
31003 (upper)	3.5cm	20g
31003 (lower)	55.0cm	20g
31005 (upper)	70.0cm	15g
31005 (lower)	74.0cm	15g
31006 (upper)	82.0cm	20g
31006 (lower)	87.0cm	20g

Processing was undertaken as follows. The sediment of each sample was broken up into small pieces by hand and placed in a ceramic bowl and first, dried thoroughly in an oven. A little sodium carbonate was added (to help remove the clay fraction) and then boiling water was poured over the sample. After soaking overnight each sample was washed through a 75 micron sieve with hand-hot water and the resulting residue decanted back into the bowl for drying in the oven. After final drying the samples were placed in labelled plastic bags. Picking was undertaken by first dry-sieving each sample into >500, >250,>150 and >75 micron fractions, then sprinkling a little of each

fraction at a time onto a picking tray. Ostracods, foraminifera and some organic remains were either picked out and put into faunal slides and stored for archive purposes, or merely noted.

6.1.4 Results

The organic remains are recorded on a presence/absence basis, together with the foraminifera and freshwater ostracods, identified to species level and recorded semi-quantitatively, in Table 8.

COLUMN	COLUMN 4					
SAMPLE	31003 (U)	31003 (L)	31005 (U)	31005 (L)	31006 (U)	31006 (L)
Depth from top of Column 4	3.5cm	55.0cm	70.0cm	74.0cm	82.0cm	87.0cm
earthworm granules	x	x				
slug plates	x					
molluscs	x	x				
freshwater ostracods	x	x				
?charcoal	x					
?slag	x					
iron mineral	x	x				
brackish foraminifera		x				
plant debris + seeds			x	x	x	x
Ecology						
	<i>Silted channel; semi-terrestrial freshwater</i>	<i>Tidal creek brackish</i>	<i>Vegetated channel freshwater</i>			
BRACKISH FORAMINIFERA						
COLUMN	COLUMN 4					
SAMPLE	31003 (U)	31003 (L)	31005 (U)	31005 (L)	31006 (U)	31006 (L)
Depth from top of Column 4	3.5cm	55.0cm	70.0cm	74.0cm	82.0cm	87.0cm
<i>Haynesina germanica</i>		x				
<i>Elphidium williamsoni</i>		x				
<i>Ammonia</i> sp. (brackish)		x				
FRESHWATER OSTRACODS						
COLUMN	COLUMN 4					
SAMPLE	31003 (U)	31003 (L)	31005 (U)	31005 (L)	31006 (U)	31006 (L)
Depth from top of Column 4	3.5cm	55.0cm	70.0cm	74.0cm	82.0cm	87.0cm
<i>Candona</i> spp. (juveniles)	x	x				

Table 8: Summary of foraminifera, ostracods and organic remains in column sample <4>

The lower four subsamples (two each from contexts [3/005] and [3/006], covering the interval 70–87cm from the top of Column 4, were peaty silts and sands. Their only organic content was plentiful plant debris and some seeds. It is assumed the environment was freshwater, probably a well vegetated channel or swampy depression. Such sediments invariably lack calcium

carbonate, due to decalcification, but if it were saltmarsh then agglutinating foraminifera (which make their shell from mineral grains cemented by organic material) would surely have been preserved. In spite of a diligent search none was found. A palynological analysis of these samples will, no doubt, confirm their ecology in some detail.

The uppermost two subsamples (both from Context [3/003]) appeared to be alluvial silty clays. That from the lower part (at 55cm from the top of the column) contained a few earthworm granules, mollusc scraps, and both freshwater ostracods and brackish foraminifera. The ostracods, better described as 'non-marine', can indeed tolerate low salinities in estuaries, but were rare. The foraminifera, of three species, were extremely small as to be nearly missed in the residue. As a rule, foraminifera cannot live in freshwater but the minute size of the brackish species here (usually found in low saltmarsh and tidal flats), indicates that they were virtually at the limit of their tolerance. The earthworm granules were probably washed in as earthworms cannot live in saline soils. This was therefore a brackish mudflat, but at the very limit of tidal penetration. Access of this creek to the Thames must have been through what is now Southwark Park.

In comparison, the uppermost sample, from a mere 3.5cm within Column 4, contained a whole range of remains: earthworm granules in abundance, slug plates, molluscs and a few freshwater ostracods. The molluscs, some of the more complete shells being of planorbid snails, would warrant attention from a specialist. The ostracods were all juveniles, possibly of more than one species of *Candona*, but as such they cannot be identified with any certainty. Clearly the site had now been reduced to being a wet ditch or small watercourse, the tidal channel having silted up, either naturally or through the agency of man. There was a lot of iron mineral which also usually indicates weathering of the sediment. Moreover, some charcoal and slag also seemed to indicate industry and thus this level could be medieval or even younger.

6.2 The Pollen by Rob Batchelor

6.2.1 Introduction

One 92cm long column sample (<4>) was taken through a sequence of alluvium (context [3/003]) overlying peat (context [3/005]), in turn overlying sand (context [3/006]). The overarching aim of the pollen assessment was to evaluate the potential of the sedimentary sequence for reconstructing the vegetation history of the site and its environs.

6.2.2 Methodology

Six sub-samples were extracted for the assessment of pollen content (two from each context). The pollen was extracted as follows: (1) sampling a standard volume of sediment (1ml); (2) adding two tablets of the exotic clubmoss *Lycopodium clavatum* to provide a measure of pollen concentration in each sample; (3) deflocculation of the sample in 1% Sodium pyrophosphate; (4) sieving of the sample to remove coarse mineral and organic fractions (>125µ); (5) acetolysis; (6) removal of finer mineral fraction using Sodium polytungstate (specific gravity of 2.0g/cm³); (7)

mounting of the sample in glycerol jelly. Each stage of the procedure was preceded and followed by thorough sample cleaning in filtered distilled water. Quality control is maintained by periodic checking of residues, and assembling sample batches from various depths to test for systematic laboratory effects. Pollen grains and spores were identified using the Royal Holloway (University of London) pollen type collection and the following sources of keys and photographs: Moore *et al* (1991); Reille (1992). Plant nomenclature follows the Flora Europaea as summarised in Stace (2005). The assessment procedure consisted of scanning the prepared slides, and recording the concentration and preservation of pollen grains and spores, and the principle taxa on four transects (10% of the slide) (Appendix 1).

6.2.3 Results

The results of the assessment indicate low to moderate concentrations of pollen through the sequence, with the exception of the sample from the base of the peat which contains a very high concentration of remains. Pollen preservation is moderate throughout the sequence.

Within the two samples from the sand (context [3/006]), the pollen assemblage included *Alnus* (alder), *Quercus* (oak), *Tilia* (lime), *Pinus* (pine), *Corylus* type (e.g. hazel), Poaceae (grass family), Cyperaceae (sedge family), *Chenopodium* type (e.g. fat hen) and buckler/polypody ferns (*Dryopteris* type and *Polypodium vulgare*). This assemblage most likely represents a combination of wetland and dryland habitats. Alder carr most likely occupied the wetland surface with an understorey of grasses, sedges, mixed herbs and aquatics. On the dryland, mixed oak-lime dominated mixed deciduous woodland appears to have grown. Hazel may have grown on either surface.

The two samples taken from the peat (context [3/005]) contain a similar pollen assemblage and thus environmental reconstruction, to those from the sands. Within the lower of these samples, a very high concentration and reasonably diverse pollen assemblage is recorded, but in the uppermost sample, concentration and diversity decline. The dominance of woodland taxa and limited quantity of herbaceous pollen would suggest that the peat is prehistoric in age, although no material suitable for radiocarbon dating was recovered.

The transition into the alluvium (context [3/003]) is characterised in the pollen assemblage by the decline of tree and shrub taxa (such as alder, oak and hazel), and increase in the concentration and diversity of herbaceous taxa. These herbaceous taxa include sedges, grasses, dandelions, fat hen (or other Chenopodiaceae), *Anthemis* type (chamomile) and possibly cereal pollen (e.g. barley). This assemblage is suggestive of a more open and wetter environment on the wetland, whilst woodland has clearly declined on the dryland. The cause of change in environment on the wetland is unclear from the pollen record, although a variation in relative sea level change (i.e. an increase) seems a likely scenario. The change in environment on the dryland however, was most likely caused by clearance for agricultural and/or settlement purposes.

6.2.4 Discussion

There are clear changes in vegetation at the site through the sequence assessed which might be the result of hydrological change and human activity. The influence of the latter seems likely due to the occurrence of cereal pollen combined with a decline in dryland arboreal taxa, whilst on the wetland, trees and shrubs decline contemporaneously with a change in stratigraphy. However, no material suitable for establishing a radiocarbon chronology has been identified.

6.3 The Bulk Environmental and Wood Samples by Karine Le Hégarat and Lucy Allott

6.3.1 Introduction and methodology

Peat and alluvium deposits were uncovered during the evaluation work at the site. Three bulk soil samples of between 20 and 40L were taken to establish the presence of environmental remains which would help clarify the post-depositional and sedimentary history of the deposits. Sample <1> was taken from peat deposit [3/005], and sample <2> came from the overlying dark alluvium [3/003]. Sample <6> was collected from peat deposit [4/005] in Trench 4. In addition, sampling aimed to recover material suitable for dating and two wood samples, <3> and <5>, were extracted from contexts [3/005] and [4/005], respectively for identification.

Sample <2> was processed in a flotation tank. The residue and flot were retained on 500 and 250µm meshes respectively and an overview of their contents is presented in Table 9. Samples <1> and <6> from the peat deposits were wet sieved. Sub-samples of 2L were washed through a stack of sieves measuring 4mm, 2mm, 1mm and 250µm and each fraction was retained in water. The fractions were scanned for environmental remains under a stereozoom microscope at 7-45x magnifications and an overview of their contents is recorded in Table 10. Waterlogged wood samples were manually sectioned and identified under a transmitted light microscope with reference to modern comparative material.

6.3.2 Results

Sample <2> (alluvium [3/003]) produced a very small flot (<2ml in size) which was dominated by uncharred fine rootlets. Their presence could indicate some post-depositional disturbance within the alluvial layer with the possibility of contamination by later intrusions. A small quantity of land snail shells was present in the flot and residue. With the exception of three small charcoal fragments <4mm in size and two indeterminate charred plant remains, the deposit produced no artefactual or environmental remains.

Sample <1> (peat layer [3/005]) contained no charred botanical remains at all. It was dominated by very small uncharred indeterminate plant detritus <1mm in size. It produced a very small assemblage of uncharred wood fragments. The assemblage comprised a single piece >15mm in size and infrequent pieces <2mm. Four unidentified leaves were also recorded in the residue.

Charred botanical remains were also absent in sample <6> (peat layer [4/005]). The sample produced a moderate quantity of uncharred compressed organics but no intact wood fragments were noted. A single poorly preserved seed of possible blackberry/raspberry (cf. *Rubus fruticosus* agg./*idaeus*) was present.

Wood samples <3>, [3/005] and <5>, [4/005] were identified as deciduous oak (*Quercus* sp.). Both were from large, slow grown timbers and were not considered suitable for dating.

6.3.3 Discussion

The three environmental bulk samples taken during the evaluation work have confirmed the presence of a small assemblage of botanical remains consisting principally of small uncharred wood fragments but also infrequent charred wood pieces and uncommon uncharred macroplants. The assemblage is too limited to provide evidence for vegetation in the area. Blackberry/raspberry could be an indication of disturbed ground or scrub although it can grow in a range of habitats, while oak is more indicative of woodland vegetation that would have been exploited for timber and fuel. Pollen from this context provides evidence for oak-lime dominated woodland on the dry ground with alder-carr on the wetter ground (see Batchelor above). It is interesting to note the absence of evidence for the alder-carr vegetation in the macrobotanical assemblage. Alder seeds tend to preserve well in peat deposits and their absence in the macrobotanical assemblage, but presence in the pollen, may indicate that the trees were growing nearby rather than in the immediate vicinity.

The assemblages of charred wood fragments and uncharred macrobotanical remains are too limited to provide material suitable for radiocarbon dating. Both of the larger oak wood samples, <3> and <5> also provide no potential for dating this sequence.

Sample Number	Context	Context / deposit type	Sample Volume litres	Sub-Sample Volume litres	Flot							Residue					
					Weight g	Flot volume ml	Uncharred %	Sediment %	Charcoal <4mm	Other botanical charred	Identifications	Preservation	Land Snail Shells	Charcoal <4mm	Weight (g)	Land Snail shells	Weight (g)
2	3/003	Alluvium	20	20	<2	<2	85	5	* (1)	*	CPR (2)	+	** 2 types 10%	* (2)	<2	**	2

Table 9: Sample quantification for one sample processed by flotation (* = 0-10, ** = 11-50, *** = 51 – 250, **** = >250) and preservation (+ = poor, ++ = moderate, +++ = good)

Sample Number	Context	Sample Volume litres	Sub-sample processed litres	Sieves used	Residues volume (ml)	Sub-sample scanned (ml)	Macrobotanical Remains	Identification and preservation notes	Wood	Notes on Preservation of Wood	Faunal remains	Insects and Fly pupae	Other finds
1	3/005	40	2	4, 2, 1mm & 250 micron	400	200	P	Uncharred: unidentified leaves (*1/4)(++)	P	Uncharred: one single piece >15mm in size, well preserved; remaining fragments <2mm in size (*)	A	A	A
6	4/005	20	2	4, 2, 1mm & 250 micron	650	200	P	Uncharred: cf. <i>Rubus fruticosus</i> agg. <i>lidaeus</i> (*1) (+)	P	Uncharred: compressed organics, possibly degraded wood fragments (***), no round wood noticed; fragments <10mm in size are very fragile	A	A	A

Table 10: Residues quantification for two samples processed by wet sieving (* = <5 items, ** = 5-10 items, *** = 11-25 items, **** = 26-100 items and ***** = > 101 items) and preservation (+ = poor, ++ = moderate, +++ = good). Presence of remains is denoted as 'P'

7.0 DISCUSSION

7.1 Geoarchaeological Formation Processes

- 7.1.1 There was considerable discrepancy between the levels at which the natural horizon was reached across the site and this was not predominantly the result of modern truncation. Trench 1, located at the north-east of the site, proved to be the shallowest of the six trenches. The gravels here were encountered at a comparatively shallow depth (c.1.20m). This is in direct contrast to Trenches 4 situated in the south of the area, where excavations reached 3.20m before the natural horizon was reached and mechanical excavations ceased. Peat deposits were also encountered in Trenches 3 and 4 but were not present elsewhere on site. Both the peat and the overlying alluvium was at its thickest in Trench 4
- 7.1.2 The undulating nature of the geology can probably be explained by the presence of a gravel bar (in the location of Trench 1) with a channel and/or low lying flood plain environment situated to the south. The winding course of Rogue Lane (later Corbett's Lane) shown on Rocque's map of 1741-5 (Fig. 4) may represent the course of this underlying gravel bar. The Desk Based Assessment postulated the sinuous line of this road as marking the course of a former embankment or marsh wall (MoLA 2010). If this is the case, the road may have been placed to take advantage of the topographically higher, drier land of the gravel bar.
- 7.1.3 Although only moderate assemblages of pollen and microfauna were recovered from the column sample in Trench 3, these provided good evidence for the environments in which the successive layers of natural sandy gravels, peat and alluvium formed. Microfossil evidence demonstrates that the both the gravels and peat formed in similar freshwater conditions and the pollen record suggests that the site was located in proximity to a range of different vegetative environments, including wetland and deciduous woodland. However, the lack of macrobotanical remains relating the latter may suggest that the woodland was not in the immediate vicinity of the site.
- 7.1.4 Microfauna and pollen provide consistent evidence for environmental change at the time that the alluvium started to accumulate. The lower samples from alluvial layer [3/003] indicate that it was probably formed in a well-vegetated channel in a brackish mudflat environment. Sub-samples from higher up in the same deposit indicate that this watercourse probably silted up over time. There was also evidence for a decline in local woodland during this period and for an increasingly wetter wetland environment.
- 7.1.5 The three environmental bulk samples taken during the evaluation work only provided a very small assemblage of botanical remains along with land snail shells. None of the charred wood was deemed suitable for radiocarbon dating. Although pollen evidence suggested that the peat is of prehistoric origin, the sequence of geoarchaeological deposits remains undated.

7.2 Archaeological Evidence

- 7.2.1 No archaeological features, structures or deposits were encountered during the evaluation.
- 7.2.2 A single flint core comprised the only significant artefact encountered at the site. This is likely to be earlier than the middle Neolithic in date. Although this stray find was only retrieved from the surface of the natural geology in Trench 2 and not from an archaeological feature it does help to confirm prehistoric activity in the vicinity of the site.

7.3 Conclusions

- 7.3.1 Although deep deposits of made-ground were encountered across the site, the natural horizons at the sampled locations were surprisingly intact (apart from possibly Trench 6 where a deep modern deposit directly overlay the natural sands).
- 7.3.2 The high potential for prehistoric, geoarchaeological and palaeoenvironmental evidence at the site identified by the Desk Based Assessment (MoLA 2010) was proved correct; however this evidence was limited in nature and unfortunately the sequence could not be dated.
- 7.3.3 The low potential for archaeology from all other periods (excluding 19th century building) as identified by the DBA (ibid) also proved to be correct.

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Appendix 1: Pollen-stratigraphic assessment of column sample <4>

Sample depth (from top of column)	Context number	Sediment description	Main pollen taxa		Concentration 0-5	Concentration grains/cm ³	Preservation 0-5	Microcharcoal 0-5
			Latin name	Common name				
3.5	3/003	Alluvium	<i>Pinus</i>	pine	2	4672	3	0
			Poaceae	grass family	2			
			Cyperaceae	sedge family	3			
			Lactuceae	dandelion family	5			
			<i>Chenopodium</i> type	e.g. fat hen	1			
55	3/003	Alluvium	<i>Pinus</i>	pine	2	35739	3	0
			<i>Quercus</i>	oak	2			
			<i>Alnus</i>	alder	1			
			<i>Betula</i>	birch	1			
			Poaceae	grass family	4			
			Cyperaceae	sedge family	1			
			of <i>Cereale</i> type	e.g. barley	3			
			Lactuceae	dandelion family	1			
			<i>Chenopodium</i> type	e.g. fat hen	1			
			<i>Anthemis</i> type	chamomile	1			
			<i>Alnus</i>	alder	10			
			<i>Corylus</i> type	e.g. hazel	2			
			Poaceae	grass family	1			
<i>Dryopteris</i> type	buckler fern	20						
70	3/005	Peat	<i>Alnus</i>	alder	2	12045	3	0
			<i>Corylus</i> type	e.g. hazel	2			
			Poaceae	grass family	1			
			<i>Dryopteris</i> type	buckler fern	20			
			<i>Alnus</i>	alder	8			
			<i>Quercus</i>	oak	4			
			<i>Fraxinus</i>	ash	3			
			<i>Tilia</i>	lime	2			
			<i>Pinus</i>	pine	2			
			<i>Corylus</i> type	e.g. hazel	7			
			Poaceae	grass family	2			
Lactuceae	dandelion family	1						
<i>Chenopodium</i> type	e.g. fat hen	1						
<i>Cirsium</i> type	thistle	1						
<i>Dryopteris</i> type	buckler fern	High						
82	3/006	Sand	<i>Alnus</i>	alder	4	9970	3	0
					2			

Sample depth (from top of	Context number	Sediment description	Main pollen taxa		Concentration 0-5	Concentration grains/cm ³	Preservation 0- 5	Microcharcoal 0 - 5
87	3/006	Sand	<i>Pinus</i> <i>Tilia</i> <i>Corylus</i> type Poaceae <i>Polypodium vulgare</i> <i>Dryopteris</i> type <i>Alnus</i> <i>Pinus</i> <i>Quercus</i> Erica type <i>Corylus</i> type Poaceae Cyperaceae <i>Chenopodium</i> type Sparganium type	pine lime e.g. hazel grass family polypody fern buckler fern alder pine oak heath e.g. hazel grass family sedge family e.g. fat hen bur-reed	1 3 1 1 2 21 2 2 5 1 1 1 1 3 1	10760	3	0

Key:

Concentration: 0 = 0 grains; 1 = 1-75 grains, 2 = 76-150 grains, 3 = 151-225 grains, 4 = 226-300, 5 = 300+ grains per slide
 Preservation: 0 = none, 1 = very poor, 2 = poor, 3 = moderate, 4 = good, 5 = excellent
 Charcoal: 0 = none, 1 = negligible, 2 = occasional, 3 = moderate, 4 = frequent, 5 = abundant

HER Summary Form

Site Code	SWE 12					
Identification Name and Address	Silwood Estate, Silwood Street, Rotherhithe					
County, District &/or Borough	Southwark, Greater London					
OS Grid Refs.	TQ 3523 7858					
Geology	Shepperton Gravels					
Arch. South-East Project Number	5059					
Type of Fieldwork	Eval. X	Excav.	Watching Brief	Standing Structure	Survey	Other
Type of Site	Green Field	Shallow Urban	Deep Urban X	Other		
Dates of Fieldwork	Eval. 21 st Feb- 1 st Mar 2012	Excav.	WB.	Other		
Sponsor/Client	CgMs Consulting					
Project Manager	Andy Leonard					
Project Supervisor	Andrew Margetts					
Period Summary	Palaeo.	Meso.	Neo.	BA	IA	RB
	AS	MED	PM	Other		
<i>Summary</i>						
<p><i>Archaeology South-East was commissioned by CgMs Consulting Ltd, on behalf of their client, to undertake an archaeological evaluation in advance of the construction of new residential units at the location of the former Silwood Estate.</i></p> <p><i>No archaeological features were encountered during the evaluation and only a single flint core of Middle Neolithic or earlier date was recovered. The evaluation did however encounter an interesting geoarchaeological sequence, including a peat formation in the south-east corner of the site. Overlying the peat was alluvium probably formed in a brackish channel which silted over time. Evidence for a probable gravel bar was also found to the north of the site</i></p>						

OASIS FORM

OASIS ID: archaeol6-122920

Project details

Project name Archaeological Evaluation Report, Silwood Estate, Rotherhithe, South Bermondsey, London SE1

Short description of the project Archaeology South-East was commissioned by CgMs Consulting Ltd, on behalf of their client, to undertake an archaeological evaluation in advance of the construction of new residential units at the location of the former Silwood Estate.

No archaeological features were encountered during the evaluation and only a single flint core of Middle Neolithic or earlier date was recovered. The evaluation did however encounter an interesting geoarchaeological sequence, including a peat formation in the south-east corner of the site. Overlying the peat was alluvium probably formed in a brackish channel which silted over time. Evidence for a probable gravel bar was also found to the north of the site.

Project dates Start: 21-02-2012 End: 01-03-2012

Previous/future work Yes / Not known

Any associated project reference codes SWE 12 - Sitecode

Type of project Field evaluation

Site status None

Current Land use Residential 1 - General Residential

Monument type 0 None

Significant Finds FLINT Uncertain

Methods & techniques 'Targeted Trenches'

Development type Urban residential (e.g. flats, houses, etc.)

Prompt Direction from Local Planning Authority - PPS

Position in the planning process After full determination (eg. As a condition)

Project location

Country England
Site location GREATER LONDON SOUTHWARK BERMONDSEY ROTHERHITHE
 AND SOUTHWARK Silwood Estate

Postcode SE1 XXX

Study area 1.00 Hectares

Site coordinates TQ 535660 178400 50.9389518441 0.185951137149 50 56 20
 N 000 11 09 E Point

Lat/Long Datum Unknown

Height OD / Depth Min: 0m Max: 2.00m

Project creators

Name of Archaeology South East
Organisation

Project brief CgMs Consulting
originator

Project design Southwark Council
originator

Project Andy Leonard
director/manager

Project supervisor Andrew Margetts

Type of CgMs Consulting
sponsor/funding
body

Project archives

Physical Archive No
Exists?

Digital Archive No
Exists?

Paper Archive No
Exists?

**Project
bibliography 1**

 Grey literature (unpublished document/manuscript)
Publication type

Title Archaeological Evaluation Report Silwood Estate, Rotherhithe
South Bermondsey London, SE 1

Author(s)/Editor(s) Margetts, A.

Other bibliographic
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Date 2012

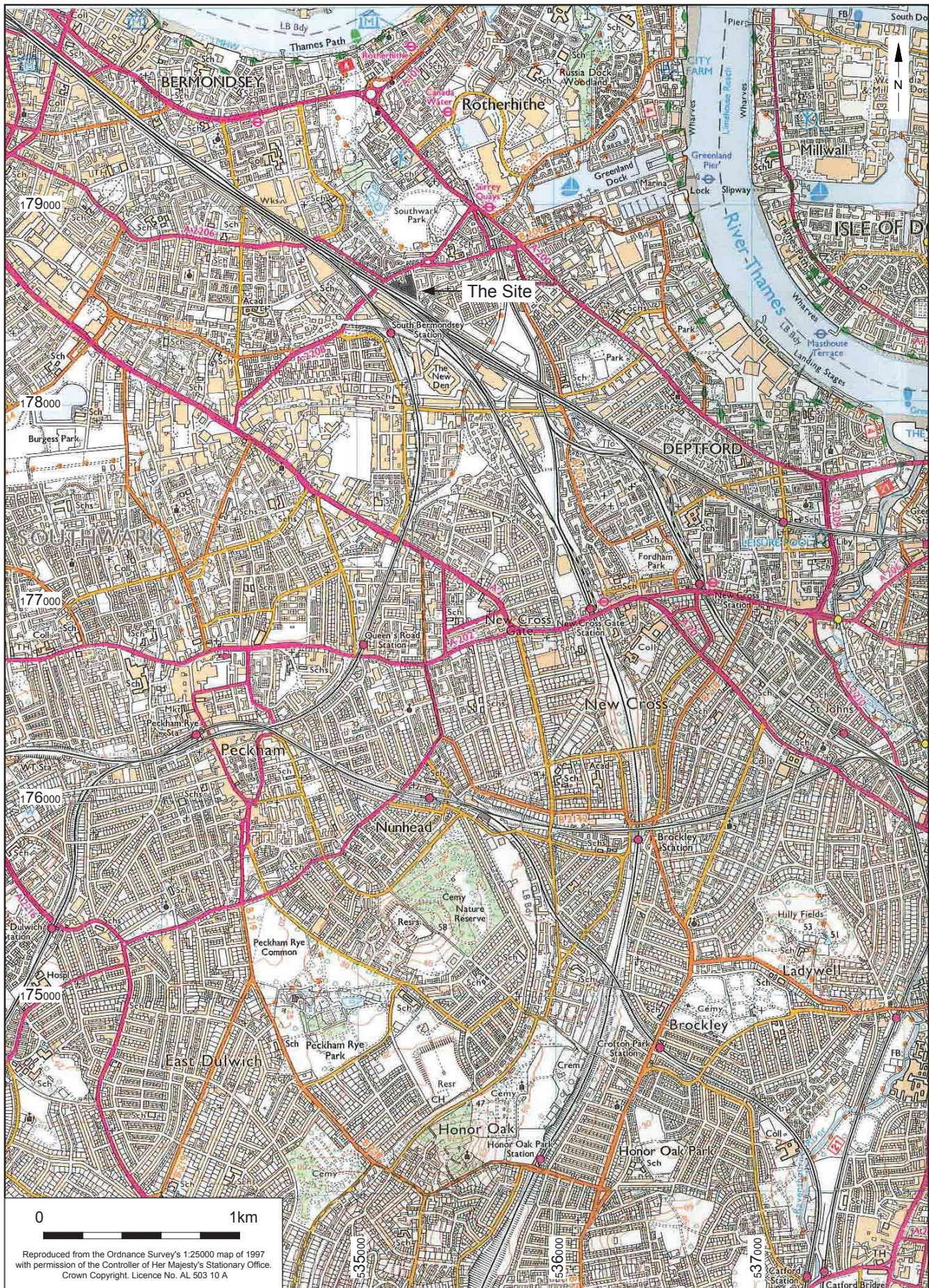
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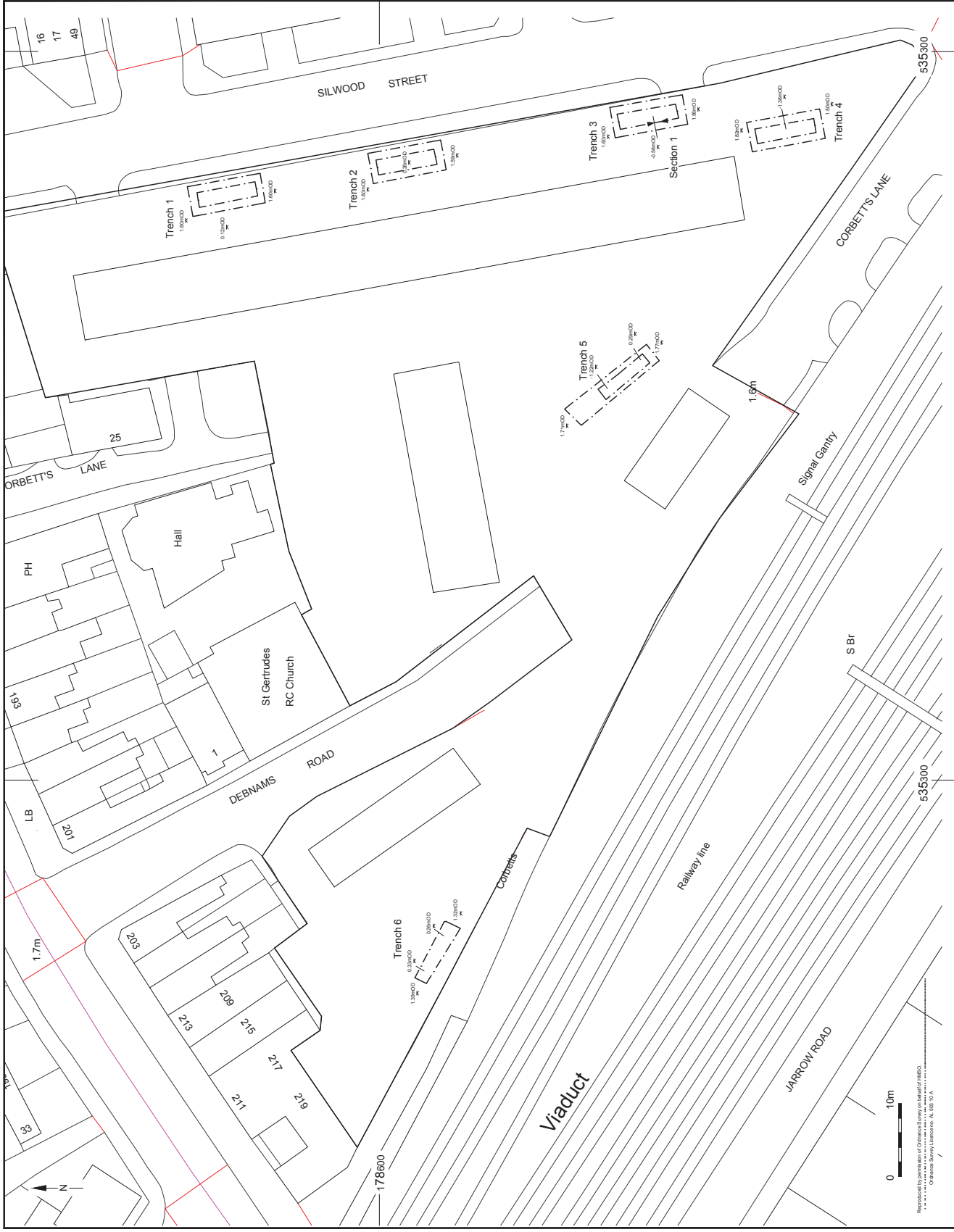
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Entered on 10 April 2012



© Archaeology South-East		Silwood Estate, Southwark		Fig. 1
Project Ref: 5059	March 2012	Site location		
Report Ref: 2012054	Drawn by: FEG			

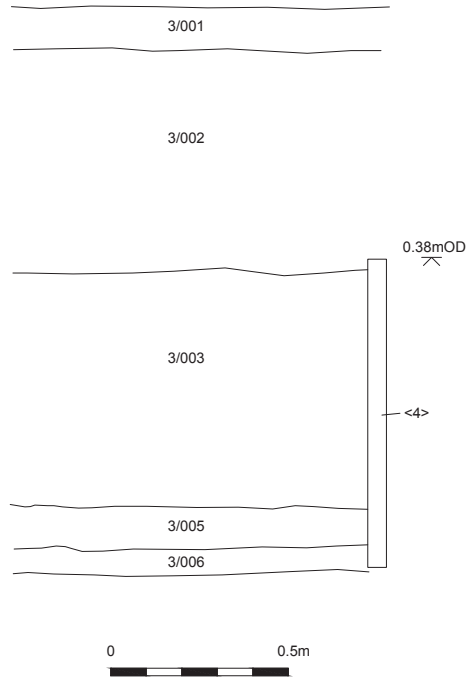


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Project Ref: 50569	March 2012	Trench location plan	
Report Ref: 2012054	Drawn by: FEG		

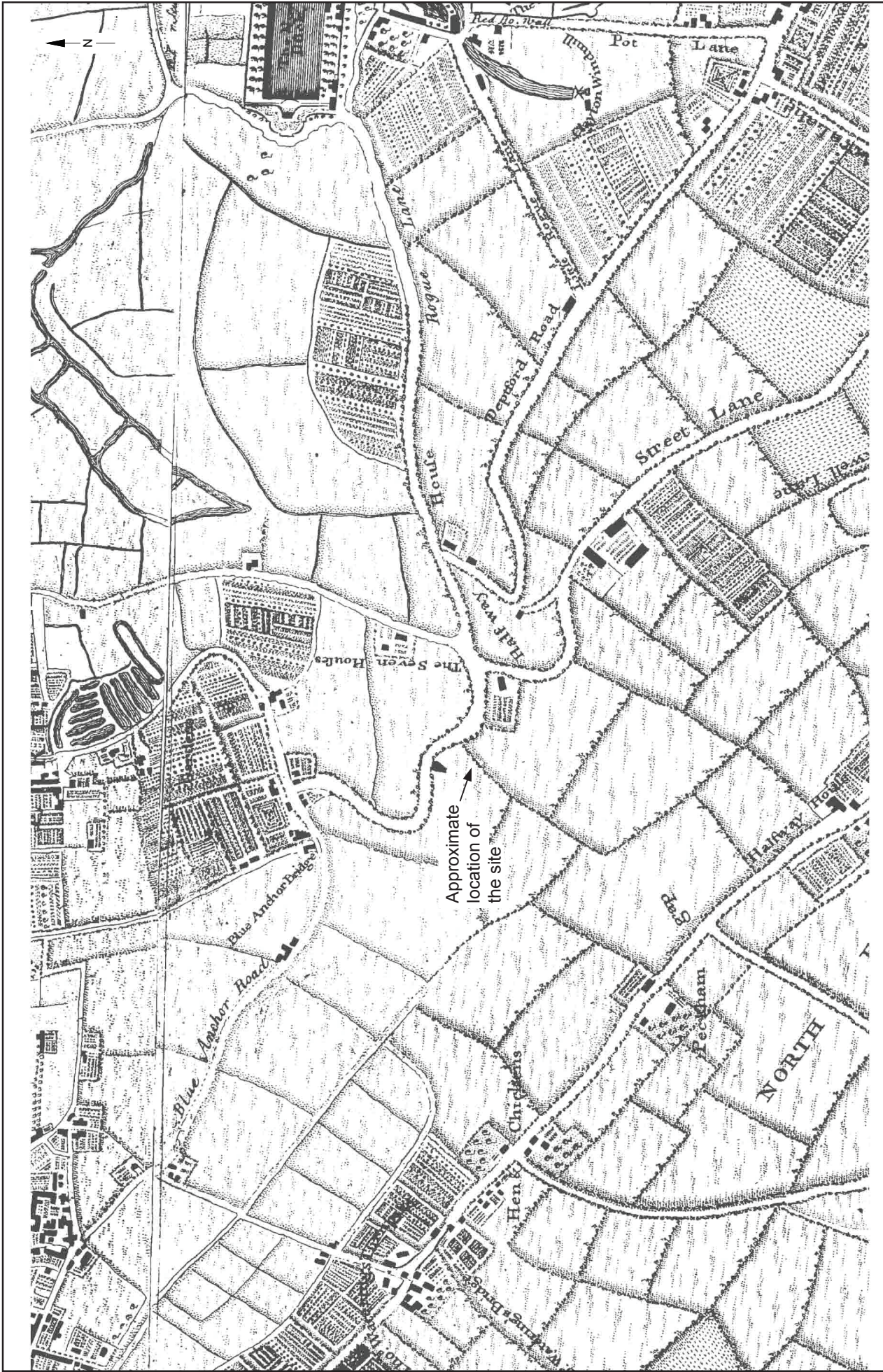
Fig. 2

Section 1



East facing section of trench 3

• Archaeology South-East		Silwood Estate, Southwark	Fig. 3
Project Ref: 5059	March 2012	Section of trench 3 showing location of column sample <4>	
Report Ref: 2012054	Drawn by: FEG		



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