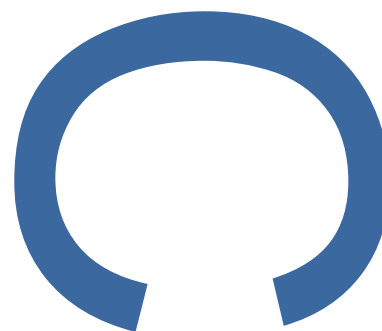


**MARINE WHARF,  
LAND AT PLOUGH WAY,  
ROTHERHITHE, LONDON SE16 7UD**

**AN ARCHAEOLOGICAL EVALUATION**

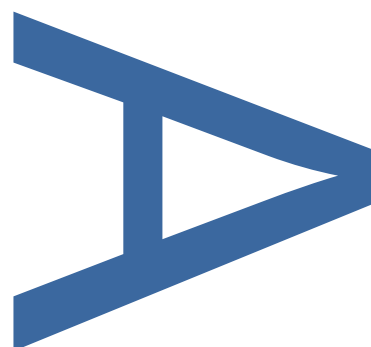


**PLANNING APPLICATION NUMBER:  
13/85917**

**LOCAL PLANNING AUTHORITY:  
LONDON BOROUGH OF LEWISHAM**

**SITE CODE: MNW16**

**FEBRUARY 2016**



**PRE-CONSTRUCT ARCHAEOLOGY**



**DOCUMENT VERIFICATION**

**MARINE WHARF, LAND AT PLOUGH WAY,  
ROTHERHITHE, LONDON SE16 7UD**

**AN ARCHAEOLOGICAL EVALUATION**

Quality Control

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**MARINE WHARF, LAND AT PLOUGH WAY, ROTHERHITHE, LONDON SE16 7UD**  
**AN ARCHAEOLOGICAL EVALUATION**

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**LOCAL PLANNING AUTHORITY:** London Borough of Lewisham

**PLANNING APPLICATION NUMBER:** 13/85917

**CENTRAL NGR:** TQ 3648 7884

**COMMISSIONING CLIENT:** CgMs Consulting

On behalf of: Quickdrop Limited

**WRITTEN AND RESEARCHED BY:** Neil Hawkins

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**February 2016**

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## **1 ABSTRACT**

- 1.1 This report details the results of an archaeological evaluation undertaken by Pre-Construct Archaeology Limited at Marine Wharf, land at Plough Way, Rotherhithe, London SE16 7UD (Figure 1). The work was commissioned by CgMs Consulting on behalf of the client, Quickdrop Limited.
- 1.2 The evaluation consisted of five trenches located across the previously undeveloped area of the site to assess the archaeological potential of the upper stratigraphic layers. The site is known to be located upon deep deposits of alluvium which have rendered pre-post-medieval occupation impossible; therefore the evaluation has targeted only the more recent potential of the site, with the underlying sequence recorded by means of machine-dug sondages within the evaluation trenches.
- 1.3 The evaluation recorded natural alluvium in only one of the five trenches. This was a homogenous and sterile clay which contained no anthropogenic material or organic components. This deposit was sealed by a considerable thickness, 4.40m, of modern made ground.
- 1.4 The four other evaluation trenches all exclusively recorded extensive sequences of modern made ground, being between 3.70m to 4.10m in thickness. These considerable sequences of modern made ground relate to an episode of ground raising in the area known to have occurred in the 19<sup>th</sup> and 20<sup>th</sup> centuries.
- 1.5 This report incorporates the findings of a geotechnical site investigation undertaken in 2015 (Appendix 4), which demonstrated results correlating the findings of the evaluation: that thick, natural alluvium underlies the modern made ground and disturbed alluvium across the site, capping terrace gravels.

## **2 INTRODUCTION**

- 2.1 An archaeological evaluation was undertaken by Pre-Construct Archaeology Limited at Marine Wharf, Plough Way, Rotherhithe, London SE16 7UD, between 12<sup>th</sup> and 18<sup>th</sup> January 2016. The evaluation consisted of five stepped trenches located across the site to enable proportionate spatial coverage of the area whilst avoiding the footprint of the previous building at the site. The work was commissioned by CgMs Consulting on behalf of the client, Quickdrop Limited.
- 2.2 The site is centred on the National Grid Reference of TQ 3648 7884 and is approximately 8,500m<sup>2</sup> in area. Located under 200m due east of the River Thames it is bounded by Plough Way to the north, a development under construction on Cary Avenue to the west, properties fronting Hockett Close to the south and Grove Street to the east. It is located within the London Borough of Lewisham.
- 2.3 The site was previously occupied by a two storey commercial premises 'Marine Wharf', constructed in the late 1980's or early 1990's. This building encompassed the majority of the eastern half of the site and had been founded upon numerous piles and pilecaps
- 2.4 The archaeological evaluation was supervised by Ireneo Grosso and Neil Hawkins and project managed by Chris Mayo, all of Pre-Construct Archaeology Limited (PCA). The work was undertaken following an approved Written Scheme of Investigation (Mayo 2016), and the site works were monitored by the Mark Stevenson of the Greater London Archaeological Advisory Service (GLAAS), Historic England on behalf of the London Borough of Lewisham.
- 2.5 The site was subject of an Archaeological Desk-Based Assessment (Hawkins 2013) which contains a full background to the site. The site is located in an Area of Archaeological Priority as defined by the London Borough of Lewisham. The site does not lie within the vicinity of a Scheduled Ancient Monument, Historic Battlefield or Historic Wreck site.
- 2.6 The site was recorded using the unique Museum of London site code MNW16.

### **3 PLANNING BACKGROUND**

3.1 The proposed development of the site is subject to planning guidance and policies contained within the National Planning Policy Framework (NPPF), the London Plan and those of the London Borough of Lewisham, which fully recognises the importance of the buried heritage for which it is the custodian.

#### **3.2 National Guidance: National Planning Policy Framework**

3.2.1 In March 2012, the government published the National Planning Policy Framework (NPPF), which replaced existing national policy relating to heritage and archaeology (Planning Policy Statement 5: Planning for the Historic Environment (PPS5)). In summary, current national policy provides a framework which protects nationally important designated Heritage Assets and their settings, in appropriate circumstances seeks adequate information (from desk based assessment and field evaluation where necessary) to enable informed decisions regarding the historic environment and provides for the investigation by intrusive or non-intrusive means of sites not significant enough to merit *in-situ* preservation.

#### **3.3 Regional Guidance: The London Plan**

3.3.1 Additional relevant planning strategy framework is provided by The London Plan, which was updated in 2015. It includes policy 7.8 of relevance to heritage assets and archaeology.

#### **3.4 Local Planning Policy: London Borough of Lewisham's Core Strategy**

3.4.1 The local planning authority responsible for the study site is the London Borough of Lewisham whose LDF contains a number of documents relating to planning policies within the Borough. The key planning document in the LDF is the Core Strategy, adopted on 29<sup>th</sup> June 2011. The Lewisham Core Strategy sets out the vision, objectives, strategy and policies that will guide public and private sector investment to manage development and regeneration in the Borough during the period from 2011 to 2026. It sets out the overall ambitions and priorities for the borough, a set of proposals, and a means for making sure that they are delivered. Contained within the Core Strategy are a number of Objectives and Policies that are of relevance to the current development proposal in relation to the historic environment. These are:

- Core Strategy Objective 10: Protect and enhance Lewisham's character
- Core Strategy Policy 15
- Core Strategy Policy 16

3.4.2 A second LDF document is the Lewisham Development Management Local Plan (DMLP), adopted on 26<sup>th</sup> November 2014, which sets out the Council's planning policies for managing development in the London Borough of Lewisham and is used to guide, assess and determine planning applications. The following policies are of relevance to the current development proposal in terms

of the historic environment:

- DM Policy 30
- DM Policy 36
- DM Policy 37

### **3.5 Site Specific Background**

3.5.1 Planning permission has been granted for the redevelopment of the site under application number 13/85917, as follows:

DC/13/85917 | Demolition of the existing office building and redevelopment to provide 183 residential dwellings (88 x 1 bed, 55 x 2 bed, 36 x 3 bed and 4 x 4 bed) and 1,053 sqm of flexible commercial floorspace (A1, A2, A3, B1 and D2 Use Classes) in buildings up to 8 storeys, together with access onto Plough Way, 83 car parking spaces, 233 cycle parking spaces, landscaping and public realm improvements at Marine Wharf East, Plough Way, Deptford, SE16 | MARINE WHARF EAST, LAND ON THE SOUTH SIDE OF, PLOUGH WAY, LONDON

The planning submission included an archaeological desk-based assessment (Hawkins 2013).

3.5.2 The Archaeology Advisor to the London Borough of Lewisham advised CgMs Consulting that an evaluation was necessary to investigate the site. The evaluation, herein reported, was designed in a Written Scheme of Investigation (Mayo 2016) which was approved by GLAAS.

3.5.3 The site is located in an Area of Archaeological Priority by the London Borough of Lewisham.



## **4 GEOLOGY AND TOPOGRAPHY**

### **4.1 Geology**

4.1.1 The bedrock geology of the site consists of the Thanet Sand Formation capped by alluvial clays and peats which can be up to 10m thick (Hawkins 2013). Modern made ground sits above the alluvium, between 2m and 4m thick.

### **4.2 Topography**

4.2.1 Existing ground level is between 2.7m OD on the south and 4.5m OD on the north. This ground level is entirely a product of ground level being artificially raised between the mid eighteenth century and the present. This is particularly noticeable on the east of the site where ground level is c. 1.5m higher than surrounding streets (Hawkins 2013).

### **4.3 Geotechnical Investigation**

4.3.1 A previous geotechnical investigation (Oakley Soils and Concrete Engineering 2015, Appendix 4) suggests alluvial deposits located across the site between 3.50m and 4.10m below ground level. Natural terrace gravels were identified between 7.40m and 9m below ground level. In another localised area alluvium was suggested at 2.70m below ground level and terrace gravel also at 2.70m below ground level. This level seems unusually high in comparison with the records from adjacent interventions, and is therefore thought to be an anomaly.

## **5 ARCHAEOLOGICAL AND HISTORICAL BACKGROUND**

### **5.1 Introduction**

- 5.1.1 The archaeological and historical background below has been summarised from the site specific Desk Based Assessment (Hawkins 2013).

### **5.2 Prehistoric**

- 5.2.1 Alluvial deposits underlying the site have a palaeoenvironmental potential for the Prehistoric periods. However these deposits have been extensively examined in past investigations in northeast Southwark and northwest Lewisham.

### **5.3 Roman**

- 5.3.1 The only finds dating to the Roman period within the vicinity are two Roman coin hoards found approximately 150 years ago; the first of Hadrian was recorded in 1867 probably during the excavation of the south Dock. The second was a late Roman coin hoard of the emperors Arcadius and Honorius recorded from 'Chilton Grove'.

### **5.4 Anglo Saxon, Early Medieval and Late Medieval**

- 5.4.1 During the Anglo Saxon and early medieval periods it is thought the site is likely to have lain in an area of marsh pasture, subject to periodic flooding; from the twelfth century flood defences stabilised through the process of inning. Throughout the late medieval period the site is thought to have lain in pasture lands bisected by drainage ditches with embanked flood defences.

### **5.5 Post-Medieval and Modern**

- 5.5.1 The site first began to be developed from the early sixteenth century onwards as numerous docks and wharves were built alongside the Thames. John Rocque's map of 1747 shows Grove Street on the eastern boundary of the site built up with properties along the eastern edge of the site. To the north the 'upper wet dock' represents part of what is now 'Greenland Dock'. Horwood's map of 1819 shows the area of the site to be undeveloped and the 'East Country Dock' (now the South Dock Marina) begun to be formed to the north.
- 5.5.2 On the Saint Paul Deptford Tithe map of 1844 the east of the site is occupied by low status courts and tenements and the west occupied by market gardens and pasture. The Ordnance Survey map of 1870 shows the west of the site occupied by a railway supplied timber yard. By 1895 the railway yard had been extended across the majority of the site.
- 5.5.3 By 1919 the site had been altered considerably, being cleared and the ground level substantially raised to form a railway yard and by 1929 the site was recorded as a timber yard. Sometime in the early twentieth century before 1919 Plough Way directly to the north of the site had also been constructed.

5.5.4 By 1951 the site is recorded as part of a railway yard, most probably in use as a timber yard. It continues to be labelled as such in 1981 though in reality the site may have been disused at this time. Shortly after the site was redeveloped for commercial use as Marine Wharf.

## 6 ARCHAEOLOGICAL METHODOLOGY

- 6.1 A detailed methodology for the archaeological evaluation was set out in the approved Written Scheme of Investigation (Mayo 2016). The proposed trenching scheme consisted of six trenches each measuring 22.4m by 4.2m at ground level to expose a basal area of 20m by 1.8m at up to 2.4m below ground level. During the evaluation the number of evaluation trenches was cut from six to five due to on-site spatial constraints. The locations, alignments and lengths of trenches four and five, in the western area of the site, were also altered somewhat again due to on-site constraints.
- 6.2 The trench locations were CAT scanned by a trained member of Pre-Construct Archaeology Ltd prior to machine excavation. The machining was undertaken using a HYMAC-type excavator; a breaker and toothed bucket was initially used to break the ground surface. Once completed a toothless ditching bucket was used to remove modern overburden under archaeological supervision. Machine excavation then continued under archaeological supervision in spits of 100mm to a maximum safe working depth of 2.4m below ground level. This was achieved by excavating steps into the trench edges at a gradient of 1:1. The steps were cut so that they were a maximum depth of 1.2m deep and an equivalent width. Subsequently in all evaluation trenches a deeper machine-dug sondage was undertaken to the full reach of the mechanical excavator to further investigate lower deposits.
- 6.3 All recording systems adopted during the investigations were fully compatible with those most widely used elsewhere in London; that is those developed out of the Department of Urban Archaeology Site Manual and presented in PCAs *Fieldwork Operations Manual 1* (Taylor 2009). Individual descriptions of all archaeological and geological strata and features excavated and exposed were entered onto pro-forma recording sheets. All plans and sections of archaeological deposits were recorded on polyester based drawing film, the plans being at scale of 1:20 and the sections at 1:10. The OD heights of all principle strata were calculated and indicated on the appropriate plans and sections.
- 6.4 A photographic record of the investigations was made using HQ digital SLR format.
- 6.5 Temporary Bench Marks were installed upon the site using a Leica GPS survey instrument, also used to locate the trenches to the OS grid.
- 6.6 The archaeological works were and monitored by Mark Stevenson of the Greater London Archaeological Advisory Service (GLAAS) on behalf of the London Borough of Lewisham.
- 6.7 The complete site archive including site records, photographs and finds will be deposited at the London Archaeological Archive Research Centre, (LAARC) under the site code MNW16.

## **7 ARCHAEOLOGICAL SEQUENCE**

### **7.1 Phase 1: Natural**

- 7.1.1 A geotechnical investigation has recently been undertaken (Oakley Soils and Concrete Engineering 2015, see data logs at Appendix 4) comprising of three boreholes and four window samples located across the area of the site (Figure 2, Table 1). The results showed natural alluvial deposits between 2.70m, 3.50m and 4.10m below ground level at the western end of the site (WS1, BH2 and BH1A) and 3.90m below ground level in the southeastern area (BH3). The alluvium was recorded to be at least 3.3m to 5.5m thick, and was described in localised areas as “Medium dense light to mid slightly bluish grey locally slightly clayey slightly silty slightly organic fine sand with occasional rotted plant remains...”; in other words entirely naturally accumulated alluvially deposited material. The geotechnical investigation recorded underlying terrace gravel in all three boreholes, at an average height of +0.50m OD.
- 7.1.2 The results from the geotechnical boreholes mirror the findings within evaluation Trench 1, the only intervention in which the same natural alluvium was exposed [elsewhere only disturbed alluvium was encountered, again mirroring the borehole results]. The earliest deposit recorded within Trench 1 was a stiff light blueish grey clay, context [4]. This deposit was recorded within the base of the machine excavated sondage in Trench 1 at 0.58m OD, continuing to at least 0.42m OD. This sterile homogenous deposit represents the underlying alluvial clay recorded across the wider area.
- 7.1.3 In no intervention at the site, archaeological or geotechnical, have any organic layers (i.e peat) been observed.

### **7.2 Phase 2: Modern**

- 7.2.1 Sealing the alluvial clay deposit [4] with Trench 1 was a sequence of modern deposits, contexts [1], [2] and [3]. This sequence was recorded at a highest level of 5.02m OD, the modern ground level, and had an overall thickness of 4.44m. This sequence included some redeposited alluvial clay deposits which contained modern, nineteenth century and later post-medieval brick fragments.
- 7.2.2 Trench 2 exclusively recorded modern deposits, contexts [5], [6], [7] and [8]. These deposits were recorded at a highest level of 4.98m OD, the modern ground level, and had a combined thickness of 3.96m (the base of the machine excavated sondage being located at 1.02m OD). The lowest of these deposits, and therefore stratigraphically the earliest, context [8], was redeposited alluvial clay which contained modern, nineteenth century and later post-medieval brick fragments.
- 7.2.3 Trench 3 exclusively recorded modern deposits, contexts [9] and [10]. These deposits were recorded at a highest level of 5.32m OD, the modern ground level, and had a combined thickness of 4m (the base of the machine excavated sondage being located at 1.32m OD). The lowest of these deposits, and therefore stratigraphically the earliest, context [10], was a redeposited alluvial

clay which contained modern, nineteenth century and later post-medieval brick fragments.

- 7.2.4 Trench 4 exclusively recorded modern deposits, context [11]. These deposits were recorded at a highest level of 5.37m OD, the modern ground level, and had a combined thickness of 4.10m (the base of the machine excavated sondage being located at 1.27m OD). Much of this modern sequence was composed of redeposited alluvial clay deposits which contained modern, nineteenth century and later post-medieval brick fragments.
- 7.2.5 Trench 5 exclusively recorded modern deposits, contexts [12] and [13]. These deposits were recorded at a highest level of 5.37m OD, the modern ground level, and had a combined thickness of 4.10m OD (the base of the machine excavated sondage being located at 1.27m OD). The lowest two of these deposits consisted of redeposited alluvial clay which contained modern, nineteenth century and later post-medieval brick fragments.
- 7.2.6 The boreholes recorded the same sequence of redeposited and disturbed alluvium in five of the seven interventions, a soil matrix identical to that of the natural alluvium (see 7.1.1 above) but with occasional CBM and pottery fragments.

<b>Intervention</b>	<b>Tr. 1</b>	<b>Tr. 2</b>	<b>Tr. 3</b>	<b>Tr. 4</b>	<b>Tr. 5</b>	<b>BH1</b>	<b>BH1A</b>	<b>BH2</b>	<b>BH3</b>	<b>WS1</b>	<b>WS2</b>	<b>WS3</b>	<b>WS4</b>
Thickness of modern made ground (m)	3.20	2.90	3.10	3.20	2.70	1.20	2.40	3.10	3.90	1.60	2.70	1.50	4.00
Depth to base of modern reworked alluvium (m BGL)	4.42	3.70	4.00	4.10	4.10	n/a	4.10	4.90	4.90	2.70	n/a	4.00	n/a
Depth to base of natural alluvium (m BGL)	>4.6	n/a	n/a	n/a	n/a	n/a	7.40	n/a	n/a	4.00	n/a	n/a	n/a
Depth to top of terrace gravels (m BGL)	n/a	n/a	n/a	n/a	n/a	n/a	7.40	4.90	4.90	n/a	2.70	n/a	n/a
OD height in location of intervention (m OD)	5.02	4.98	5.32	5.37	5.37	5.37	5.37	5.37	5.32	5.37	4.98	5.37	5.02
OD height of:													
Made ground (m OD)	5.02	4.98	5.32	5.37	5.37	5.37	5.37	5.37	5.32	5.37	4.98	5.37	5.02
Alluvium (m OD)	0.60	1.28	1.32	1.27	1.27	n/a	1.27	0.47	n/a	2.67	n/a	1.37	n/a
Gravel (m OD)	n/a	n/a	n/a	n/a	n/a	n/a	-2.03	0.47	0.42	1.37	2.28	n/a	n/a
Thickness of:													
Made ground (m)	3.20	2.90	3.10	3.20	2.70	1.20	2.40	3.10	3.90	1.60	2.70	1.50	4.00
Reworked alluvium (m)	1.22	0.80	0.90	0.90	1.40	n/a	1.70	1.80	1.00	1.10	n/a	2.50	n/a
Alluvium (m)	>0.18	n/a	n/a	n/a	n/a	n/a	3.30	n/a	n/a	>1.30	n/a	n/a	n/a

*Italics represent approximate values*

Table 1: Measurements of depositional sequence across the site including evaluation trenches and previous geotechnical results from 2015

The data logs are included at Appendix4

## **8 DISCUSSION AND CONCLUSIONS**

### **8.1 Discussion**

- 8.1.1 The archaeological evaluation recorded a variety of depositional sequences across the trenches. Only one of these evaluation trenches, however, encountered in situ alluvial clay consistent with the expected underlying geology as described by the British Geological Survey. This natural alluvial clay was recorded within evaluation Trench 1, located on the eastern area of the site, at 0.58m OD, some 4.42m below ground level. It was a sterile and homogenous clay which contained no anthropomorphic material. No evidence for organic material such as peat was observed.
- 8.1.2 The same deposit of sterile alluvium was observed within the geotechnical interventions undertaken at the site in 2015, at comparable OD heights.
- 8.1.3 All evaluation trenches and boreholes / window samples recorded extensive sequences of modern made ground which again included redeposited alluvial clays. Trenches 2 to 5 contained entirely such modern deposits, being between at least 3.70m to 4.10m thick. The considerable depth of modern made ground relates to extensive ground raising known to have occurred in the early twentieth century (Hawkins 2013).
- 8.1.4 The combined evidence from the evaluation and geotechnical investigation allows the creation of a uniform profile of the underlying depositional sequence. The evaluation trenches suggest modern made ground across the site to be between 3.70m and 4.40m thick, with natural alluvium recorded within Trench 1 and the previous geotechnical interventions, wherein modern made ground was encountered at a similar depth of between 3.50m and 4.10m.

### **8.2 Research Objectives**

- 8.2.1 The series of primary research objectives were highlighted in the Written Scheme of Investigation (Mayo 2016) and are addressed below.

*To determine the natural topography and geology of the site, and the height at which it survives, if it can be reached within the achievable depths of the trenches.*

- 8.2.2 Only one of the five evaluation trenches encountered the underlying natural topography (Trench 1). This deposit consisted of a natural homogenous alluvial clay, consistent with the known underlying geology as described by the British Geological Survey. This deposit was located at 4.42m below ground level, 0.58m OD.
- 8.2.3 This correlates well with the geotechnical results, which showed the same deposit of sterile alluvium across the site.

*To establish the presence or absence of prehistoric activity, its nature and (if possible) date.*

- 8.2.4 No evidence for prehistoric activity was encountered during the evaluation.



*To establish the presence or absence of Roman and medieval activity.*

8.2.5 No evidence for Roman or medieval activity was encountered during the evaluation.

*To establish the presence or absence of post-medieval activity at the site.*

8.2.6 No evidence for post-medieval activity was encountered during the evaluation.

*To establish the nature, date and survival of activity relating to any archaeological periods at the site.*

8.2.7 The archaeological evaluation encountered no archaeological activity dating to any periods.

*To establish the extent of all past post-depositional impacts on the archaeological resource.*

8.2.8 The evaluation illustrated that the area of the site had been severely modified during the modern period by the ground level being raised considerably. This was represented in the evaluation trenches as extensive sequences of modern made ground between 3.70m and 4.42m thick.

### **8.3 Conclusions**

8.3.1 The site therefore is underlain at depths below around 4.0m BGL by natural alluvium, capped by extensive deposits of made ground. No archaeological finds or features were observed in any of the five evaluation trenches executed. In the eastern side of the site, where map regression has suggested the former presence of buildings and properties fronting Grove Street / Plough Way (Hawkins 2013, Figures 2-9), no archaeological presence was seen. Similarly no remains were observed in any trench for the railway workings which formerly occupied the site (Hawkins 2013, Figures 7-12).

### **8.4 Publication and Archive**

8.4.1 The results of the site investigation will be published by PCA as a summary in the annual 'Round-Up' of London Archaeologist.

8.4.2 Upon approval this report and with confirmation that the site work is complete, the archive will be deposited with the London Archaeological Archive and Research Centre under the unique site code MNW16. Until then it will be stored by PCA at its offices in Brockley, SE4.

## **9 ACKNOWLEDGEMENTS**

- 9.1 Pre-Construct Archaeology Limited would like to thank Duncan Hawkins of CgMs Consulting for commissioning the project on behalf of Quickdrop Limited. We also thank the site staff of Galliard for facilitating the work and hosting the archaeological team on site.
- 9.2 Thanks also to Mark Stevenson of the Greater London Archaeological Advisory Service (GLAAS) for monitoring the fieldwork on behalf of the London Borough of Lewisham.
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  - Poppy Alexander, Anna Tymcio and Tanya Jones for their site work during the evaluation
  - Jennifer Simonson for the CAD illustrations
  - Rik Archer for the site survey

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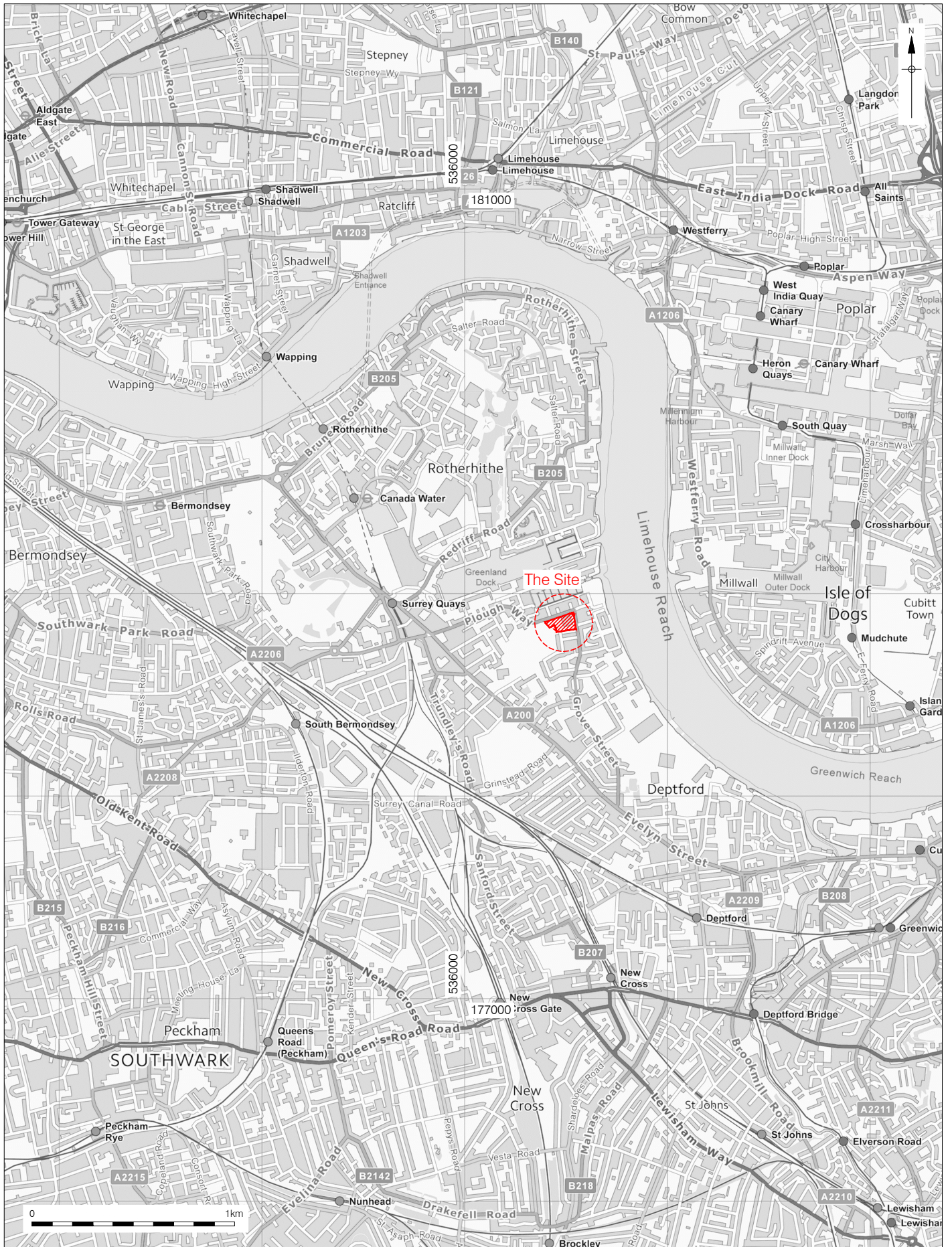
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Taylor, J with Brown, G 2009, *Fieldwork Induction Manual: Operations Manual 1*, Pre-Construct Archaeology Limited

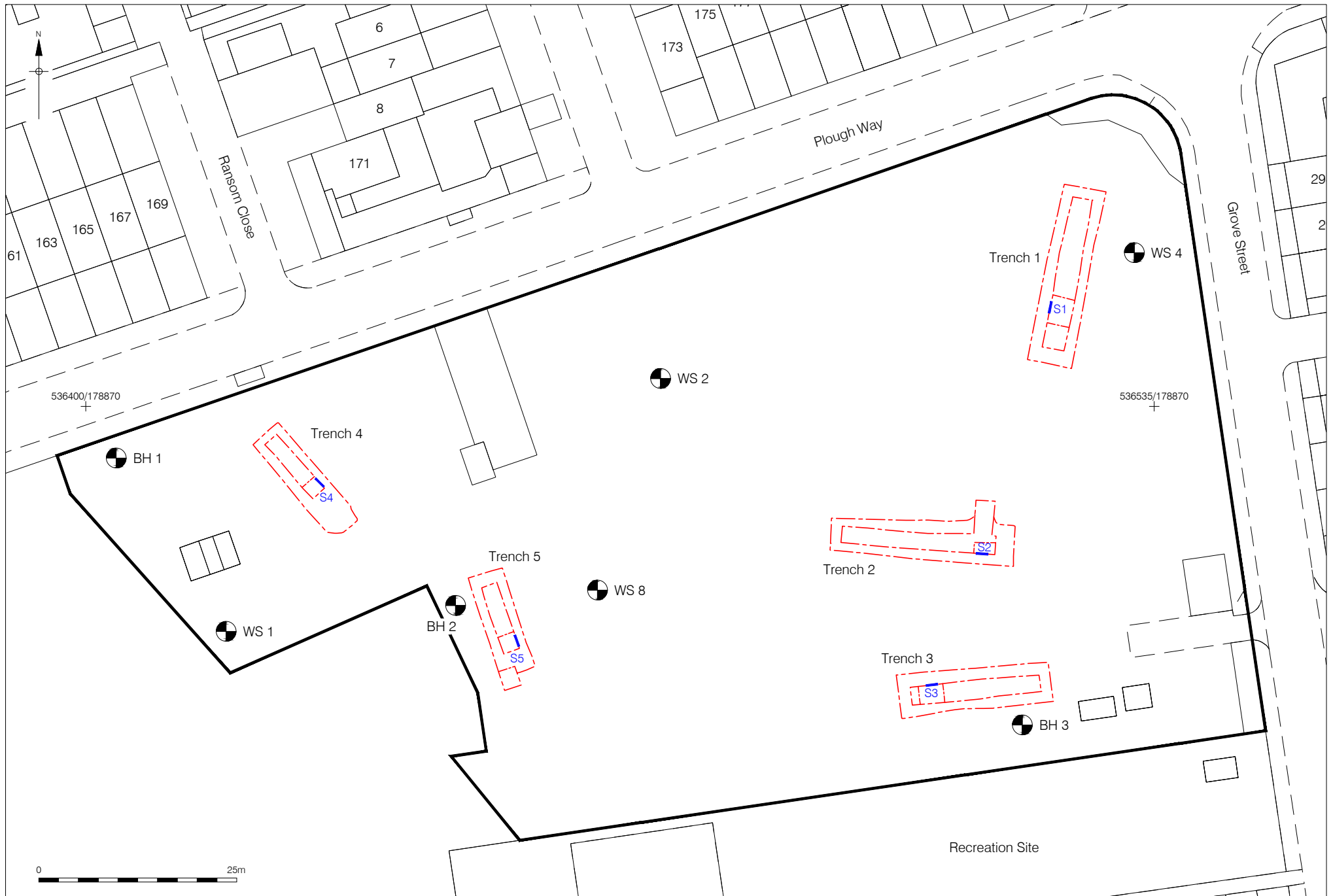


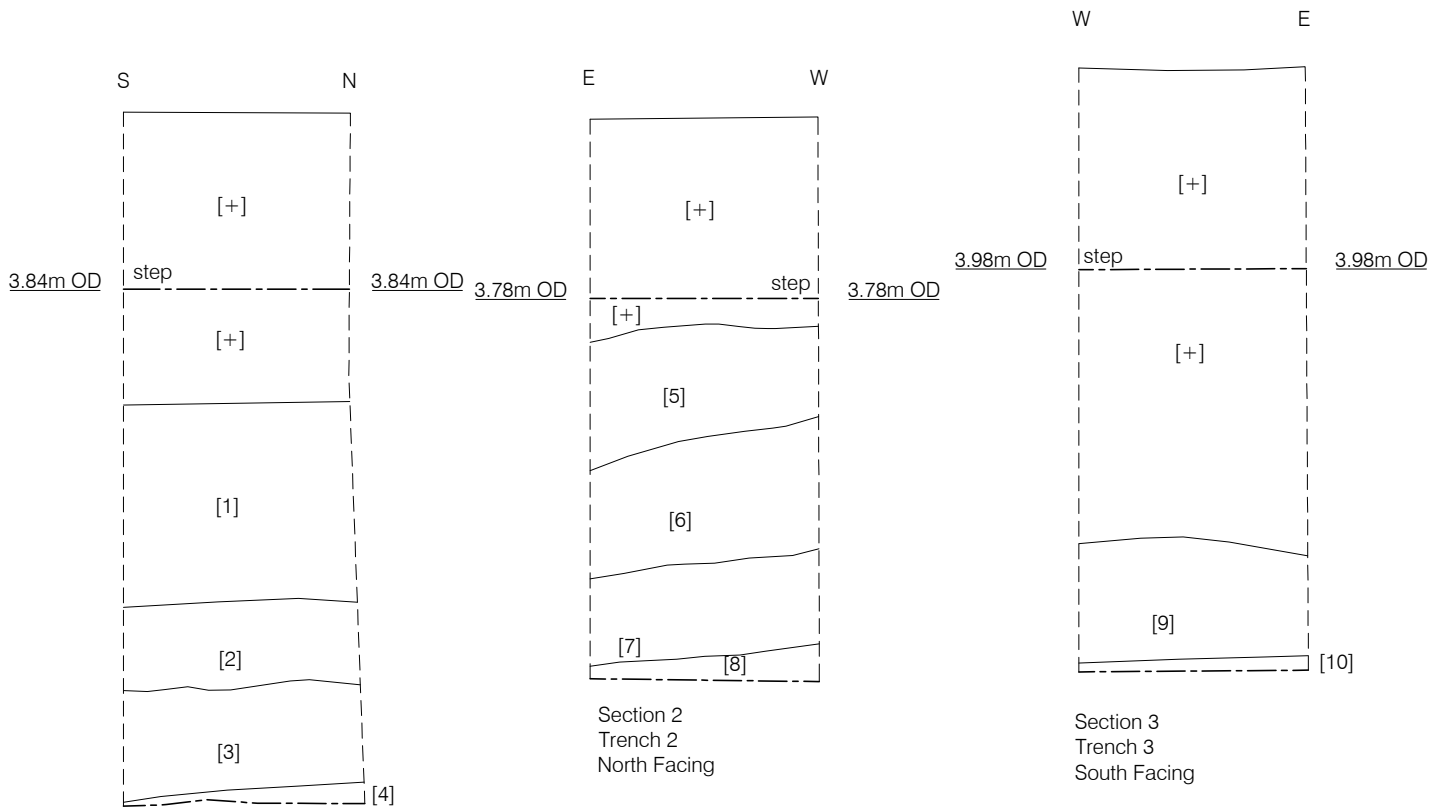
Contains Ordnance Survey data © Crown copyright and database right 2014

© Pre-Construct Archaeology Ltd 2016

03/02/16 JS

Figure 1  
 Site Location  
 1:25,000 at A4





Section 1  
Trench 1  
East Facing

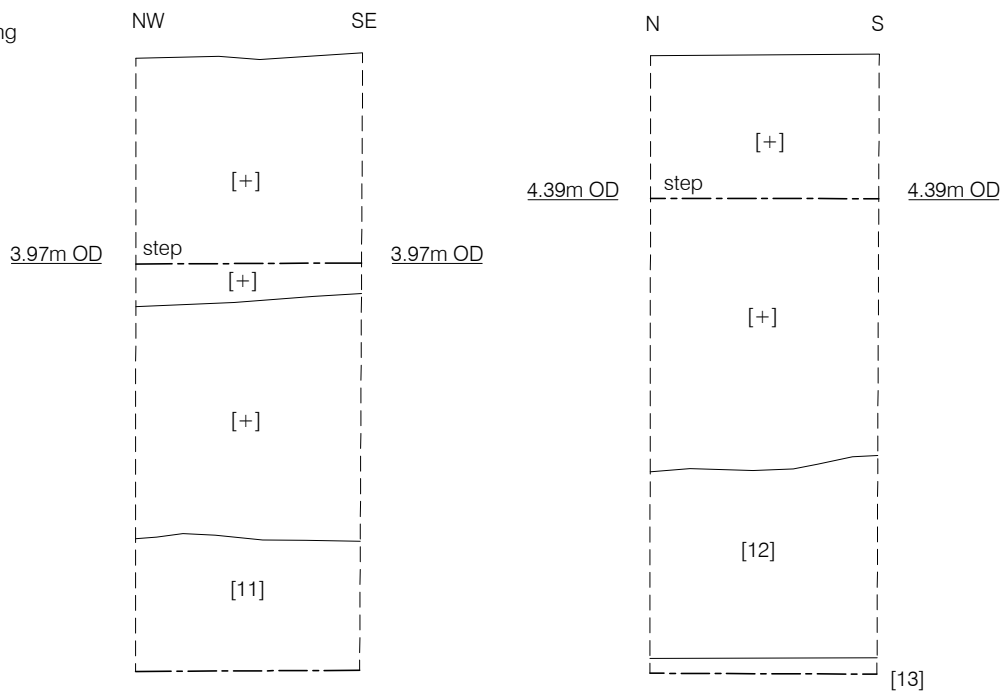


Figure 3  
Sections 1 - 5  
1:50 at A4

## APPENDIX 1: CONTEXT INDEX

Context No.	Trench	Phase	Type	Description	Height (m OD)
1	1	2	Layer	Modern made ground	3.10
2	1	2	Layer	Modern made ground	1.82
3	1	2	Layer	Modern redeposited alluvium, made ground	1.22
4	1	1	Layer	Natural alluvial clay	0.58
5	2	2	Layer	Modern made ground	3.60
6	2	2	Layer	Modern made ground	2.98
7	2	2	Layer	Modern made ground	2.14
8	2	2	Layer	Modern redeposited alluvium, made ground	1.28
9	3	2	Layer	Modern made ground	2.90
10	3	2	Layer	Modern redeposited alluvium, made ground	1.42
11	4	2	Layer	Modern redeposited alluvium, made ground	2.17
12	5	2	Layer	Modern redeposited alluvium, made ground	2.67
13	5	2	Layer	Modern redeposited alluvium, made ground	1.37

## APPENDIX 2: PLATES



*Plate 1: Trench 1 facing north*



*Plate 2: Section 1 in Trench 1, facing west*





*Plate 3: Trench 2 facing west*



*Plate 4: Section 2 in Trench 2, facing south*



*Plate 5: Trench 3 facing east, 1m scale*



*Plate 6: Section 3 in Trench 3, facing north*



*Plate 7: Trench 4 facing north*



*Plate 8: Section 4 in Trench 4, facing east*



*Plate 9: Trench 5 facing north, 1m scale*



*Plate 10: Section 5 in Trench 5, facing east*

## APPENDIX 3: OASIS FORM

OASIS ID: preconst1-241282

### Project details

Project name	An Archaeological Evaluation at Marine Wharf, Land at Plough Way, Rotherhithe, London SE16 7UD
Short description of the project	An evaluation consisted of five trenches located across the previously undeveloped area of the site to assess the archaeological potential of the upper stratigraphic layers. The site is known to be located upon deep deposits of alluvium which have rendered pre-post-medieval occupation impossible; therefore the evaluation has targeted only the more recent potential of the site, with the underlying sequence recorded by means of machine-dug sondages within the evaluation trenches. The evaluation recorded natural alluvium in only one of the five trenches. This was a homogenous and sterile clay which contained no anthropogenic material or organic components. This deposit was sealed by a considerable thickness, 4.40m, of modern made ground. The four other evaluation trenches all exclusively recorded extensive sequences of modern made ground, being between 3.70m to 4.10m in thickness. These considerable sequences of modern made ground relate to an episode of ground raising in the area known to have occurred in the 19th and 20th centuries.
Project dates	Start: 12-01-2016 End: 18-01-2016
Previous/future work	No / No
Any associated project reference codes	MNW16 - Sitecode
Any associated project reference codes	13/85917 - Planning Application No.
Type of project	Field evaluation
Site status	Local Authority Designated Archaeological Area
Current Land use	Industry and Commerce 2 - Offices
Monument type	NONE None
Significant Finds	NONE None
Methods & techniques	"Sample Trenches"
Development type	Urban residential (e.g. flats, houses, etc.)
Prompt	Planning condition
Position in the planning process	After full determination (eg. As a condition)

### Project location

Country	England
Site location	GREATER LONDON LEWISHAM DEPTFORD AND NEWCROSS Marine Wharf, Land at Plough Way, Rotherhithe, London SE16 7UD
Postcode	SE16 7UD

Study area	8500 Square metres
Site coordinates	TQ 3648 7884 51.491509157798 -0.033879151839 51 29 29 N 000 02 01 W Point
Lat/Long Datum	Unknown
Height OD / Depth	Min: 0.58m Max: 0.58m

#### Project creators

Name of Organisation	Pre-Construct Archaeology Limited
Project brief originator	CgMs Consulting
Project design originator	Chris Mayo
Project director/manager	Chris Mayo
Project supervisor	Ireneo Grosso
Project supervisor	Neil Hawkins
Type of sponsor/funding body	Housing Developer
Name of sponsor/funding body	Quickdrop Limited

#### Project archives

Physical Archive Exists?	No
Digital Archive recipient	LAARC
Digital Archive ID	MNW16
Digital Contents	"Stratigraphic"
Digital Media available	"Images vector","Survey","Text","Images raster / digital photography"
Paper Archive recipient	LAARC
Paper Archive ID	MNW16
Paper Contents	"Stratigraphic"
Paper Media available	"Context sheet","Drawing","Photograph","Plan","Report","Section","Survey","Unpublished Text"

#### Project bibliography 1

Publication type	Grey literature (unpublished document/manuscript)
Title	An Archaeological Evaluation at Marine Wharf, land at Plough Way, Rotherhithe, London SE16 7UD
Author(s)/Editor(s)	Hawkins, N.
Other bibliographic details	PCA R12355
Date	2016
Issuer or publisher	Pre-Construct Archaeology Limited
Place of issue or publication	London
Description	A4 client document, A4 pages

Entered by Chris Mayo (cmayo@pre-construct.com)  
Entered on 3 February 2016

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## **APPENDIX 4: BOREHOLE LOGS**

Data logs from 2015 site investigation, provided to PCA by CgMs Consulting



OAKLEY SOILS AND CONCRETE ENGINEERING LTD			BOREHOLE No: BH1																																					
Type of boring: Cable Percussive Type of rig: Dando 2000 Dia of boring: Casing details: NONE			Sheet 1 of 1 Job No: AAA/50 (GB107) Feature: Marine Wharf East Location: Plough Way, London, SE8 3RF Ground Level: GPS Co-ordinates ±5m: E N																																					
Date & (Time)	Depth & diam of boring & (depth of casing)	Ground Water	Samples & Tests			Strata																																		
			Samples	Depth	Test & instr	Depth	Reduced Level	Legend	Thickness	Description																														
22.09.15						metres																																		
(13:45)	PIT		B ⌀	0.1-0.2		0.00			0.10	ASPHALT																														
			B ⌀	0.3-0.4		0.10			0.18	MADE GROUND (SUB-BASE): Sandy f/m/c gravel, gravel is crushed limestone.																														
			B ⌀	0.6-0.7		0.28			0.32	MADE GROUND: Brown slightly sandy gravel, gravel is f/m/c (predominantly coarse) subangular to well rounded flint, occasional brick, tile and concrete fragments.																														
22.09.15 (16:30)	1.20	DRY	B ⌀	1.0-1.1		0.60			0.40	MADE GROUND: Brown slightly clayey and locally clayey silty very gravelly sand, gravel is f/m/c subangular to rounded flint, occasional coarse fragments.																														
23.09.15 (08:00)		DRY				1.00			(0.20)	MADE/REWORKED GROUND: Soft and locally very soft mid and dark grey mottled locally slightly sandy and sandy slightly gravelly organic clay with partings of soft light grey clay and small pockets of dark brown amorphous peat, gravel is f/m/c subangular to rounded flint.																														
						1.20				END OF BOREHOLE																														
						2.00																																		
						3.00																																		
						4.00																																		
						5.00																																		
						6.00																																		
						7.00																																		
						8.00																																		
						9.00																																		
						10.00																																		
<ul style="list-style-type: none"> <li>• Small disturbed sample</li> <li>⇕ Large disturbed sample</li> <li>I Undisturbed sample</li> <li>↓ Standard Penetration Test</li> <li>▲ Water sample</li> <li>X Hand Shear Vane test (kpa)</li> <li>PP Pocket Penetrometer (kg/cm<sup>2</sup>)</li> <li>T Plastic Tub 1 litre</li> <li>J Amber Jar 250ml</li> <li>V Vial 60ml</li> </ul>			<b>Remarks :</b> Location set out by GB Card & Partners and service routes cleared by Service Location Ltd. Service plans reviewed and location scanned with Cable Avoidance Tool. Surface hardstanding broken out and service inspection pit excavated to 1.2m. David Harrison (Galliard) instructed borehole to be moved due to sales cabin arrival on 23rd. Discussions with Galliard 16:30-18:00. 23.09.15 borehole backfilled.				Logged by: NB Checked by: JBI Date: 17.10.15		<b>ENVIRONMENTAL SAMPLES</b> <table border="1"> <thead> <tr> <th>Depth (m)</th> <th>Type</th> <th>PID Reading (ppm)</th> </tr> </thead> <tbody> <tr> <td>0.6-0.7</td> <td>TJV</td> <td></td> </tr> <tr> <td>1.0-1.2</td> <td>TJV</td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> </tr> </tbody> </table>		Depth (m)	Type	PID Reading (ppm)	0.6-0.7	TJV		1.0-1.2	TJV																						
Depth (m)	Type	PID Reading (ppm)																																						
0.6-0.7	TJV																																							
1.0-1.2	TJV																																							
Date started: 22.09.15 Date finished: 23.09.15								Scale: 1:50 metres																																

OAKLEY SOILS AND CONCRETE ENGINEERING LTD  
SITE: MARINE WHARF EAST, PLOUGH WAY, LONDON, SE8 3RF

JOB NO: AAA/50 (GB107)

BH1



BH1 ABORTED AFTER EXCAVATION OF INSPECTION PIT –  
SALES CABIN BEING DELIVERED



# OAKLEY

SOILS AND CONCRETE ENGINEERING LTD

BOREHOLE No: BH1A

Sheet 1 of 2 Job No: AAA/50 (GB107)

Type of boring: Cable Percussive  
 Type of rig: Dando 2000  
 Dia of boring: 200mm to 4.00m, 150mm to 20.00m  
 Casing details: 200mm dia to 3.00m, 150mm dia to 19.00m

Feature: Marine Wharf East  
 Location: Plough Way, London, SE8 3RF  
 Ground Level:  
 GPS Co-ordinates ±5m: E 536404 N 178864

Date & (Time)	Depth & diam of boring & (depth of casing)	Ground Water	Samples & Tests			Strata					
			Samples	Depth	Test & instr	Depth	Reduced Level	Legend	Thickness	Description	
30.09.15						metres					
01.10.15 (08:10)	PIT		B 0.3-0.4			0.00			0.15	ASPHALT	
			B 0.5-0.6			0.15			0.10	MADE GROUND (SUB-BASE): Slightly sandy gravel, gravel is f/m/c crushed limestone.	
			B 0.8-0.9			0.75			0.50	MADE GROUND: Brown slightly silty sand and gravel, gravel is f/m/c crushed brick, concrete, mortar, subangular to rounded flint, occasional ash/clinker and glass fragments. From 0.6m becoming a sandy, predominantly coarse gravel with occasional asphalt and rare rotted timber fragments.	
	200mm		D 1.2-1.65			1.00			1.65	MADE/REWORKED GROUND: Soft mid to dark slightly bluish grey slightly gravelly slightly organic clay, gravel is f/m/c subangular to rounded flint, occasional brick, rare crockery, an oyster shell. From 1.1m becoming soft to very soft mid to dark grey locally slightly sandy and sandy slightly gravelly clay intermixed with dark brown slightly sandy clay with some black/dark grey mottling, gravel is f/m/c subangular to rounded flint, occasional brick, ash/clinker and slate fragments. 1.1-1.6m FAINT HYDROCARBON ODOR?	
			B 1.2-1.65		S N=3	2.00			2.40	REWORKED GROUND? (ALLUVIUM): Soft mid slightly bluish grey occasionally brown mottled slightly organic clay with pockets of peat and occasional rotting plant remains, rare f/m brick, flint and pottery fragments.	
			D 2.0-2.45			2.00			0.50	REWORKED GROUND (ALLUVIUM): Soft dark grey slightly sandy slightly gravelly organic clay with rare brick fragments, gravel is f/m flint.	
			B 2.0-2.45		S N=4	2.40			2.90	From 3.45m becoming mid grey/brown/grey slightly organic clay with partings of peaty clay and amorphous peat.	
	3.00 (3.00)		U 3.0-3.45		54 blows	3.00			1.20	From 3.9m becoming peaty with rotted wood fragments. At 4.0m gravel sized coal fragments.	
			D 3.45-3.5			3.00			3.00	Soft becoming very soft mid grey occasionally mid brownish grey and dark grey mottled slightly organic CLAY with occasional rotting plant remains. (ALLUVIUM)	
	150mm	strike 1 @ 4.0m sealed out @ 4.5m	D 4.0-4.45			4.00			5.00	From 5.5m occasional partings of fine sand.	
			B 4.0-4.45		S N=8	4.10			6.00	From 6.0m becoming very soft with rare medium gravel.	
			U 5.0-5.45		36 blows	5.00			7.00		
			D 5.45-5.5			5.00			7.10		
			B 6.0-6.45		S N=0	6.00			7.40	Light slightly greenish grey clayey very silty fine SAND with occasional very sandy clay partings/bands? (ALLUVIUM)	
			B 7.1-7.2			7.00			8.00	Medium dense grey silty slightly organic SAND and GRAVEL, gravel is f/m/c (predominantly f/m) angular to rounded flint and occasional quartzite gravel. (RIVER TERRACE GRAVELS)	
			D 7.5-7.95			7.40			8.80		
			B 7.5-7.95		S N=13	8.00			9.00	Dense brown very gravelly f/m/c SAND, gravel is f/m/c angular to rounded flint and occasional quartzite. (RIVER TERRACE GRAVELS)	
			B 9.0-9.45		S N=34	9.00			10.00		

<ul style="list-style-type: none"> <li>• Small disturbed sample</li> <li>⇕ Large disturbed sample</li> <li>I Undisturbed sample</li> <li>↓ Standard Penetration Test</li> <li>▲ Water sample</li> <li>x Hand Shear Vane test (kpa)</li> <li>PP Pocket Penetrometer (kg/cm<sup>2</sup>)</li> <li>T Plastic Tub 1 litre</li> <li>J Amber Jar 250ml</li> <li>V Vial 60ml</li> </ul>	Remarks : Location set out by GB Card & Partners and service routes cleared by Service Location Ltd. Service plans reviewed and location scanned with Cable Avoidance Tool. Surface hardstanding broken out and service inspection pit excavated to 1.2m. 3.0m lead lengths of stainless steel casing used to facilitate UXO clearance by Dynasafe Bactec Ltd. At 3.0-4.0m bentonite seal placed and hydrated (0.5 hr) prior to reducing to 150mm dia casing (clean drilling). Strike 1 @ 4.0m, water rose to 2.5m in 50 mins. Strike 2 @ 7.4m, water rose to 5.47m in 30 mins.	Logged by: NB Checked by: JB Date: 17.10.15																																									
	Date started: 30.09.15 Date finished: 02.10.15	<table border="1"> <thead> <tr> <th colspan="2">ENVIRONMENTAL SAMPLES</th> <th>PID Reading (ppm)</th> </tr> <tr> <th>Depth (m)</th> <th>Type</th> <th></th> </tr> </thead> <tbody> <tr><td>0.3-0.4</td><td>J/V</td><td></td></tr> <tr><td>0.5-0.7</td><td>J/V</td><td></td></tr> <tr><td>0.8-0.9</td><td>J/V</td><td></td></tr> <tr><td>1.1-1.2</td><td>J/V</td><td>0.4</td></tr> <tr><td>1.6-1.7</td><td>J/V</td><td>0.4</td></tr> <tr><td>2.1-2.2</td><td>J/V</td><td>0.0</td></tr> <tr><td>2.9-2.6</td><td>J/V</td><td></td></tr> <tr><td>2.9-3.0</td><td>J/V</td><td></td></tr> <tr><td>3.9-4.0</td><td>J/V</td><td></td></tr> <tr><td>4.9-5.0</td><td>J/V</td><td></td></tr> <tr><td>5.9-6.0</td><td>J/V</td><td></td></tr> <tr><td>7.1-7.2</td><td>J/V</td><td></td></tr> </tbody> </table> Scale: 1:50 metres	ENVIRONMENTAL SAMPLES		PID Reading (ppm)	Depth (m)	Type		0.3-0.4	J/V		0.5-0.7	J/V		0.8-0.9	J/V		1.1-1.2	J/V	0.4	1.6-1.7	J/V	0.4	2.1-2.2	J/V	0.0	2.9-2.6	J/V		2.9-3.0	J/V		3.9-4.0	J/V		4.9-5.0	J/V		5.9-6.0	J/V		7.1-7.2	J/V
ENVIRONMENTAL SAMPLES		PID Reading (ppm)																																									
Depth (m)	Type																																										
0.3-0.4	J/V																																										
0.5-0.7	J/V																																										
0.8-0.9	J/V																																										
1.1-1.2	J/V	0.4																																									
1.6-1.7	J/V	0.4																																									
2.1-2.2	J/V	0.0																																									
2.9-2.6	J/V																																										
2.9-3.0	J/V																																										
3.9-4.0	J/V																																										
4.9-5.0	J/V																																										
5.9-6.0	J/V																																										
7.1-7.2	J/V																																										

# OAKLEY

SOILS AND CONCRETE ENGINEERING LTD

BOREHOLE No: BH1A

Sheet 2 of 2 Job No: AAA/50 (GB107)

Type of boring: Cable Percussive  
 Type of rig: Dando 2000  
 Dia of boring: 200mm to 4.00m, 150mm to 20.00m  
 Casing details: 200mm dia to 3.00m, 150mm dia to 19.00m

Feature: Marine Wharf East  
 Location: Plough Way, London, SE8 3RF  
 Ground Level:  
 GPS Co-ordinates ±5m: E 536404 N 178864

Date & (Time)	Depth & diam of boring & (depth of casing)	Ground Water	Samples & Tests			Strata																																			
			Samples	Depth	Test & Instr	Depth	Reduced Level	Legend	Thickness	Description																															
01.10.15	150mm					metres																																			
			D B	10.5-10.95 10.5-10.95	S N=36								M/c SAND and GRAVEL, gravel is f/m/c subangular to rounded flint, occasional sandstone and rounded quartzite. (RIVER TERRACE GRAVELS)																												
			B	12.0-12.45	S N=27				5.90				From 12.0m becoming medium dense greyish brown SAND and GRAVEL.																												
			B	13.5-13.95	S N=24								From 13.5m becoming greyish brown very gravelly m/c SAND.																												
01.10.15 02.10.15	15.00 (15.00)		D B	15.0-15.45 15.0-15.45	S N=50+								Very dense grey silty f/m SAND with occasional f/m subangular flint gravel. (THANET FORMATION)																												
			D B	16.5-16.95 16.5-16.95	S N=50+								From 15.5m becoming dark grey silty fine SAND with occasional fine angular to subangular flint gravel.																												
			D B	18.0-18.45 18.0-18.45	S N=50+																																				
	19.00 (19.00)																																								
02.10.15	20.00 (19.00)		D B	19.5-19.45 19.5-19.45	S N=50+								END OF BOREHOLE																												
			Remarks : Gas/groundwater monitoring standpipes installed at 14.7 & 3.0m: Deep standpipe @ 14.7m: 20.0-14.7m bentonite, 14.7-12.4m gravel, 12.4-11.4m bentonite, 11.4-7.4m 63x51.4mm dia HDPE slotted pipe c/w 250µm geowrap (cable tied) and end cap, 7.4m-GL 63x51.4mm dia HDPE plain pipe and gas bung, 7.1-3.0m bentonite. Shallow standpipe @ 3.0m: 3.0-1.0m 63x51.4mm dia HDPE slotted pipe c/w 250µm geowrap (cable tied) and end cap, 1.0m-GL 63x51.4mm dia HDPE plain pipe and gas bung, 3.0-0.8m filter pack, 0.8-0.2m bentonite, 0.2m-GL concrete surround and 200mm dia flush heavy duty cover.			Logged by: NB Checked by: JBI Date: 17.10.15																																			
			Date started: 30.09.15 Date finished: 02.10.15			ENVIRONMENTAL SAMPLES <table border="1"> <thead> <tr> <th>Depth (m)</th> <th>Type</th> <th>PID Reading (ppm)</th> </tr> </thead> <tbody> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> </tbody> </table>			Depth (m)	Type	PID Reading (ppm)																														
Depth (m)	Type	PID Reading (ppm)																																							
			Scale: 1:50 metres																																						

OAKLEY SOILS AND CONCRETE ENGINEERING LTD  
SITE: MARINE WHARF EAST, PLOUGH WAY, LONDON, SE8 3RF  
JOB NO: AAA/50 (GB107)

BH1A



RIG SET UP AT BH1A



RIVER TERRACE GRAVELS

OAKLEY SOILS AND CONCRETE ENGINEERING LTD			BOREHOLE No: BH2							
Type of boring: Cable Percussive Type of rig: Dando 2000 Dia of boring: 200mm dia to 4.50m, 150mm dia to 18.50m Casing details: 200mm dia to 3.00m, 150mm dia to 18.00m			Feature: Marine Wharf East Location: Plough Way, London, SE8 3RF Ground Level: GPS Co-ordinates ±5m: E 536447 N 178833							
Sheet 1 of 2 Job No: AAA/50 (GB107)										
Date & (Time)	Depth & diam of boring & (depth of casing)	Ground Water	Samples & Tests			Strata				
			Samples	Depth	Test & Instr	Depth	Reduced Level	Legend	Thickness	Description
23.09.15	PIT		B	0.1-0.2		0.00			0.20	GRASS over TOPSOIL: Firm? friable dark brown sandy slightly gravelly clay/silt, gravel is f/m subangular to subrounded flint, occasional brick, mortar and glass fragments.
			B	0.3-0.4		0.20			0.40	MADE GROUND: Dark greyish brown slightly clayey silty sand and gravel, gravel is f/m/c subangular to rounded flint, brick, concrete, mortar, tile and occasional clinker and asphalt fragments. Fine roots.
			B	0.6-0.7		0.60			0.40	0.5-0.6m Asphalt on western side of inspection pit.
	200mm		D	1.2-1.65		1.00			0.20	MADE GROUND: Black/dark grey silty sand and gravel sized ash, coal? and clinker fragments with occasional flint and brick fragments.
			B	1.2-1.65	S N=8	1.20			1.10	MADE GROUND: Brown slightly clayey slightly gravelly sand with pockets of firm brown slightly sandy clay, gravel is f/m/c flint and some f/m clinker.
			D	2.0-2.45		2.00				MADE GROUND: Firm mid greyish brown slightly sandy slightly gravelly rusty veined clay with occasional pockets of orange sand, gravel is f/m/c subangular to subrounded flint and some clinker.
			B	2.0-2.45	S N=6	2.30			0.80	MADE GROUND: Loose mid brown locally slightly clayey silty very gravelly f/m sand with occasional clay partings, gravel is f/m/c subangular to rounded flint, occasional quartzite and occasional brick/tile fragments.
	3.00 (3.00)		D	3.0-3.45		3.00			0.40	REWORKED GROUND (ALLUVIUM): Soft dark brown and grey locally slightly sandy slightly gravelly organic clay with occasional plant remains and pockets of dark brown pseudo amorphous peat, gravel is f/m subangular flint and occasional fine brick fragments.
			B	3.0-3.45	S N=5	3.10				APPROXIMATE BOUNDARY
			U	4.0-4.45	45 blows	4.00				Soft light to mid grey, black organic mottled CLAY with occasional f/m/c subangular to rounded flint gravel. (ALLUVIUM)
	150mm		D	4.45-4.5		4.45			2.55	At 4.45m thin band? of firm friable dark brown/black locally slightly sandy peat/clay with occasional fine brick fragments.
			D	5.0-5.45		5.00				From 5.0m becoming soft to firm mid grey occasionally brown mottled slightly organic CLAY with occasional rusty veining and rare fine flint. Rare plant remains.
			B	5.0-5.45	S N=11	5.00				
			U	6.0-6.45	57 blows	6.00				Medium dense light to mid slightly bluish grey locally slightly clayey slightly silty slightly organic fine SAND with occasional rotted plant remains, occasional partings/thin bands? of sandy clay with occasional rotted plant remains. (ALLUVIUM)
			D	6.45-6.5		6.05				
23.09.15	7.00					7.00				
24.09.15	(7.00)								2.45	
			D	7.5-7.95		8.00				
		strike 1 @ 8.0m (09:45)	B	7.5-7.95	S N=15	8.00				
			B	8.5-8.6		8.50			0.50	Medium dense mid brownish grey and grey locally clayey silty very sandy GRAVEL, gravel is f/m/c angular to rounded flint. (RIVER TERRACE GRAVELS)
			D	9.0-9.45		9.00			6.8	POSSIBLE VERY FAINT HYDROCARBON ODOUR
			B	9.0-9.45	S N=21	9.00				Medium dense brown very sandy GRAVEL, gravel is f/m/c angular to rounded flint, occasional sandstone and rounded quartzite.
						10.00				

- Small disturbed sample
- ↕ Large disturbed sample
- I Undisturbed sample
- ↓ Standard Penetration Test
- ▲ Water sample
- X Hand Shear Vane test (kpa)
- PP Pocket Penetrometer (kg/cm<sup>2</sup>)
- T Plastic Tub 1 litre
- J Amber Jar 250ml
- V Vial 60ml

Remarks :

Location set out by GB Card & Partners and service routes cleared by Service Location Ltd.

Service plans reviewed and location scanned with Cable Avoidance Tool.

23.09.15 08:00-10:55 moving rig and awaiting container to be moved close to BH2.

Service inspection pit excavated to 1.2m.

3.0m lead lengths of stainless steel casing used to facilitate UXO clearance by Dynasafe Bactec Ltd.

Slow drilling 2.7-2.9m (13:15-14:45).

At 4.5-2.9m bentonite seal placed and hydrated (0.5 hr) prior to reducing to 150mm dia casing (clean drilling).

Strike 1 @ 8.0m, water rose to 7.2m in 30 mins.

Date started: 23.09.15  
Date finished: 28.09.15

Logged by: NB	Checked by: JBI	Date: 17.10.15
ENVIRONMENTAL SAMPLES		PID Reading (ppm)
Depth (m)	Type	
0.1-0.2	J/V	
0.4-0.5	J/V	
0.7-0.8	J/V	3.9
1.1-1.2	J/V	
1.4-1.6	J/V	0.7
2.3-2.5	J/V	
3.2-3.4	J/V	
4.0-4.1	J/V	
5.0-5.1	J/V	
6.1-6.3	J/V	
7.1-7.2	J/V	
Scale:		1:50 metres

OAKLEY SOILS AND CONCRETE ENGINEERING LTD			BOREHOLE No: BH2								
Type of boring: Cable Percussive Type of rig: Dando 2000 Dia of boring: 200mm to 4.50m, 150mm to 18.50m Casing details: 200mm dia to 3.00m, 150mm dia to 18.00m			Feature: Marine Wharf East Location: Plough Way, London, SE8 3RF Ground Level: GPS Co-ordinates ±5m: E 536447 N 178833								
Date & Time	Depth & diam of boring & (depth of casing)	Ground Water	Samples & Tests			Strata					
			Samples	Depth	Test & Instr	Depth	Reduced Level	Legend	Thickness	Description	
24.09.15	150mm					metres					
			B	10.5-10.95	S N=23	10.00					From 10.1m becoming medium dense brown SAND and GRAVEL, gravel is f/m/c angular to rounded flint, occasional sandstone and rounded quartzite. (RIVER TERRACE GRAVELS)
			D B	12.0-12.45 12.0-12.45	S N=23	11.00					
			B	12.6-12.7		12.00			6.80		From 12.6m becoming sandy to very sandy GRAVEL.
			D B	13.5-13.95 13.5-13.95	S N=45	13.00					At 13.5m dense. From 13.5m becoming very sandy GRAVEL.
			B	15.0-15.45	S N=16	14.00					At 15.0m medium dense.
			B	15.8-15.9		15.00					
			D B	16.5-16.95 16.5-16.95	S N=50+	15.80					Very dense dark grey silty fine SAND with occasional fine angular to subangular flint gravel. (THANET FORMATION)
						16.00					
			D B	18.0-18.45 18.0-18.45	S N=50+	17.00			(2.70)		
24.09.15	18.00 (18.00)					18.00					
24.09.15	18.50	3.7m*				18.50					END OF BOREHOLE
25.09.15	(18.00)	3.0m @ 08:00				19.00					
						20.00					
<ul style="list-style-type: none"> <li>• Small disturbed sample</li> <li>↕ Large disturbed sample</li> <li>! Undisturbed sample</li> <li>↓ Standard Penetration Test</li> <li>▲ Water sample</li> <li>X Hand Shear Vane test (kpa)</li> <li>PP Pocket Penetrometer (kg/cm<sup>2</sup>)</li> <li>T Plastic Tub 1 litre</li> <li>J Amber Jar 250ml</li> <li>V Vial 60ml</li> </ul>			<b>Remarks :</b> *water level on completion of borehole. Gas/groundwater monitoring standpipes installed at 15.8 & 2.9m: Deep standpipe @ 15.8m: 18.5-15.8m bentonite, 15.8-11.8m 63x51.4mm dia HDPE slotted pipe c/w 250µm geowrap (cable tied) and end cap, 11.8m-GL 63x51.4mm dia HDPE plain pipe and gas bung, 15.8-11.3m filter pack, 11.3-10.3m bentonite, 10.3-8.5m gravel, 8.5-2.9m bentonite. Shallow standpipe @ 2.9m: 2.9-1.0m 63x51.4mm dia HDPE slotted pipe c/w 250µm geowrap (cable tied) and end cap, 1.0m-GL 63x51.4mm dia HDPE plain pipe and gas bung, 2.9-0.8m filter pack, 0.8-0.2m bentonite, 0.2m-GL concrete surround and 200mm dia flush heavy duty cover.					Logged by: NB Checked by: JBI Date: 17.10.15			
			Date started: 23.09.15 Date finished: 28.09.15					Scale: 1:50 metres			

OAKLEY SOILS AND CONCRETE ENGINEERING LTD  
SITE: MARINE WHARF EAST, PLOUGH WAY, LONDON, SE8 3RF  
JOB NO: AAA/50 (GB107)  
BH2



CONTAINER MOVED TO ALLOW RIG SET UP AT BH2





OAKLEY SOILS AND CONCRETE ENGINEERING LTD  
SITE: MARINE WHARF EAST, PLOUGH WAY, LONDON, SE8 3RF  
JOB NO: AAA/50 (GB107)

BH2



RIVER TERRACE GRAVELS



THANET FORMATION



FLUSH HEADWORKS PROTECTING INSTALLATION

# OAKLEY

SOILS AND CONCRETE ENGINEERING LTD

BOREHOLE No: BH3

Sheet 1 of 2 Job No: AAA/50 (GB107)

Type of boring: Cable Percussive  
 Type of rig: Dando 2000  
 Dia of boring: 200mm to 5.00m, 150mm to 17.50m  
 Casing details: 200mm dia to 3.90m, 150mm dia to 16.50m

Feature: Marine Wharf East  
 Location: Plough Way, London, SE8 3RF  
 Ground Level:  
 GPS Co-ordinates ±5m: E 536526 N 178845

Date & (Time)	Depth & diam of boring & (depth of casing)	Ground Water	Samples & Tests			Strata					
			Samples	Depth	Test & instr	Depth	Reduced Level	Legend	Thickness	Description	
28.09.15						metres					
	PIT					0.00					
			B	0.3-0.4		0.10			0.10		ASPHALT
			B	0.7-0.8		0.20			0.20		MADE GROUND (SUB-BASE): Slightly sandy GRAVEL, gravel is f/m/c crushed limestone.
			B	1.0-1.1		0.30			0.35		MADE GROUND: Brown slightly sandy gravel, gravel is f/m/c (predominantly coarse) subangular to well rounded flint, brick, concrete, occasional metal, rare wire and bitumen and clinker fragments.
28.09.15 (17:50)	1.20	DRY	D	1.2-1.65		0.90			1.00		MADE GROUND: Black/dark grey silty sand and gravel sized and occasional cobble sized ash and clinker fragments and occasional brick fragments.
29.09.15 (08:00)	200mm	DRY	B	1.2-1.65	S N=7						MADE GROUND: Loose dark brown/grey silty ashy sand and gravel with occasional cobble sized ash/clinker, gravel is f/m/c ash and clinker, occasional brick and mortar fragments and subangular to rounded flint gravel. From 1.3m SLIGHT TAR/PHENOL ODOUR. Bulk @ 1.0-1.1m contains cobble sized bitumen? and rare timber fragments.
			D	2.0-2.45		2.00			2.45		SPT 1.2-1.65m contains firm (plastic) sandy tar? From 2.0m becoming dark brown very silty very gravelly sand, gravel is f/m/c subangular to subrounded flint, occasional clinker, ash, brick and rare glass fragments.
			B	2.0-2.45	S N=7						From 2.6m includes mortar fragments and pockets? of firm light brown, grey and occasionally reddish pink mottled slightly sandy slightly gravelly clay, gravel is f/m rounded flint.
			B	2.6-2.7		3.00					MADE GROUND: Recovered as mid grey silty sand and gravel, sand includes brick/tile and lime? mortar fragments, gravel is predominantly coarse tile fragments, occasional coarse nodular flint.
			D	3.0-3.45		3.00					Firm mid slightly bluish grey rusty veined slightly organic CLAY with occasional f/m subangular to rounded flint gravel and occasional black organic mottling. (ALLUVIUM)
			B	3.0-3.45	S N=5	3.35			0.55		Possibly reworked to 4.4m - rare brick/tile fragments noted.
	3.90 (3.90)		D	4.0-4.45		3.90			4.00		
			B	4.0-4.45	S N=10	4.00					
			D	5.0-5.45		4.90			5.00		Medium dense brown slightly sandy to sandy GRAVEL, gravel is f/m/c (predominantly m/c) subangular to well rounded flint, occasional sandstone and rounded quartzite. (RIVER TERRACE GRAVELS)
			B	5.0-5.45	S N=22	5.00					
			D	6.0-6.45		6.00					From 6.0m becoming very sandy f/m/c GRAVEL.
			B	6.0-6.45	S N=27	6.00					
		strike 1? @ 6.57m water added to assist boring 4.9-8.5m	D	7.5-7.95		7.00					
			B	7.5-7.95	S N=11	7.00					From 7.5-8.0m sandy to very sandy GRAVEL.
			D	9.0-9.45		8.00					
		strike 2 @ 8.5m	B	9.0-9.45	S N=21	8.00					
			D	9.0-9.45		9.00					
			B	9.0-9.45	S N=21	9.00					
						10.00					

- Small disturbed sample
- ↕ Large disturbed sample
- I Undisturbed sample
- ↓ Standard Penetration Test
- ▲ Water sample
- X Hand Shear Vane test (kpa)
- PP Pocket Penetrometer (kg/cm<sup>2</sup>)
- T Plastic Tub 1 litre
- J Amber Jar 250ml
- V Vial 60ml

**Remarks :**  
 Location set out by GB Card & Partners and service routes cleared by Service Location Ltd.  
 Service plans reviewed and location scanned with Cable Avoidance Tool.  
 Surface hardstanding broken out and service inspection pit excavated to 1.2m.  
 3.0m lead lengths of stainless steel casing used to facilitate UXO clearance by Dynasafe Bactec Ltd.  
 1 hour collecting water to assist boring 4.9-8.5m.  
 At 4.9-3.9m bentonite seal placed and hydrated (0.5 hr) prior to reducing to 150mm dia casing (clean drilling).  
 Strike 1? @ 6.57m, no rise in water in 30 mins.  
 Strike 2 @ 8.5m, water rose to 6.5m in 25 mins.

Date started: 28.09.15  
 Date finished: 30.09.15

Logged by: NB  
 Checked by: JBI  
 Date: 17.10.15

ENVIRONMENTAL SAMPLES		PID Reading (ppm)
Depth (m)	Type	
0.4-0.5	TJV	0.2
0.7-0.8	TJV	0.2
1.0-1.1	TJV	2.1
1.6-1.8	JV	4.6
2.3-2.4	TJV	4.3
2.6-2.7	TJV	1.3
3.0-3.5	TJV	0.2
4.5-4.6	TJV	
5.2-5.4	TJV	
6.0-6.2	TJV	

Scale: 1:50 metres

OAKLEY SOILS AND CONCRETE ENGINEERING LTD			BOREHOLE No: BH3								
Type of boring: Cable Percussive Type of rig: Dando 2000 Dia of boring: 200mm to 5.00m, 150mm to 17.50m Casing details: 200mm dia to 3.90m, 150mm dia to 16.50m			Sheet 2 of 2 Job No: AAA/50 (GB107) Feature: Marine Wharf East Location: Plough Way, London, SE8 3RF Ground Level: GPS Co-ordinates ±5m: E 536526 N 178845								
Date & Time	Depth & diam of boring & (depth of casing)	Ground Water	Samples & Tests			Strata					
			Samples	Depth	Test & instr	Depth	Reduced Level	Legend	Thickness	Description	
29.09.15	150mm					metres					
29.09.15 (18:00)	10.50	7.1m				10.00					Medium dense brown very sandy GRAVEL, gravel is 1/m/c subangular to well rounded flint and occasional sandstone and rounded quartzite. (RIVER TERRACE GRAVELS)
30.09.15 (07:45)	(10.50)	6.55m	B	10.5-10.95	S N=10	11.00					
			D B	12.0-12.45 12.0-12.45	S N=15	12.00			9.60		
			B	13.5-13.95	S N=7	13.00					At 13.5m loose?
			D B	15.0-15.45 15.0-15.45	S N=50+	14.00					Very dense dark grey silty fine SAND with occasional fine subangular to subrounded flint gravel. (THANET FORMATION)
	16.50 (16.50)		D B	16.5-16.95 16.5-16.95	S N=50+	15.00			(3.45)		
30.09.15	17.50 (16.50)		D B	17.5-17.95 17.5-17.95	S N=50+	16.00					
						17.95					END OF BOREHOLE
						18.00					
						19.00					
						20.00					

<ul style="list-style-type: none"> <li>• Small disturbed sample</li> <li>∩ Large disturbed sample</li> <li>∩ Undisturbed sample</li> <li>↓ Standard Penetration Test</li> <li>▲ Water sample</li> <li>x Hand Shear Vane test (kpa)</li> <li>PP Pocket Penetrometer (kg/cm<sup>2</sup>)</li> <li>T Plastic Tub 1 litre</li> <li>J Amber Jar 250ml</li> <li>V Vial 60ml</li> </ul>	<b>Remarks :</b> Gas/groundwater monitoring standpipes installed at 10.0 & 4.4m: Deep standpipe @ 10.0m: 17.5-14.5m bentonite, 14.5-11.0m gravel, 11.0-10.0m bentonite, 10.0-6.0m 63x51.4mm dia HDPE slotted pipe c/w 250µm geowrap (cable tied) and end cap, 6.0m-GL 63x51.4mm dia HDPE plain pipe and gas bung, 10.0-5.7m filter pack, 5.7-4.4m bentonite, Shallow standpipe @ 4.4m: 4.4-1.0m 63x51.4mm dia HDPE slotted pipe c/w 250µm geowrap (cable tied) and end cap, 1.0m-GL 63x51.4mm dia HDPE plain pipe and gas bung, 4.4-0.8m filter pack, 0.8-0.2m bentonite, 0.2m-GL concrete surround and 200mm dia flush heavy duty cover.	Logged by: NB Checked by: JBI Date: 17.10.15																																		
	Date started: 28.09.15 Date finished: 30.09.15	<table border="1"> <thead> <tr> <th colspan="2">ENVIRONMENTAL SAMPLES</th> <th rowspan="2">PID Reading (ppm)</th> </tr> <tr> <th>Depth (m)</th> <th>Type</th> </tr> </thead> <tbody> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> </tbody> </table>	ENVIRONMENTAL SAMPLES		PID Reading (ppm)	Depth (m)	Type																													
ENVIRONMENTAL SAMPLES		PID Reading (ppm)																																		
Depth (m)	Type																																			

OAKLEY SOILS AND CONCRETE ENGINEERING LTD  
SITE: MARINE WHARF EAST, PLOUGH WAY, LONDON, SE8 3RF  
JOB NO: AAA/50 (GB107)

BH3



RIG SET UP AT BH3,  
HAZARDOUS CHEMICAL  
STORE IN BACKGROUND



ARISINGS FROM  
INSPECTION PIT



MADE GROUND

OAKLEY SOILS AND CONCRETE ENGINEERING LTD  
SITE: MARINE WHARF EAST, PLOUGH WAY, LONDON, SE8 3RF  
JOB NO: AAA/50 (GB107)  
BH3



RIVER TERRACE GRAVELS



THANET FORMATION



FLUSH HEADWORKS PROTECTING INSTALLATION

- Windowless Sampler including sample photographs

# OAKLEY

SOILS AND CONCRETE ENGINEERING LTD

BOREHOLE No: WS1

Sheet 1 of 1 Job No: AAA/50 (GB107)

Type of boring: WINDOWLESS (LINER) SAMPLING  
 Type of rig: ARCHWAY COMPETITOR DART  
 Dia of boring: 87mm to 4.0m  
 Casing details: 115mm dia to 4.0m

Feature: Marine Wharf East  
 Location: Plough Way, London, SE8 3RF  
 Ground Level:  
 GPS Co-ordinates ±5m: E 536418 N 178842

Date & Time	Depth & diam of boring & (depth of casing)	Ground Water	Samples & Tests			Strata					
			Samples	Depth	Test & Instr	Depth	Reduced Level	Legend	Thickness	Description	
07.09.15						metres					
	PIT					0.00			0.10	ASPHALT	
			TJV	0.2-0.3		0.10			0.10	MADE GROUND (SUB-BASE): Slightly sandy f/m gravel sized crushed limestone.	
			TJV	0.6-0.8		0.50			0.70	MADE GROUND: Brown slightly clayey slightly silty gravelly f/m sand, gravel is angular to rounded flint and brick fragments, occasional concrete, crockery fragments and occasional fine coal and clinker fragments.	
	87mm		TJV	1.0-1.2		0.90			0.70	MADE GROUND: Orange brown clayey medium sand and gravel, gravel is f/m subangular to well rounded flint and occasional brick? From 1.0m sand is medium to coarse grained.	
						1.50				From 1.5m becoming greenish grey.	
	87mm		TJV	1.6-1.9 1.7-1.9		1.60			1.10	REWORKED GROUND? (ALLUVIUM): Soft dark green to grey locally slightly sandy and slightly gravelly peaty clay with occasional wood fragments, gravel is f/m and occasional coarse subangular to rounded flint.	
						2.00				From 2.0m pockets? of dark brown to black locally clayey amorphous peat, occasional f/m subangular flint gravel.	
						2.50				At 2.3m rotting timber fragments up to 70mm long.	
			TJV	2.5-2.8		2.70				APPROXIMATE BOUNDARY	
	87mm					3.00			(1.30)	Very soft bluish mid grey slightly sandy slightly organic CLAY/SILT with occasional plant fibres and black organic mottling. (ALLUVIUM) At 2.8-2.9m lens of grey to green medium sand.	
						3.50				3.7-3.9m becoming gravelly.	
07.09.15	4.00 (4.00)	DRY*	TJV	3.5-3.8		4.00				From 3.95m becoming brown silty fine SAND. END OF WINDOWLESS SAMPLER	
						4.50					
						5.00					

- Small disturbed sample
- ⇕ Large disturbed sample
- I Windowless Sample
- ↓ Standard Penetration Test
- ▲ Water sample
- X Hand Shear Vane test
- T Plastic Tub 1 litre
- J Amber Jar 250ml
- V Vial 60ml

Remarks :  
 Location set out by GB Card & Partners and service routes cleared by Service Location Ltd.  
 Service plans reviewed and location scanned with cable avoidance tool.  
 Surface hardstanding broken out and service inspection pit hand excavated to 1.0m.  
 3m lead length of stainless steel casing used to facilitate UXD clearance by Dynasafe Bactec Ltd.  
 \*Windowless sampler dry on completion.  
 Gas/groundwater monitoring standpipe installed @ 3.5m:  
 4.0-3.5m bentonite seal, 3.5-1.0m 63x51.4mm dia HDPE 1mm slotted pipe c/w 650µm geosock and end cap, 1.0m-GL 63x51.4mm dia HDPE plain pipe and gas bung, 3.5-0.8m 4-10mm filter pack, 0.8-0.2m bentonite seal, 0.2m-GL concrete surround and 150mm dia flush heavy duty cover.

Date started: 07.09.15  
 Date finished: 07.09.15

Logged by: NB  
 Checked by: JBI  
 Date: 07.09.15

Scale: 1:25 metres

OAKLEY SOILS AND CONCRETE ENGINEERING LTD

SITE: MARINE WHARF EAST, PLOUGH WAY, LONDON, SE8 3RF

JOB NO: AAA/50 (GB107)

WS1



G1-1.0m



1.0-2.0m



2.0-3.0m



OAKLEY SOILS AND CONCRETE ENGINEERING LTD

SITE: MARINE WHARF EAST, PLOUGH WAY, LONDON, SE8 3RF

JOB NO: AAA/50 (GB107)

WS1



3.0-4.0m



OAKLEY SOILS AND CONCRETE ENGINEERING LTD			BOREHOLE No: WS2							
Type of boring: WINDOWLESS (LINER) SAMPLING Type of rig: ARCHWAY COMPETITOR DART Dia of boring: 87mm to 4.0m Casing details: 115mm dia to 4.0m			Feature: Marine Wharf East Location: Plough Way, London, SE8 3RF Ground Level: GPS Co-ordinates ±5m: E 536473 N 178874							
Date & (Time)	Depth & diam of boring & (depth of casing)	Ground Water	Samples & Tests			Strata				
			Samples	Depth	Test & Instr	Depth	Reduced Level	Legend	Thickness	Description
07.09.15	PIT					metres				
						0.00			0.10	ASPHALT
						0.10			0.15	MADE GROUND (SUB-BASE): Slightly sandy f/m gravel sized crushed limestone.
			TJV	0.3-0.5		0.25			0.75	MADE GROUND: Brown gravelly f/m sand, gravel is f/m/c angular to rounded flint, brick and concrete fragments.
						0.50				From 0.6m becoming dark brown with f/m gravel sized clinker, ash, bitumen and coal fragments.
	87mm		TJV	0.6-0.9		1.00			0.30	MADE GROUND: Brown clayey gravelly f/m sand, gravel is f/m and occasional coarse subangular to rounded flint and occasional brick.
						1.30				MADE GROUND: Firm brown mottled grey and yellow slightly sandy slightly gravelly clay, gravel is f/m subangular to rounded flint and occasional brick.
			TJV	1.0-1.3		1.50			1.40	From 2.0m becoming soft.
	87mm					2.00				
			TJV	2.3-2.6		2.50				
						2.70				Yellow brown very gravelly m/c SAND, gravel is f/m/c subangular to well rounded flint. (RIVER TERRACE GRAVELS)
	87mm		TJV	2.9-3.2		3.00			(1.30)	From 3.2m becoming mid to dark brown slightly silty very sandy GRAVEL.
						3.50				
			TJV	3.2-3.7		4.00				END OF WINDOWLESS SAMPLER
07.09.15	4.00 (4.00)	DRY*				4.00				
						4.50				
						5.00				

<ul style="list-style-type: none"> <li>• Small disturbed sample</li> <li>⇕ Large disturbed sample</li> <li>I Windowless Sample</li> <li>↓ Standard Penetration Test</li> <li>▲ Water sample</li> <li>X Hand Shear Vane test</li> <li>T Plastic Tub 1 litre</li> <li>J Amber Jar 250ml</li> <li>V Vial 60ml</li> </ul>	<b>Remarks :</b> Location set out by GB Card & Partners and service routes cleared by Service Location Ltd. Service plans reviewed and location scanned with cable avoidance tool. Surface hardstanding broken out and service inspection pit hand excavated to 1.0m. 3m lead length of stainless steel casing used to facilitate UXO clearance by Dynasafe Bactec Ltd. *Windowless sampler dry on completion. 4.0-2.7m collapsed on pulling casing. Gas/groundwater monitoring standpipe installed @ 2.7m: 2.7-1.0m 63x51.4mm dia HDPE 1mm slotted pipe and end cap, 1.0m-Gl 63x51.4mm dia HDPE plain pipe and gas bung, 2.7-0.8m 4-10mm filter pack, 0.8-0.2m bentonite seal, 0.2m-Gl concrete surround and 150mm dia flush heavy duty cover.	Logged by: NB Checked by: JBI Date: 07.09.15
	Date started: 07.09.15 Date finished: 07.09.15	Scale: 1:25 metres

OAKLEY SOILS AND CONCRETE ENGINEERING LTD

SITE: MARINE WHARF EAST, PLOUGH WAY, LONDON, SE8 3RF

JOB NO: AAA/50 (GB107)

WS2



GL-1.0m



1.0-2.0m



2.0-3.0m

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JOB NO: AAA/50 (GB107)

WS2



3.0-4.0m



OAKLEY SOILS AND CONCRETE ENGINEERING LTD			BOREHOLE No: WS3								
Type of boring: WINDOWLESS (LINER) SAMPLING Type of rig: ARCHWAY COMPETITOR DART Dia of boring: 87-77mm to 4.0m Casing details: 115mm dia to 2.0m			Feature: Marine Wharf East Location: Plough Way, London, SE8 3RF Ground Level: GPS Co-ordinates ±5m: E 536465 N 178847								
Date & (Time)	Depth & diam of boring & (depth of casing)	Ground Water	Samples & Tests			Strata					
			Samples	Depth	Test & instr	Depth	Reduced Level	Legend	Thickness	Description	
07.09.15	PIT					metres					
	87mm		TJV	0.3-0.5		0.00			0.15	0.15	ASPHALT
						0.15			0.15	0.15	MADE GROUND (SUB-BASE): Slightly sandy f/m gravel sized crushed limestone.
			TJV	0.8-0.9		0.30			0.50	0.50	MADE GROUND: Brown slightly clayey gravelly f/m/c sand, gravel is f/m angular to rounded flint, brick and occasional concrete fragments, occasional fine ash fragments.
						0.50					
			TJV	1.1-1.5		0.80			0.10	0.10	MADE GROUND: Firm brown slightly sandy slightly gravelly clay, gravel is f/m flint, occasional brick and ash fragments.
						0.90			0.20	0.20	MADE GROUND: Orange brown slightly clayey sandy gravel, gravel is f/m subangular to rounded flint.
			TJV	1.7-2.0		1.00			0.40	0.40	Interbedded/layered firm yellow brown sandy clay and clayey medium sand, occasional fine flint gravel.
						1.10					
			•	1.5-1.7		1.50			(2.50)	(2.50)	ALLUVIUM/REWORKED GROUND: Inter layered firm light to mid grey and dark greyish brown locally sandy slightly organic CLAY with partings/layers of dark grey/brown amorphous peat, occasional f/m subangular to rounded flint gravel.
			TJV	2.7-3.0		2.00					
	77mm					2.50					
						3.00					At 3.0-3.1m lenses of peat/clay.
						3.50					At 3.2-3.3m lenses of green slightly clayey medium sand.
			•	3.3-3.7		3.50					At 3.6-3.65m occasional shells.
			TJV	3.7-4.0		3.70					At 3.7m rare rounded gravel sized brick.
						4.00					At 3.9-4.0m lenses of peat/clay.
07.09.15	4.00 (2.00)	DRY*				4.00					END OF WINDOWLESS SAMPLER
						4.50					
						5.00					

- Small disturbed sample
- ↑ Large disturbed sample
- I Windowless Sample
- ↓ Standard Penetration Test
- ▲ Water sample
- X Hand Shear Vane test
- T Plastic Tub 1 litre
- J Amber Jar 250ml
- V Vial 60ml

Remarks :  
 Location set out by GB Card & Partners and service routes cleared by Service Location Ltd.  
 Service plans reviewed and location scanned with cable avoidance tool.  
 Surface handstanding broken out and service inspection pit hand excavated to 1.0m.  
 3m lead length of stainless steel casing used to facilitate UXO clearance by Dynasafe Bactec Ltd.  
 \*Windowless sampler dry on completion.  
 Gas/groundwater monitoring standpipe installed @ 3.5m:  
 4.0-3.5m bentonite seal, 3.5-1.0m 63x51.4mm dia HDPE 1mm slotted pipe and end cap,  
 1.0m-GI 63x51.4mm dia HDPE plain pipe and gas bung, 3.5-0.8m 4-10mm filter pack,  
 0.8-0.2m bentonite seal, 0.2m-GI concrete surround and 150mm dia flush heavy duty cover.

Date started: 07.09.15  
 Date finished: 07.09.15

Logged by: NB  
 Checked by: JBI  
 Date: 07.09.15  
 Scale: 1:25 metres

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JOB NO: AAA/50 (GB107)

WS3



GL-1.0m



1.0-2.0m



2.0-3.0m

OAKLEY SOILS AND CONCRETE ENGINEERING LTD

SITE: MARINE WHARF EAST, PLOUGH WAY, LONDON, SE8 3RF



JOB NO: AAA/50 (GB107)

WS3



3.0-4.0m



OAKLEY SOILS AND CONCRETE ENGINEERING LTD				BOREHOLE No: WS4						
Type of boring: WINDOWLESS (LINER) SAMPLING Type of rig: ARCHWAY COMPETITOR DART Dia of boring: 87-77mm to 4.0m Casing details: 115mm dia to 3.0m				Sheet 1 of 1 Job No: AAA/50 (GB107) Feature: Marine Wharf East Location: Plough Way, London, SE8 3RF Ground Level: GPS Co-ordinates ±5m: E 536533 N 178890						
Date & (Time)	Depth & diam of boring & (depth of casing)	Ground Water	Samples & Tests			Strata				
			Samples	Depth	Test & instr	Depth	Reduced Level	Legend	Thickness	Description
07.09.15	PIT					metres				
	87mm		TJV	0.1-0.2		0.00			0.25	Grass over TOPSOIL: Friable dark brown very sandy slightly gravelly clay/silt, gravel is f/m subangular flint, f/m and occasional coarse brick fragments and occasional f/m ash/clinker fragments.
			TJV	0.5-0.6		0.25				MADE GROUND: Brown slightly clayey gravelly f/m sand, gravel is f/m subangular flint, brick, occasional slate and ash fragments, occasional coarse gravel sized brick fragments.
			TJV	0.8-1.0		0.50				At 1.0-1.05m pocket of ash. From 1.0m becoming varicoloured brown, dark brown, yellow brown and grey.
			TJV	1.4-1.6		1.00				
			TJV	1.4-1.6		1.50			2.55	
			TJV	2.0-2.3		2.00				At 2.4-2.5m pocket of ash.
			TJV	2.0-2.3		2.50				At 2.6-2.65m pocket of ash.
			TJV	2.8-3.0		2.80				MADE GROUND: Firm yellow and mottled grey slightly sandy slightly gravelly clay, gravel is f/m subangular to subrounded flint, brick, occasional clinker and ceramic fragments. At 2.95m coarse gravel sized brick.
			TJV	3.3-3.6		3.00			0.50	
			TJV	3.3-3.6		3.30			(0.70)	MADE GROUND: Brown clayey gravelly f/m sand with pockets of sandy clay, gravel is f/m flint, brick, clinker, ash and occasional glass fragments.
						3.50				
07.09.15	4.00 (3.00)	DRY*				4.00				From 3.9m becoming pale brown. END OF WINDOWLESS SAMPLER
						4.50				
						5.00				

- Small disturbed sample
- ⇕ Large disturbed sample
- I Windowless Sample
- ↓ Standard Penetration Test
- ▲ Water sample
- X Hand Shear Vane test
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0.8-0.2m bentonite seal, 0.2m-GL concrete surround and 150mm dia flush heavy duty cover.

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WS4



3.0-4.0m





### 3. RECENT SITE INVESTIGATION

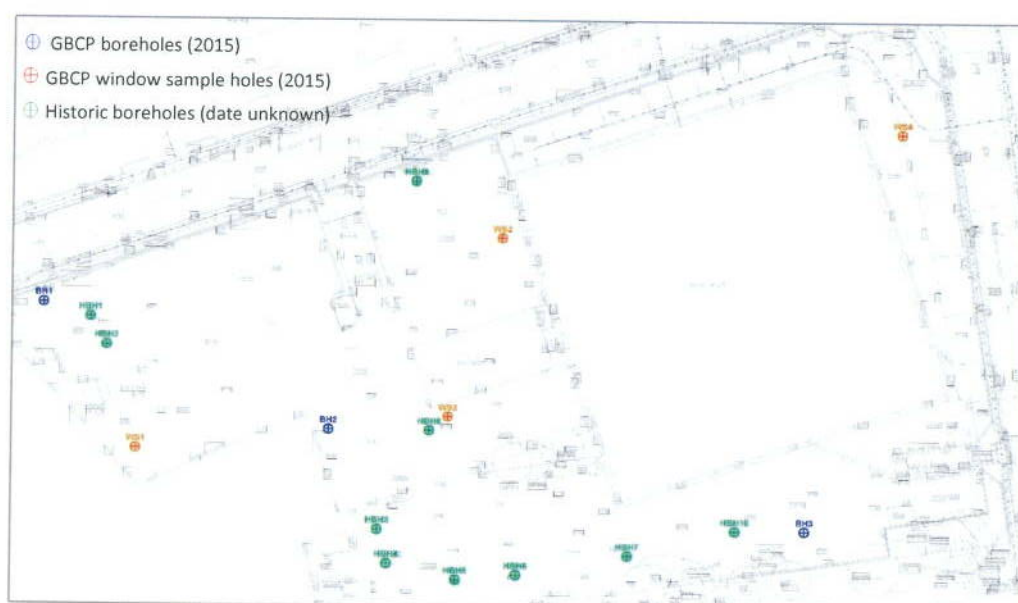
#### 3.1 Basis of the site investigation

The findings of the Desk Study Report and the ground conditions immediately to the west of the site have informed the scope of an intrusive site investigation, which was undertaken in September 2015. The aim of the investigation was to quantify the potential pollutant linkages identified in the preliminary CSM and to determine the potential for contamination to have migrated from Marine Wharf West and impact conditions at the site.

The site investigation was designed to provide information on the shallow soil conditions with respect to contamination, provide preliminary information for geotechnical design and to investigate the deeper soil and groundwater conditions to determine the potential for contamination beneath the site.

#### 3.2 Fieldwork

The recent site investigation was undertaken by Oakley Soils & Concrete Engineering (Oakley Soils) under the supervision of GBCP. The works comprised the drilling of four window sample holes (WS1 to WS4) to approximately 4mbgl and three cable percussion boreholes (BH1 to BH3) to between 18m and 20mbgl. The locations of the exploratory holes are provided in Figure 3.



**Figure 3: Exploratory hole location plan**



The soils were logged in accordance with *BS 5930:1999+ A2:2010 Code of Practice for Site Investigation* and the works were undertaken in accordance with *BS 10175:2011+A1:2013 Investigation of Potentially Contaminated Sites - Code of Practice*. Standard Penetration Tests (SPT) were undertaken at regular intervals in the three boreholes. Standpipe installations were placed in all borehole and window sample holes, with dual installations in the three boreholes. The location of response zones was selected to target, where possible, shallow and deep groundwater and to measure gases in the Made Ground and/or Alluvium. However, the location of the response zones was often restricted due to the thickness of strata and the placement of bentonite seals for aquifer protection purposes.

Prior to the excavation and drilling works, service plans relating to the site were inspected and all locations were scanned using a Cable Avoidance Tool (CAT) to prevent damage to underground utilities. Service inspection pits were dug to 1.2mbgl prior to the drilling of all holes.

As a result of the findings of a Detailed Unexploded Ordnance (UXO) Threat Assessment Report<sup>3</sup> for the site, which identified a medium risk from UXO, a magnetometer survey was undertaken during the drilling works. No anomalies were encountered.

In order to prevent the migration of contamination during the drilling works, dual string casing techniques were used. Reduction of casing was typically undertaken at the base of the Made Ground/top of Alluvium. A 1m thick bentonite seal was installed to prevent the vertical migration of contamination across potential confining/retarding layers. Drilling and sampling equipment was cleaned between holes to prevent cross contamination.

The factual report, containing the exploratory hole logs and site investigation data from Oakley Soils is provided in Appendix B.

### **3.3 Monitoring**

Three rounds of monitoring were undertaken by Oakley Soils on 24<sup>th</sup> September, 1<sup>st</sup> October and 12<sup>th</sup> October 2015. Monitoring of soil gas concentrations, flow rate, volatile gases (using a Photoionization Detector) and groundwater level

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<sup>3</sup> 1<sup>st</sup> Line Defence UXO Solutions (22 November 2013). *Detailed Unexploded Ordnance Threat Assessment: Marine Wharf East*. Report reference 1477MN01. Revision 01.

# PCA

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