

**A Geoarchaeological Assessment of Sediments at  
1-3 Turnberry Quay & 1-5 Lanark Square,  
Isle of Dogs, London E14**

**NGR: 5378 1793  
(TQ 378 793)**

**ASE Project No: 7854  
Site Code: TUQ15**

**By Kristina Krawiec  
Illustrations by Justin Russell**

**November 2015**

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**ASE Report No: 2015409  
OASIS id: 228039**

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**Abstract**

*This report presents the results of an archaeological evaluation carried out by Archaeology South-East at 1-3 Turnberry Quay and 1-5 Lanark Square, Isle of Dogs, London Borough of Tower Hamlets. The survey comprised 3 cable percussive boreholes of which two were able to be undertaken.*

*A single borehole (BH1) was recovered which recorded a peat deposit overlain by organic alluvial silt clay. This overlying deposit recorded two coarse gravelly layers suggesting changes in depositional environment related to high energy processes. The deposits have a high potential to preserve palaeoenvironmental remains and a programme of assessment and radiocarbon dating is recommended.*

## **CONTENTS**

- 1.0 Introduction**
- 2.0 Archaeological Background**
- 3.0 Archaeological Methodology**
- 4.0 Results**
- 5.0 The Environmental Samples**
- 6.0 Discussion and Conclusions**

**Bibliography**  
**Acknowledgements**

**HER Summary**  
**OASIS Form**

**Appendix 1: Troels Smith classification table**  
**Appendix 2: Borehole log**

## **FIGURES**

Figure 1: Site location  
Figure 2: Borehole Locations  
Figure 3: 3D Fence diagram  
Figure 4: South east to north west section

## **TABLES**

Table 1: Deposits recorded at the site  
Table 2: Quantification of site archive

## **1.0 INTRODUCTION**

### **1.1 Site Background**

1.1.1 Archaeology South-East was commissioned by CgMs Consulting Ltd to undertake a borehole survey at 1-3 Turnberry Quay & 1-5 Lanark Square, Isle of Dogs, London (Figure 1, NGR 5378 1793).

### **1.2 Geology and Topography**

1.2.1 The site is bounded by Millwall Outer Dock to the west, Pepper Street to the north, Lanark Square to the east and Turnberry Quay to the south. The north-western area of the site lies on the former footprint of the dock itself. The modern elevation of the site is recorded as approximately 3.0m OD.

1.2.2 The site is located on the floodplain of the estuarine Thames. The Isle of Dogs is bounded to the west, south and east by a large meander loop of the Thames, the modern waterfront lying approximately 500m from the site in these directions. The British Geological Society (BGS 2015) maps superficial geology as alluvium overlying Palaeogene Lambeth Group bedrock.

### **1.3 Planning Background**

1.3.1 Planning consent by Tower Hamlets Borough Council for the mixed use, residentially led redevelopment of the site is due to be issued with the following condition relating to archaeology:

*7 – Prior to commencement of the development hereby permitted, the applicants, their agents or successors in title shall:*

*a) Secure the implementation of a programme of archaeological works in accordance with a Written Scheme of Investigation to be submitted and approved by the local planning authority;*

*b) No development shall take place other than that which has been approved in accordance with the Written Scheme of Investigation as above; and*

*c) The development shall not be occupied until the Written Scheme of*

*Investigation and post investigation assessment have been completed in accordance with the programme set out in the Written Scheme of Investigation (as approved) and the provision made for analysis, publication and dissemination of the results and archive deposition has been secured.*

*Reason: the development of this site is likely to damage heritage assets of archaeological interest that may survive in this area. These measures should be taken to ensure the preservation of any finds or remains, in situ or by record, and subsequent analyses and dissemination of the results. This is in accordance with the recommendations of the NPPF 2011, policy*

*SP10 of the Core Strategy (2010), and policy DM27 of the Managing Development Document (2013).*

- 1.3.2 The Greater London Archaeological Advisory Service (GLAAS) Officer for the London Borough of Tower Hamlets advised that in the first instance the discharge of the condition outlined above be progressed by the implementation of a geoarchaeological borehole survey at the site.
- 1.3.3 A Written Scheme of Investigation for geoarchaeological evaluation (ASE 2015) was submitted to GLAAS for approval prior to the commencement of fieldwork in compliance with the above condition. All works were carried out in accordance with the ClfA standards and guidance and the Greater London Archaeology Advisory Service's (GLAAS) Archaeological Guidance Paper (Historic England 2015). Any variations to the scope of work were agreed with CgMs Consulting Ltd prior to implementation

#### **1.4 Scope of Report**

- 1.4.1 This report covers the results of the survey carried out between 20<sup>th</sup> and 22<sup>nd</sup> of October 2015 by Kristina Krawiec (Senior Archaeologist). The fieldwork was managed by Jon Sygrave and the post-excavation was managed by Jim Stevenson.

## 2.0 GEOARCHAEOLOGICAL BACKGROUND

### 2.1 Introduction

- 2.1.1 The information presented below derives in large part from the former WSI (CgMs 2015) and is reproduced here in modified form with due acknowledgment.
- 2.1.2 The BGS (2015) maps the superficial geology at the site as 'Alluvium- Clay, Silty, Peaty, Sandy' overlying Palaeogene Lambeth Group bedrock. The site lies on the Isle of Dogs, bounded to the west, south and east by a large meander loop of the Thames, the modern waterfront lying approximately 500m from the site in these directions. The site is adjacent to the Millwall Outer Dock, the north-western area of the site lying on the former footprint of the dock itself. The modern elevation of the site is recorded as c. 3.0 m OD.
- 2.1.3 A borehole investigation at the site by Merebrook in May 2015 (Merebrook 2015) comprised drilling three cable percussion boreholes (Figure 2). Previous work by Merebrook at the site in 2012 comprised six windowless sample holes and six hand dug pits. The combined results are summarised as:

Strata	Depth to Top Range (m bgl)	Thickness Range (m)
Made Ground	0.0	2.40 – 3.00
Alluvium	2.40 – 3.00	5.50 – 6.00
River Terrace Gravel	8.30 – 8.50	5.00 – 5.30
Lambeth Group	13.30 – 13.80	2.90 – 3.30
Upnor Formation	16.50 – 17.10	>2.90 - 5.00
Thanet Sand	21.50	>3.50

Table 1: Deposits recorded at the site

- 2.1.4 During the Merebrook works the boreholes were found to comprise deposits of predominantly granular made ground (between 2.4 and 3.0 m thick) underlain by superficial deposits of alluvial (locally peaty) clay and river terrace gravel. A 1.0 m thick layer of clayey peat was reported in MBH3 from a depth of 7.5 m bgl. The alluvial clay attained thicknesses of between 5.0 and 6.0 m, whilst the river terrace gravel was encountered at depths ranging from 8.3 to 8.5 m bgl and attained thicknesses of between 5.0 and 5.3 m (Merebrook 2015).
- 2.1.5 Two BGS archive boreholes in the area of the site (BGS 2015) show thicknesses of between 4.2 (TQ37NE3086) and 5.7 m (TQ37NE3087) of silty, sandy clay Alluvium, containing 'fibrous peat layers' and overlying Pleistocene Gravel at 7.6 and 7.7m below ground level (bgl) respectively. In both boreholes the sequence is capped by between 2.0 and 3.4 m of Made Ground. Although no OD heights are available for these boreholes, assuming a ground level of 3.0 m OD would result in Gravel surfaces of between -4.6 and -4.7 m OD, the top of the Alluvium lying at between 1.0 and -0.4 m OD. (BGS 2015).
- 2.1.6 Work at the site provides an opportunity to test hypotheses generated by previous studies in this part of the Lower Thames Valley, such as at Canada Water (Sidell *et al.* 2000) and Surrey Quays (Batchelor *et al.* 2011). Since the site is located within a geographical area not subject to detailed investigation,

a detailed geoarchaeological record for this part of the Lower Thames Valley for the Middle to Late Holocene will contribute to a broader record and permit comparison and integration with neighbouring records. This will enable reconstruction of spatial and temporal variations in the environment.

- 2.1.7 At Heron Quays 1, 10 Bank Street and Heron Quays 2, 1 Bank Street (Batchelor & Young 2014) ca. 600 m to the northwest the Gravel surface was recorded significantly higher at between -0.2 and -1.2 m, overlain by a relatively thin sequence of fine-grained dominantly inorganic Alluvium, generally present at between 1.0 and -1.2 m OD. At Canada Water, ca. 1 km to the west (NGR TQ 355 795; Sidell *et al.* 2000) a thin peat unit was recorded within the Alluvium between -1.20 m and -0.90 m OD. Peat initiation at this site commenced around 4280-3690 cal BP (Late Neolithic/Bronze age). At the Surrey Quays site (NGR TQ 355 796; Batchelor *et al.* 2010) Peat horizons were recorded at between ca. -1.3 and -0.2 m OD. These horizons were radiocarbon dated to the late Bronze Age/early Iron Age, with a later period of peat formation occurring during the Roman to Early Medieval periods. Towards the northeast of the Isle of Dogs, Peat was recorded at Preston Road, Poplar (ca. 800m to the northeast; Branch *et al.* 2007) between -0.46 to -0.32 m OD. This horizon was radiocarbon dated to the late Neolithic (4260-3910 cal BP) through to the Bronze Age (3650-3360 cal BP). At the Atlas Wharf site, ca. 500 m to the south of Heron Quays (Lakin 1998) Peat formation occurred during the early/middle Neolithic (ca. 5750 cal BP) through to the Bronze Age. Significantly, a Bronze Age structure (possible platform) was recorded at this site, the earliest construction date radiocarbon dated to 3840-3550 cal BP (Lakin 1998).
- 2.1.8 The site offered the potential to provide detailed records of spatial and temporal changes in the environment due to the possible presence of alluvial (and potentially peat) sequences. The stratigraphic boundaries between alluvium and peat indicate highly significant successions from aquatic to semi aquatic, and then semi terrestrial to fully terrestrial ecosystems. These successions result in changes in the composition and diversity, and potential availability to humans, of plant and animal resources. However, records from the Lower Thames Valley (Batchelor, 2009) indicate significant changes in environmental conditions, in particular vegetation structure and composition, *during* the main period of Middle Holocene peat formation. These changes occurred due to: (1) natural succession and human impact, and (2) episodic fluvial inundation of the peat surface prior to the main period of marine incursion (alluviation). Recording these changes enables us to address questions relating to human adaptability and survivability against a background of changing environmental conditions, and human modification of the natural environment (CgMs 2015).
- 2.1.9 A recent study of three areas to the north of the site demonstrated that despite a similar lithological sequence several different environmental scenarios were present (Yendell 2012). The variation in subsurface topography played an important role in the nature of the landscape and channel edge and back water environments were recorded (Yendell 2012, 98). This study demonstrated the need for further higher resolution environmental data, especially with regard to chronology as several of the dates recovered from the study were not viable having been taken from bulk sediment. The outcome of the study suggests that multi-proxy study and higher resolution dating is required to better understand the nature and timing of landscape change in the Lower Thames valley.



## **2.2 Project Aims and Objectives**

2.2.1 The aims and objectives of the geoarchaeological evaluation can be defined as follows:

### *Aims*

- To define and record the geomorphology and archaeology of the site in order to mitigate against the impact of the proposed scheme.
- To make recommendations for further geoarchaeological laboratory-based assessment/analysis (if necessary).

2.2.2 In light of the past work on this and nearby sites the following geoarchaeological objectives are suggested:

- To record and understand the Holocene sequences at the site through the drilling of 3 purposive geoarchaeological boreholes.
- To record and understand the evidence for the past environmental conditions of the site and to create an interpretation of the vegetation and aquatic conditions and their development through time
- To record and understand the evidence for human activity at the site
- To collect samples for off-site analysis/assessment
- To interpret archaeological site formation processes
- To report on the findings of the surveys
- To archive and disseminate the results of the work

2.2.3 More generally the research framework for London archaeology (MoL, 2002) identifies the following areas that this site could contribute to:

*“(L2) Understanding London’s hydrology and river systems and tributaries... in shaping London’s history and the relationships between rivers and floodplains.*

*“(L1) Conducting baseline surveys and the use these to develop models for understanding the significance of geomorphology, ecology, ecosystems and climate, hydrology and vegetational and faunal development on human lives.*

### **3.0 ARCHAEOLOGICAL METHODOLOGY**

#### **3.1 Fieldwork Methodology**

- 3.1.1 A total of three boreholes were proposed to be cored using a cable percussion drilling rig (shell and auger) in positions shown on Figure 2. The presence of a piling rig, 360 excavator and buried concrete supports for the dock wall prevented borehole 3 from being undertaken despite several attempts to move the location. The positions of the boreholes were surveyed using an RTK GPS.
- 3.1.2 The boreholes were undertaken using a shell and auger rig which involved the percussive hammering of a hollow bit into the ground using wireline rigs, and the recovery of the caught sample. Undisturbed cores (U4/U100 samples of 450mm length) of sediment were recovered within a plastic liner in a steel shell and then cut open using a saw.
- 3.1.3 The lithology of the sediment sequence was recorded by ASE using the Troels-Smith (1955) system of sediment classification (Appendix 1). The scheme breaks down a sediment sample into four main components and allows the inclusion of extra components that are also present, but that are not dominant. Key physical properties of the sediment layers are also identified according to darkness (Da), stratification (St), elasticity (El), dryness of the sediment (Dr) and the sharpness of the upper sediment boundary (UB). This was supplemented by digital photography.

#### **3.2 Archive**

- 3.2.1 The site archive is currently held at the offices of ASE and will be deposited at the LAARC in due course. The contents of the archive are tabulated below (Table 2).

No. of files/paper record	Borehole logs 5
Digital photos	10
Rockworks files	5.83 MB
Samples	4m sediment (8 tubes)

Table 2: Quantification of site archive

## **4.0 RESULTS**

### **4.1 Lithology**

- 4.1.1 The borehole survey was constrained by the restricted amount of space at the site (Figure 2). These restrictions included concrete anchors and reinforcements for the dockwall and existing concrete piles. Previous disturbance on the site may also have created below ground voids and/or loose material which affected the success of the boreholes. As a consequence BH3 was attempted but was unsuccessful and BH2 encountered problems with recovery of material. Despite the issues with BH2 the gravels were reached at 8.00m below ground level. A single borehole was recovered (BH1), the full description of which can be found in Appendix 2.
- 4.1.2 The gravels were encountered at 8.00m below ground level (-2.39m OD) in BH1 and were overlain by a thin silty fine sand deposit. This appeared to have thin laminations of possible calcareous material. This trended into a blue silt with occasional wood/root fragments at the base. This may represent deposits forming due to marine influence although palaeoenvironmental assessment is required to confirm this.
- 4.1.3 This deposit was overlain with a sharp contact by a well humified peat deposit 0.43m thick (-0.96m OD) which also contained woody fragments towards the middle of the deposit. The upper contact between this peat unit and the overlying organic silts was unconformable indicating an erosive event. It was also uneven demonstrating some possible reworking of the underlying peat deposit. The peat varied in wood content suggesting a possible phase of drying out during its development. The ponding back of the river system caused by rising base levels may be the driving factor of peat development at the site although local hydrological variations cannot be ruled out.
- 4.1.4 The overlying organic alluvial silt was 2.57m thick and contained well humified organic material. Again further work is required to establish whether this deposit was as a result of marine transgressive conditions or represents freshwater overbank sedimentation. Within this deposit were bands of coarser material (0.35m OD, -0.15m OD), namely silty gravels which indicate episodic changes in depositional environment. No cultural material was recovered so the timings of these events are hard to establish but the coarse nature of the material indicates high energy events were occurring periodically at the site.
- 4.1.5 The material overlying the upper layer of gravelly material (0.35m OD) was slightly more organic than the alluvial deposit below it suggesting the underlying clay had perched the water table. The overall condition of the alluvial silt clay was good with little evidence of degradation through oxidation. The upper part of the deposit was however disturbed by later made ground deposits.
- 4.1.6 The made ground was 4.00m thick and comprised loose rubble and sandy clay material, part of which was piling mat material. The surface of the carpark had already been removed prior to the survey being carried out, although it appeared that the ground level had not been reduced significantly (c.0.20m).

## **4.2 Deposit Model**

- 4.2.1 The deposit model was generated using the previous geotechnical borehole survey data (MBH 1-3, Merebrook 2015) and BGS publically available data (OL51) and BH1 from this survey (Figure 2). The model outputs can be seen as a 3D fence diagram (Figure 3) and a 2D section (Figure 4). The model also exists as a rockworks files which can be navigated around and placed into other mapping software (ie ArcGIS). The limited number of data points for the site somewhat limit the model but a good general understanding of the deposits can be gained.
- 4.2.2 The model demonstrates that the peat deposit recorded at the site appears to have accumulated within both a topographic high and low (Figure 3). The deposit was not continuous across the site, although the low number of data points may have missed more subtle features such as small channels that may also contain such material. The peat overlies the gravels directly in MBH3 but overlies the sandy silt in BH1 demonstrating possible variation the way the peat has formed at the site.
- 4.2.3 In addition, the basal unit, a fine sand and silt, was also not continuous across the site although this may be a factor of the variable recording systems used by multiple investigators.
- 4.2.4 The data gathered here is suitable for inclusion in other models of the isle more generally which would add more data points to better understand the variations in the model.

## **5.0 THE ENVIRONMENTAL SAMPLES**

- 5.1 A single borehole in half metre sleeved lengths was recovered from the site (BH1, 4.00-8.00m) this was opened at ASE facilities and recorded. The samples were resealed and placed in storage.

## **6.0 DISCUSSION AND CONCLUSIONS**

### **6.1 Overview of stratigraphic sequence and deposit survival**

6.1.1 The survey demonstrated that deposits survived well within the areas where it was possible to place the boreholes. The underlying alluvial silt clays and organic peat deposits demonstrated little in the way of oxidisation and later contamination. It is likely that the sediment sequence recovered has a high potential to recover palaeoenvironmental remains suitable for landscape reconstruction. The peat deposit encountered does not appear to be continuous across the site and seems to have formed over a small topographic high within the sub-surface gravels.

### **6.2 Discussion of deposit formation**

6.2.1 The peat deposit appears to have accumulated at the site over a topographic high point as well as a topographic low. This demonstrates the potentially complex nature of the depositional environment at the site. The high spot could be seen as an area with the potential to preserve archaeological remains although none were recorded during these limited interventions. Certainly no woody remains were recovered which might suggest human-wetland interaction.

6.2.2 Recent work undertaken at the northern extent of the Isle of Dogs has demonstrated that the subsurface topography of the pre-Holocene deposits has important implications for the nature of the later landscape development (Yendell 2012). The model produced by the survey at Turnberry Quay is similar to that recorded by Yendell (2012) with highs in the Pleistocene gravel serving as focuses for the accumulation of Mesolithic sand which in turn were overlain by organic deposits. These high points became waterlogged during the Early Neolithic leading to the development of alder carr wetland.

6.2.3 The results from Canning Town and Blackwall demonstrate that both local changes in hydrology as well as regional changes, related to relative sea level rise, were at work on the Isle of Dogs resulting in differences in the timing for the onset of peat formation (Yendell 2012). In general the onset for this accumulation appears to be the late Neolithic-Bronze Age although work undertaken by Batchelor et al (2010) demonstrates peat accumulation also occurring in later periods. In order to correlate the results of the Turnberry Quay survey with existing models of landscape development further work is required.

6.2.4 The coarse-grained deposits recorded at the site may be related to later breaches of the earthen bank that protected the reclaimed land from flooding (Hobhouse 1994, 275). These breaches were recorded throughout the late medieval to early post-medieval period, with several records of repair phases occurring after the wall was damaged (Hobhouse 1994, 375).

6.2.5 The underlying gravel deposits were encountered at -2.39m OD. The gravels within the northern half of the isle have been recorded between -0.53 to -3.77m OD (Yendell 2012, 95). At Heron Quays, 600m to the northwest, the gravels were recorded between -0.20m to -1.20m (Batchelor and Young 2014). This demonstrates the variation of the topography of the gravel surface. In the

context of these other sites, the gravels at Turnberry Quay would seem to occupy a lower point in the landscape, although again the significance of this needs to be established by being integrated into existing models of the deposits.

- 6.2.6 The deposits appear to be well-preserved with little in the way of visible post-depositional degradation or contamination and would be suitable for palaeoenvironmental assessment and dating.

### **6.3 Consideration of research aims and recommendations for further work**

- 6.3.1 The survey has addressed the aims set out in section 2.3 by recording the geomorphology of the deposits at the site. Despite the lack of archaeological material within the boreholes, the sediments recovered have a high potential to preserve palaeoenvironmental remains.

- 6.3.2 In order to fully understand the timing of the landscape development represented by these deposits a programme of assessment of microfossils (Pollen, diatoms, ostracods and forams) and radiocarbon dating is proposed.

Pollen 20 samples  
Diatoms 20 samples  
Ostracods and Forams 8 samples  
C14 3 dates

- 6.3.3 Further fieldwork is not recommended given the confined nature of the site and numerous on site constraints detailed in section 4.1.1.

### **6.4 Conclusions**

- 6.4.1 The evolution of the Isle of Dogs is beginning to be understood by the application of deposit modelling and palaeoenvironmental analysis. The deposits reported here have the potential to contribute to the understanding of the complex nature of the development of the Holocene landscape.

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**HER Summary**

<b>HER enquiry no.</b>						
<b>Site code</b>	TUQ15					
<b>Project code</b>	7854					
<b>Planning reference</b>						
<b>Site address</b>	1-2 Turnberry Quay, Isle of Dogs, London					
<b>District/Borough</b>	Tower Hamlets					
<b>NGR (12 figures)</b>	537800 179300					
<b>Geology</b>	Alluvium; Lambeth Group					
<b>Fieldwork type</b>	Eval	Excav	WB	HBR	Survey	Other
<b>Date of fieldwork</b>	October 2015					
<b>Sponsor/client</b>	CgMs Consulting Ltd					
<b>Project manager</b>	Jon Sygrave					
<b>Project supervisor</b>	Kristina Krawiec					
<b>Period summary</b>	Palaeolithic	Mesolithic	Neolithic	Bronze Age	Iron Age	
	Roman	Anglo-Saxon	Medieval	Post-Medieval	Other	
<b>Project summary (100 word max)</b>	Archaeology South Est were commissioned to undertake a borehole survey at 1-2 Turnberry Quay, Isle of Dogs. The survey comprised three boreholes, of which two were able to be drilled. A single borehole was recovered which recorded a peat deposit underlying organic alluvial silts. The material is suitable for palaeoenvironmental reconstruction and a programme of multi-proxy assessment work has been recommended.					
<b>Museum/Accession No.</b>						

**OASIS Form**

**OASIS ID: archaeol6-228039**

**Project details**

Project name	a geoarchaeological assessment at 1-3 Turnberry Quarry
Short description of the project	A borehole survey was undertaken at 1-3 Turnberry Quay and 1-5 Lanark Square, Isle of Dogs, London by ASE in order to characterise the underlying deposit at the site. A total of three purposive cable percussive boreholes were attempted but only one was successful in recovering a full sediment sequence. The underlying gravels were encountered at 8m below ground level and a peat and organic alluvial silt clay sequence was recorded.
Project dates	Start: 20-10-2015 End: 22-10-2015
Previous/future work	No / Yes
Type of project	Field evaluation
Current Land use	Vacant Land 1 - Vacant land previously developed
Methods & techniques	"Environmental Sampling"
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 TOWER HAMLETS TOWER HAMLETS 1-3 Turnberry Quay and 1-5 Lanark Square
Postcode	E14
Site coordinates	TQ 378 793 51.495322306926 -0.014695894813 51 29 43 N 000

00 52 W Point

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**Project creators**

Name of Organisation	Archaeology South-East
Project brief originator	Archaeology South-East
Project design originator	ASE/CgMs
Project director/manager	Jon Sygrave
Project supervisor	Kristina Krawiec
Type of sponsor/funding body	CgMs Consulting

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**Project bibliography 1**

Publication type	Grey literature (unpublished document/manuscript)
Title	A Geoarchaeological Assessment of sediments at 1-3 Turnberry Quay and 1-5 Lanark Square,
Author(s)/Editor(s)	Kristina Krawiec
Other bibliographic details	201549
Date	2015

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Entered by	kristina krawiec (k.krawiec@ucl.ac.uk)
Entered on	28 October 2015

### Appendix 1

Darkness	Degree of Stratification	Degree of Elasticity	Degree of Dryness
nig.4      black	strf.4    well stratified	elas.4    very elastic	sicc.4    very dry
nig.3	strf.3	elas.3	sicc.3
nig.2	strf.2	elas.2	sicc.2
nig.1	strf.1	elas.1	sicc.1
nig.0      white	strf.0    no stratification	elas.0    no elasticity	sicc.0    water

Sharpness of Upper Boundary	
lim.4	< 0.5mm
lim.3	< 1.0 & > 0.5mm
lim.2	< 2.0 & > 1.0mm
lim.1	< 10.0 & > 2.0mm
lim.0	> 10.0mm

	<i>Sh</i>	<i>Substantia humosa</i>	Humous substance, homogeneous microscopic structure
I Turfa	<i>Tb</i>	<i>T. bryophytica</i>	Mosses +/- humous substance
	<i>Tl</i>	<i>T. lignosa</i>	Stumps, roots, intertwined rootlets, of ligneous plants
	<i>Th</i>	<i>T. herbacea</i>	Roots, intertwined rootlets, rhizomes of herbaceous plants
II Detritus	<i>DI</i>	<i>D. lignosus</i>	Fragments of ligneous plants >2mm
	<i>Dh</i>	<i>D. herbosus</i>	Fragments of herbaceous plants >2mm
	<i>Dg</i>	<i>D. granosus</i>	Fragments of ligneous and herbaceous plants <2mm >0.1mm
III Limus	<i>Lf</i>	<i>L. ferrugineus</i>	Rust, non-hardened. Particles <0.1mm
IV Argilla	<i>As</i>	<i>A. steatodes</i>	Particles of clay
	<i>Ag</i>	<i>A. granosa</i>	Particles of silt
V Grana	<i>Ga</i>	<i>G. arenosa</i>	Mineral particles 0.6 to 0.2mm
	<i>Gs</i>	<i>G. saburralia</i>	Mineral particles 2.0 to 0.6mm
	<i>Gg(min)</i>	<i>G. glareosa minora</i>	Mineral particles 6.0 to 2.0mm
	<i>Gg(maj)</i>	<i>G. glareosa majora</i>	Mineral particles 20.0 to 6.0mm
	<i>Ptm</i>	<i>Particulae testae molloscorum</i>	Fragments of calcareous shells

### Physical and sedimentary properties of deposits according to Troels-Smith (1955)

#### Appendix 2

**Borehole logs**

**BH1**

0-4.00m	Made Ground, loose rubble, clayey at base				
4.00-4.10m	Da	St	El	Sicc	UB
	3	1	0	3	3
	Ag 3 As1 Sh+				
	Mid grey silt clay with black organic flecks, well humified				
4.10-4.46m	Da	St	El	Sicc	UB
	3	0	0	3	1
	Ag 2 Gmin2				
	Mid grey sandy silt				
4.46-4.67m	Gap				
4.67-5.06m	Da	St	El	Sicc	UB
	3/4	1	0	3	0
	Ag 3 Sh1 Gmin+ Gmaj				
	Mid grey black silt with black organic flecks, well humified, occasional gravel at base, occasional sand				
5.06-5.26m	Da	St	El	Sicc	UB
	3/4	1	0	3	1
	Ag 3 Sh1 TI				
	Dark grey silt with black organic flecks, well humified, woody fragments				
5.26-5.31m	Da	St	El	Sicc	UB
	2	0	0	2	4
	Ag 2 Gmin1 Gmaj1				
	Mid yellow brown sandy gravelly silt				
5.31-5.50m	Da	St	El	Sicc	UB
	2	0	0	3	4
	Ag 3 Sh1				
	Grey black flecked silt, well humified organics				
5.50-5.76m	Da	St	El	Sicc	UB
	2	2	1	3	0
	Ag 2 Sh2				
	Mid grey brown silt, well humified organics				
5.76-6.00m	Da	St	El	Sicc	UB
	2	0	0	3	4
	Ag 2 Gmaj2				
	Mid grey brown silt with gravels				
6.00-6.57m	Da	St	El	Sicc	UB

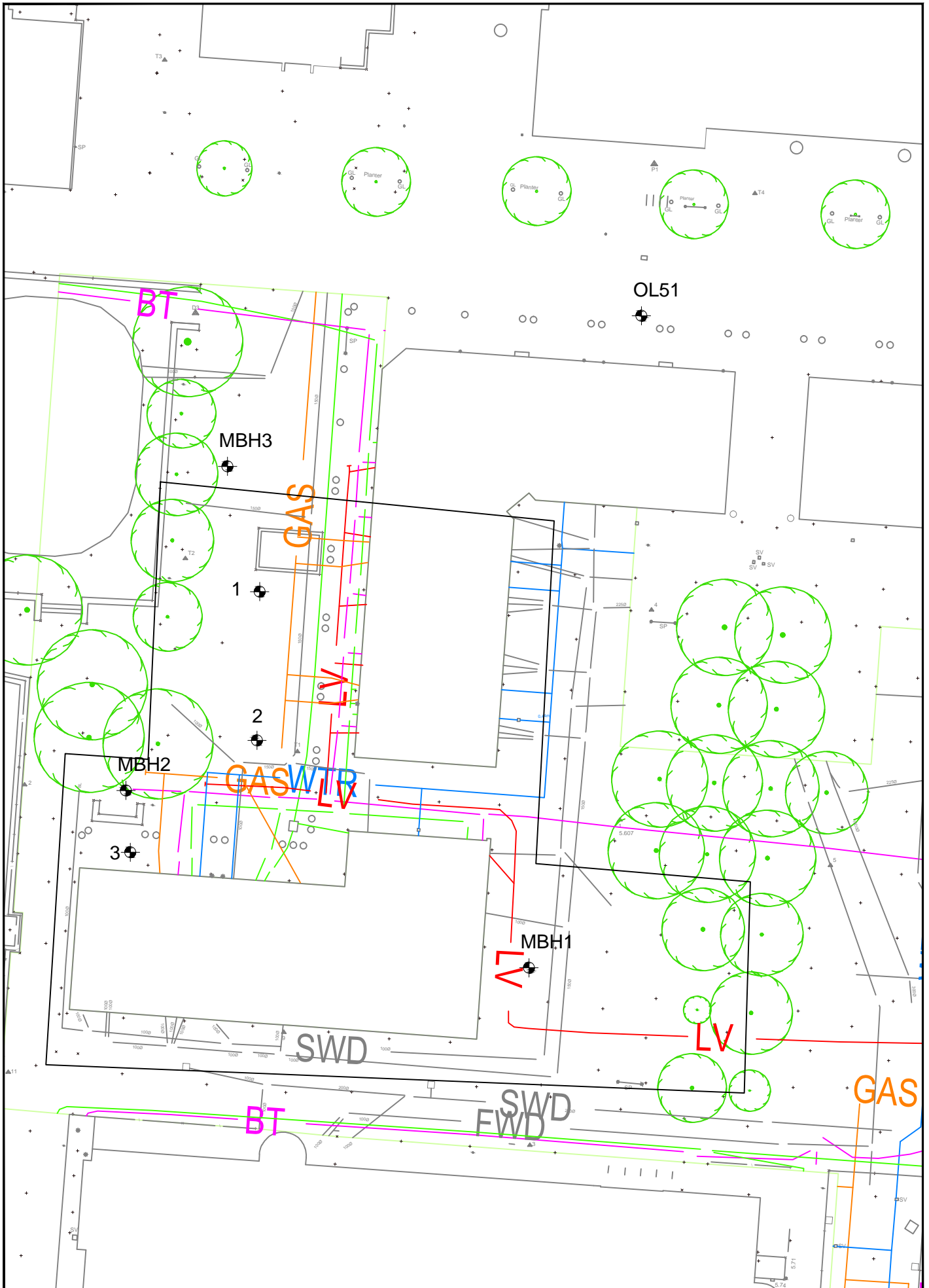
	3	0	0	3	0	
	Ag 3 Sh1					
	Mid grey silts orange mottling towards base, organic black flecks, disturbed lower contact with peat					
6.57-7.00m	Da	St	El	Sicc	UB	
	4	1	2	2	4	
	Ag 1 Sh2 Dh1 TI					
	Dark brown reddish peat, well humified occasional woody fragments, disturbed upper contact					
7.00-7.30m	Gap					
7.30-7.73m	Da	St	El	Sicc	UB	
	3/4	1	0	3	4	
	Ag 3 Gmin1 TI					
	Grey blue silt with sand, woody/rooty fragments at base					
7.73-8.00m	Da	St	El	Sicc	UB	
	3/4	1	0	3	0	
	Ag 2 Gmin2					
	Pale grey white silt and very fine sands, calcareous?					
8.00m	Sands and gravels, very wet					



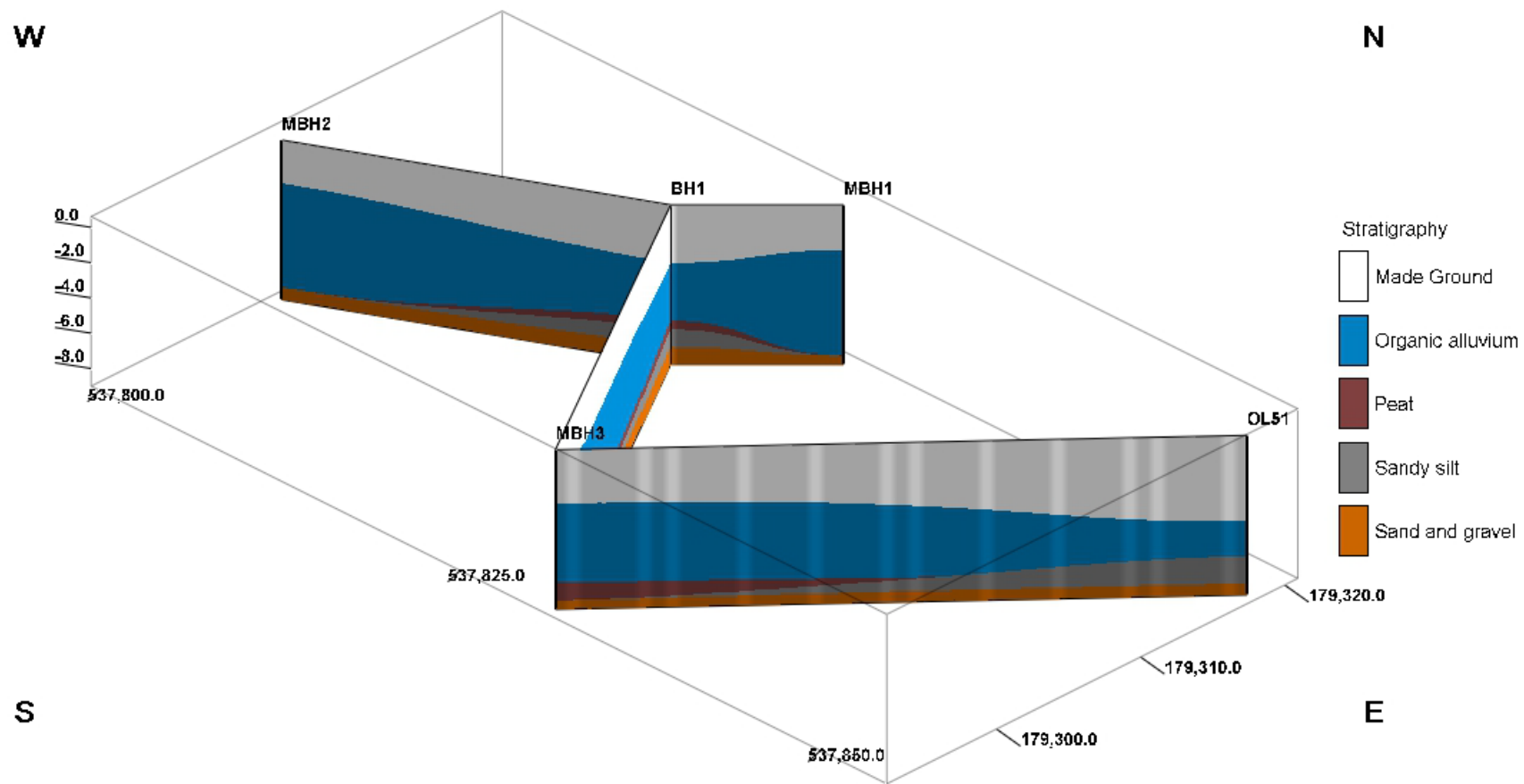
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Project Ref: 7854	Oct 2015	Site location		
Report Ref: 2015409	Drawn by: JLR			

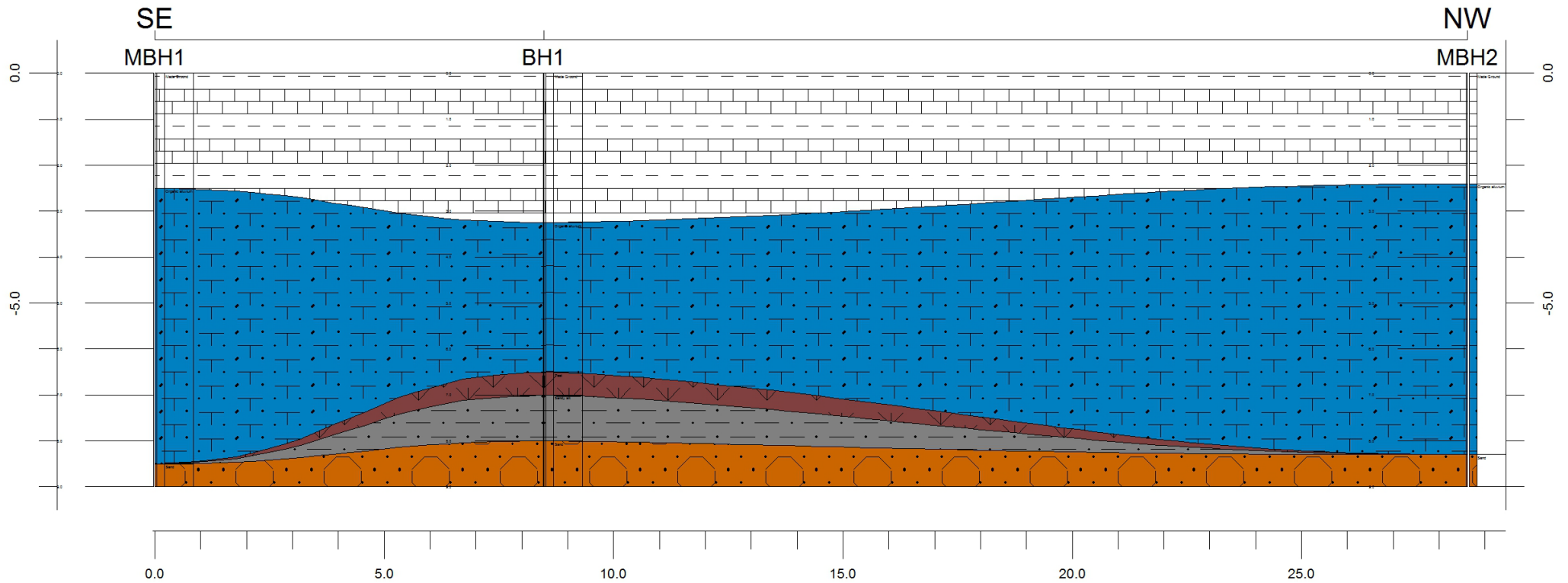




© Archaeology South-East		1-3 Tunberry Quay and 1-5 Lanark Square, Isle of Dogs	Fig. 2
Project Ref: 7854	Oct 2015	Borehole locations	
Report Ref: 2015409	Drawn by: KK		



# Cross-Section SE-NW



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1-3 Turnberry Quay and 1-5 Lanark Square, Isle of Dogs

Project Ref: 7854  
Report Ref: 2015409

December 2015  
Drawn by: KK

South east to north west section

Fig. 4

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