



C156 – Central Project

Archaeological Monitoring of Ground Investigations, Borehole Package 19

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1 Purpose

- 1.1.1 This document reports briefly on the results of monitoring selected geotechnical boreholes at the site of the future Crossrail Victoria Dock Portal and Custom House Station, and at North Woolwich portal.
- 1.1.2 The fieldwork was conducted between June and August 2009 for Halcrow within their guise as Multi Disciplinary Consultant (MDC) 4. Whilst the Ground Investigation (GI) survey data was being awaited, Halcrow ceased to serve as MDC4 in September 2009, and work on the report was halted. A draft report (v 1.0) was produced to record the point at which the reporting was put on hold – essentially only the logs in the Appendix, and some introductory sections, had been completed.
- 1.1.3 This version (2.0) completes the report, under the management of Capita Symonds (Framework Design Consultant (FDC)) and the Project Archaeologist (Jo Vallender and Jay Carver), in order that it might inform the Written Schemes of Investigation (WSI) for these sites.

2 Scope

- 2.1.1 The geotechnical boreholes were carried out for engineering purposes, and formed part of Crossrail Package 19. The boreholes to be monitored were selected by MOL Archaeology (MOLA, formerly MoLAS) on the basis of their potential to provide additional information on geoarchaeological deposits in areas of proposed construction works that would contribute to archaeological project designs. The Crossrail 'short report' format does not include a location plan, and should be read in conjunction with the final local plan produced for geotechnical/engineering purposes (which would otherwise be duplicated).
- 2.1.2 It was not considered appropriate at this point to update the existing digital deposit models for these two sites (produced by the author of this report in 2008) with these results, as it is understood that further data will be forthcoming from geoarchaeological evaluation boreholes (as well as that from Pk19A: Crossrail 2010b).

3 Definitions

- 3.1.1 Grid coordinates in this report are on the Ordnance Survey National Grid, and levels to Ordnance Datum (Newlyn).

4 Introduction

4.1.1 The archaeological background to the site is covered in the following Crossrail documents:

- Crossrail, 2005, Assessment of Archaeology Impacts, Technical Report, Part 4 of 6, South-East Route Section, 1E0318-E2E00-00001
- Crossrail, 2008a, Archaeological Monitoring of Ground Investigations, Borehole Package 11, Limehouse to North Woolwich
- Crossrail/MoLAS, 2008b, Geoarchaeological Deposit Model: Victoria Dock Portal. January 2008
- Crossrail/MoLAS, 2008c, Geoarchaeological Deposit Model: North Woolwich Portal. January 2008
- Crossrail/MDC4, 2008d, WSI Victoria Dock Portal and Custom House Station, Document Number: CR-SD-PRW-X-IS-00002
- Crossrail, 2010a, North Woolwich Portal, Site-Specific Archaeological Written Scheme of Investigation, v 6.0, Document Number: CR-SD-PRW-X-IS-00006
- Crossrail/ARUP-Atkins, 2010b, Crossrail, Archaeological Monitoring of Ground Investigations, Limmo Peninsula & Victoria Dock Portal (Excel Car Park) [draft submitted for comment 13.04.10].

4.1.2 In summary:

- The Victoria Dock Portal site has potential for palaeo-environmental and topographic data, prehistoric remains including activity on higher gravel eyots (islands: predicted at the eastern end of the portal and to the west of the tunnel eye) and structures such as timber trackways in the former wetlands, and for industrial and railway archaeology.
- The North Woolwich Portal is generally low-lying land associated with a network of braided channels flowing across the Thames floodplain from the late Pleistocene/early Holocene to historic periods. There is reasonable potential for prehistoric to Roman archaeological remains in the form of boats, and subsistence equipment related to fishing and the exploitation of the Thames floodplain in this landscape. Areas of higher, drier ground exist towards the eastern end of the future Crossrail portal, and at the western end of Factory Road, and to the east of the eastern worksite (in the area of the former North Woolwich station). These areas have good potential for evidence of dry-land prehistoric and later human activity. The transitional environment between the higher ground of the sand and gravel islands is characterised by well-developed peats which have reasonable to good potential for the recovery of prehistoric wetland archaeological remains (such as Neolithic or Bronze Age timber trackways or platforms), and excellent potential for the recovery of organic remains with palaeoenvironmental significance.

5 Aims and objectives

- 5.1.1 This report was commissioned by Crossrail and produced by the Museum of London Archaeology (MOL Archaeology, formerly MoLAS). The geoarchaeological data, gathered through the monitoring of the boreholes by a geoarchaeologist, will contribute to archaeological mitigation project designs by providing information of the depth and nature of deposits in the areas of proposed Crossrail Victoria Dock Portal/Custom House Station, North Woolwich Portal, and associated works. Of particular interest are the depths and nature of alluvium and the levels of the floodplain gravels, as well as the presence of modern disturbance and any archaeological material. This information, and that from any future geoarchaeological evaluation, will be used to update the previous deposit models for the site.

6 The Watching Brief

6.1 Methodology

- 6.1.1 The site contractor, Soil Mechanics Limited, undertook the excavation of all trial trenches, boreholes, and window samples (using cable percussion and terrier rigs); these investigations were monitored by geoarchaeologists from MOLA.
- 6.1.2 In total, 3 boreholes and 7 window samples (and their starter pits) from the NWP site and 2 boreholes and 7 window samples (and their starter pits) from the VDP site were monitored. All on-site archaeological work was carried out in accordance with Crossrail Generic Method Statement for archaeological monitoring of geotechnical ground investigations (MoLAS, 23.04.08), and the Museum of London Archaeological Site Manual 3rd edition (1994). Deposits of archaeological significance were recorded on site using pro-forma recording sheets.
- 6.1.3 Geoarchaeological sediments were recorded on site using standard sedimentary criteria (relating to colour, compaction, texture, structure, bedding, inclusions, and clast-size). Subsamples suitable for radiocarbon dating were taken from the organic deposits where possible. National Grid References and Ordnance Datum levels were provided at a later date by Soil Mechanics.

6.2 Results of the watching brief

- 6.2.1 The interpreted results of the boreholes monitored are tabulated as an Appendix attached to this report, and have been added to a MS Excel table, which forms the basis for a shapefile in an ongoing MOLA GIS project.
- 6.2.2 Relevant previous geotechnical borehole results were incorporated in the initial deposit models constructed by MOLA for the North Woolwich Portal and Victoria Dock Portal/Custom House Station sites (MoLAS, January 2008). The watching brief on the current phase of geotechnical work is intended to provide information that will contribute to updating and refining the original deposit models and thus the WSIs for these sites.

6.3 Victoria Dock Portal

- 6.3.1 The deposit sequence recorded in the boreholes and window samples of this phase of works will be briefly summarised. The basal deposits recorded are sands and gravels that were laid down under a braided river environment during the final phases of the last (Devensian) glaciation (c 15,000 to 10,000 years ago). The boreholes and window samples at Victoria Dock Portal show the surface of the gravels between – 1.60 and –2.71m OD. To a limited extent the floodplain gravels are overlain by sands and sandy silts, recorded between –2.51 and –2.52m OD. This fluvial deposition probably occurred in the early Holocene when medium to coarse sand, still available in the fluvial system, formed point and mid-channel bars within the floodplain's network of anastomosing channels. The deposits, which exist only in WS29 and WS30, are quite thin, between 0.1 to 0.2m, indicating only marginal fluvial influence here.
- 6.3.2 The Pleistocene gravels and fluvial sands are overlain by a woody peat, recorded between –0.3 and –1.57m OD and 1.1 to 2.2m in thickness. These deposits indicate a more stabilised, but wetter, landscape and possibly the development of a Late Neolithic to Late Bronze Age (Yendell 2009) alder carr woodland.
- 6.3.3 The sandy deposits and peats are overlain by blue grey silty clay, recorded between 1.3 and 0.09m OD at Victoria Dock Portal (VDP). These sediments indicate grass/fen environments to mudflats. Following a rise in relative sea level rise (RSL; relative sea level is the sea level related to the level of the continental crust), associated with Devoy's (1979) Thames IV estuarine expansion event which is recorded across the area as a whole from about 2600 Cal BC, the floodplain landscape changed dramatically as it was inundated by the rising river levels. As Woodland became waterlogged and died off the landscape became more open with herbs and grasses dominated. Post-Medieval to modern made ground is recorded at the top of the sequence, and is between 1.0 and 2.1m in thickness.

6.4 North Woolwich Portal

- 6.4.1 The deposit sequence recorded in the boreholes and window samples of this phase of works is very similar to that found at Victoria Dock Portal, and will be briefly summarised. The lowest deposit present in the geotechnical works are sands and gravels that were deposited under a braided river environment during the final phases of the last (Devensian) glaciation (c 15,000 to 10,000 years ago). The monitored works show the surface of these gravels between –2.63 and –3.40m OD at North Woolwich Portal. Sands and sandy silts were recorded overlying the floodplain gravels, between –0.62 and –2.98m OD (NW32R, WS38, NW31R, WS37 and WS36). These deposits probably formed during the early Holocene when medium to coarse sand, still available in the fluvial system, was being deposited and banked up against gravel highs, or forming point and mid-channel bars within the network of anastomosing channels. The deposits are recorded in a number of boreholes and window samples and are between 0.2 to 0.8m in thickness.
- 6.4.2 In numerous locations at the North Woolwich Portal site the sandy deposits are overlain by a woody peat, recorded between 0.8 and –2.17m OD and 0.1 to 3.15m in thickness. These deposits indicate a more stabilised, but on the whole wetter,

environment, and possibly the development of an alder carr woodland of a Late Neolithic to Late Bronze Age (Yendell 2009).

- 6.4.3 The sandy deposits and peats are overlain by blue grey silty clay, encountered between 0.88 and -1.72m OD. These sediments indicate grass/fen environments to mudflats. Following a rise in RSL, the floodplain landscape changed dramatically as it was inundated by the rising river levels. Woodland became waterlogged and died off, and the whole area changed to a much more open landscape, with an expansion in herbs and grasses. During this time the landscape really began to level out and any former depressions in the floodplain area silted up. Post-Medieval to modern made ground seals the natural deposits and is between 1.0 and 2.4m in thickness.

7 Conclusions

- 7.1.1 *Note: the numbering of the Landscape zones (LZ: areas of archaeological potential) is different for the individual deposit models for separate Crossrail sites. EG LZ3 at Victoria Dock Portal represents similar topography and archaeological potential to LZ2 at North Woolwich Portal).*

7.2 Victoria Dock Portal

- 7.2.1 The overall deposit sequence from Pk 19 does not differ greatly from that proposed in the previous deposit model (Crossrail/MoLAS, 2008b). However, again some of the data will modify the extent of the areas of archaeological potential (Landscape Zones). Borehole CH38 records a high elevation of Pleistocene gravel and may extend the LZ3 Island at the eastern end of the portal slightly further to the south. These high dry areas would have been exposed for much of the Holocene and would have been appealing to Mesolithic peoples as temporary or more permanent occupation sites. Therefore the potential for Mesolithic or latter flint scatters or artefacts associated with LZ3 would also extend further south in this area.
- 7.2.2 Due to their thickness and location the fluvial sands recorded in WS29 and WS30 are likely to be point and mid channel bars as opposed to being banked up against a gravel island. Therefore, soil formation and evidence of human occupation is less likely. However, the elevation of the floodplain gravels and the thickness of peat deposits within WS29, WS30, WS31, WS32 and WS33 suggest that the semi-terrestrial wetland of LZ4 extends further south in this area. The results from monitoring of GI Package 19A suggested the same extension (Crossrail 2010b).
- 7.2.3 In such marginal wetland settings platforms constructed by prehistoric peoples may be discovered. At Atlas Wharf (Lakin 1998) such a platform was identified associated with Bronze Age peat formation. It is likely that varying degrees of both alder-carr and woodland typical of a dry land environment would have existed as a mosaic across these marginal wetlands, dictated by local factors (such as proximity to channels and surface elevation for example). A study of the Neolithic woodland of the submerged forest downstream at Erith (Seel 2000) shows that the composition and distribution of tree species across such areas needs greater investigation.

7.3 North Woolwich Portal

- 7.3.1 The general sequence of deposits does not differ greatly from that proposed in the previous deposit model (Crossrail/MoLAS, 2008c). However, this data would modify the extent of the areas of archaeological potential, the Landscape Zones, to a potentially significant degree in one locality. As a result of the high elevation of the Pleistocene gravels in WS38 and NW32R the gravel island (LZ2) crossing Factory Road and to the centre of the deposit model is likely to extend further to the south-west.
- 7.3.2 These new boreholes appear to present a more complex topography and shape for this gravel island that needs investigating with further deposit modelling. This is an important factor for the WSI for this site, as these results should revise the deposit model over the area of the portal, extending the predicted area of LZ2 (the gravel eyot with potential for prehistoric activity) at least c 50m further west along the portal. This will influence mitigation designs for this site.
- 7.3.3 Additionally, the potentially Early Holocene fluvial sand deposits recorded (NW32R, WS38, NW31R, WS37 and WS36) overlie this south-west extension of the island and continue out into the deeper channel/floodplain area (LZ1). These fluvial sand sediments, that have banked up against the gravel island (LZ2), would have been subject to occasional hiatuses in deposition, allowing for soils to possibly form which would have been appealing to Mesolithic populations roaming the landscape along channel margins in search of resources. If these sediments are of an Early Holocene date the archaeological potential of these areas would be similar to that of the gravel island (LZ2).
- 7.3.4 In future fieldwork on this site, it would be useful if samples were taken for OSL dating. If required, these could be used to confirm an Early Holocene date for these sediments.

8 Bibliography

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- Seel, S, 2000 The Erith buried forest, in *International geological correlation programme 437, coastal environmental change during sea-level highstands: the Thames Estuary, field guide* (eds J Sidell and A Long), 33–39
- Yendell 2009 *Docklands Light Railway 3 Car Capacity Enhancement: South Quay, Canning Town Flyover, Delta Junction, Geoarchaeological Evaluation Report* MoLAS unpublished report

9 Appendix: interpreted borehole results

9.1 Victoria Dock Portal

CH38					
Location			VDP		
Dimensions			0.2m diameter		
OS National grid coordinates			540,674	180,930	
Modern Ground Level/top of the slab			2.00m OD		
Modern subsurface deposits			Large levelling deposits of modern made ground including demolition material		
Level of base of archaeological deposits observed and/or base of trench			None		
Natural observed			-2.00m OD		
(truncated/not truncated ?)			n/a		
Extent of modern truncation			n/a		
Top (m)	Base (m)	Top (m OD)	Base (m OD)	Description	Interpretation
0	1.2	2.00	0.80	Inspection pit (unknown)	Madeground
1.2	2.2	0.80	-0.20	Soft dark bluish grey clay with frequent Manganese flecks, slight greyish white calcareous flecks.	Alluvial overbank deposits
2.2	2.7	-0.20	-0.70	Soft dark bluish grey homogenous silty clay.	
2.7	3.2	-0.70	-1.20	Soft slightly friable dark greyish brown organic clay, lignified wood fragments, occasional detrital plant remains.	Wooded marshland
3.2	4	-1.20	-2.00	Soft mid brown peaty clay with frequent large lignified wood and detrital plant remains.	
4	4.2	-2.00	-2.20	Dark greyish brown, loose fine to medium sands and gravel clasts, sub rounded and sub angular, some coarse sands.	Floodplain gravels

CH55					
Location			VDP		
Dimensions			0.2m diameter		
OS National grid coordinates			540,368	180,907	
Modern Ground Level/top of the slab			2.40 m OD		
Modern subsurface deposits			Large levelling deposits of modern made ground including demolition material		
Level of base of archaeological deposits observed and/or base of trench			None		
Natural observed			-1.60m OD		
(truncated/not truncated ?)			n/a		
Extent of modern truncation			n/a		
Top (m)	Base (m)	Top (m OD)	Base (m OD)	Description	Interpretation
0	1.1	2.40	1.30	Friable, mid to dark brown sandy silt.	Madeground
1.1	2.2	1.30	0.20	Soft dark bluish grey clay with frequent flecks of manganese staining. Slight greyish white calcareous mottling. No visible structure.	Alluvial overbank deposits
2.2	2.7	0.20	-0.30	Soft dark bluish grey homogenous silty clay	
2.7	3.2	-0.30	-0.80	Soft slightly friable dark greyish brown organic clay. Moderate quantities of large lignified wood fragments and occasional plant remains.	Wooded marshland
3.2	4	-0.80	-1.60	Soft mid brown peaty clay with frequent large lignified wood fragments and frequent plant remains.	



4	-	-1.60	-	Dark greyish brown, loose, fine to medium sandy gravel. Clasts are rounded to sub angular with fine to coarse sand.	Floodplain gravels
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WS26					
Location			VDP		
Dimensions			0.2m diameter		
OS National grid coordinates			540,313	180,899	
Modern Ground Level/top of the slab			2.44m OD		
Modern subsurface deposits			Large levelling deposits of modern made ground including demolition material		
Level of base of archaeological deposits observed and/or base of trench			None		
Natural observed			Not reached		
(truncated/not truncated ?)			n/a		
Extent of modern truncation			n/a		
Top (m)	Base (m)	Top (m OD)	Base (m OD)	Description	Interpretation
0	1.2	2.44	1.24	Inspection pit (unknown)	Madeground
1.2	1.4	1.24	1.04	Soft dark brown peaty clay, with sand and gravel inclusions. Topsoil to made ground.	Alluvial overbank deposits with post-medieval soil development at the top.
1.4	1.95	1.04	0.49	Greenish grey silty clay, blocky, very silty.	
1.95	2.15	0.49	0.29	As above, mottled darker	
2.15	2.2	0.29	0.24	Dark brown, silty clay, reed remains.	
2.2	2.7	0.24	-0.27	VOID	
2.7	3.2	-0.27	-0.77	Blue grey silty soft malleable, calcium carbonate bands <5mm, large piece of charcoal at 3.5m	
3.2	3.7	-0.77	-1.27	VOID	
3.7	4	-1.27	-1.57	Blue grey silty soft	

				malleable, calcium carbonate bands <5mm, large piece of charcoal at 3.5m	
4	4.2	-1.57	-1.77	Dark brown, soft, spongy, peat.	Wooded marshland with freshwater tufa at base.
4.2	4.5	-1.77	-2.07	VOID	
4.5	4.8	-2.07	-2.37	Soft spongy dark brown peat, 2cm diameter wood	
4.8	4.95	-2.37	-2.52	Soft dark, brown, silty clay, reed remains, substantial, humic	
4.95	5.15	-2.52	-2.72	Tufa rich light grey silt	
5.15	5.2	-2.72	-2.77	VOID	

WS27					
Location			VDP		
Dimensions			0.2m diameter		
OS National grid coordinates			540,368	180,905	
Modern Ground Level/top of the slab			2.46m OD		
Modern subsurface deposits			Large levelling deposits of modern made ground including demolition material		
Level of base of archaeological deposits observed and/or base of trench			None		
Natural observed			Not reached		
(truncated/not truncated ?)			n/a		
Extent of modern truncation			n/a		
Top (m)	Base (m)	Top (m OD)	Base (m OD)	Description	Interpretation
0	1.2	2.46	1.26	Inspection pit (unknown)	Madeground
1.2	1.55	1.26	0.91	VOID	Alluvial overbank deposits with post-medieval soil development at the top.
1.55	1.76	0.91	0.70	Clayey peat, firm, spongy, dark brown to black, irregular lower boundary.	
1.76	2.1	0.70	0.36	Blue grey silty clay, soft, occasional manganese formation.	

2.1	2.2	0.36	0.26	Dark blue grey silty clay, soft, occasional manganese.	Wooded marshland
2.2	3.6	0.26	-1.14	Blue grey silty clay firm but malleable, occasional manganese formation and rare pockets of organics.	
3.6	3.8	-1.14	-1.34	Brownish grey, silty clay, soft, frequent wood chips and organic inclusions.	
3.8	4.2	-1.34	-1.74	Dark brown peat, woody spongy	
4.2	4.5	-1.74	-2.04	Dark grey slightly organic silty clay	
4.5	5.2	-2.04	-2.74	Back to dark brown spongy wood peat.	

WS28					
Location			VDP		
Dimensions			0.2m diameter		
OS National grid coordinates			540,396	180,907	
Modern Ground Level/top of the slab			2.31m OD		
Modern subsurface deposits			Large levelling deposits of modern made ground including demolition material		
Level of base of archaeological deposits observed and/or base of trench			None		
Natural observed			Not reached		
(truncated/not truncated ?)			n/a		
Extent of modern truncation			n/a		
Top (m)	Base (m)	Top (m OD)	Base (m OD)	Description	Interpretation
0	1.2	2.31	1.11	Inspection pit (unknown)	Madeground
1.2	1.5	1.11	0.81	Black organic silty clay, frequent gravel etc	Alluvial overbank deposits
1.5	1.85	0.81	0.46	Blue grey silty clay, soft occasional manganese, blocky.	



1.85	2.2	0.46	0.11	Dark blue grey silty clay, frequent abundant manganese mottling, less manganese with depth.	Wooded marshland
2.2	3	0.11	-0.69	Blue grey clay, rare manganese mottling, soft.	
3	3.2	-0.69	-0.89	Spongy, dark brown, slightly clayey wood peat, large piece of wood at base.	
3.2	3.3	-0.89	-0.99	Light blue grey silty clay soft.	
3.3	3.5	-0.99	-1.19	Organic/peaty clay, very soft with large hard wood inclusions.	
3.5	3.9	-1.19	-1.59	Dark grey firm, humic clay, occasional wood chips.	
3.9	4.2	-1.59	-1.89	Black slightly clayey peat, rare twig fragments.	
4.2	4.7	-1.89	-2.39	Slightly light greyish to mid brown humic silty clay with frequent wood chips.	
4.7	5.2	-2.39	-2.89	Black woody peat spongy	

WS29					
Location			VDP		
Dimensions			0.2m diameter		
OS National grid coordinates			540,438	180,913	
Modern Ground Level/top of the slab			2.19m OD		
Modern subsurface deposits			Large levelling deposits of modern made ground including demolition material		
Level of base of archaeological deposits observed and/or base of trench			None		
Natural observed			-2.71m OD		
(truncated/not truncated ?)			n/a		
Extent of modern truncation			n/a		
Top (m)	Base (m)	Top (m OD)	Base (m OD)	Description	Interpretation
0	1.2	2.19	0.99	Inspection pit (unknown)	Madeground



1.2	1.55	0.99	0.64	VOID	
1.55	2.1	0.64	0.09	Brownish grey silty clay, occasional brick fragments and gravel.	
2.1	3.2	0.09	-1.01	Blue grey silty clay, firm.	Alluvial overbank deposits
3.2	3.5	-1.01	-1.31	Blue grey silty clay, soft, frequent Fe staining to the base.	
3.5	4	-1.31	-1.81	Dark grey brown clay peat, frequent round wood visible firm, spongy.	Wooded marshland
4	4.7	-1.81	-2.51	Dark brown peat, slightly clayey but friable and spongy fewer wood remains.	
4.7	4.9	-2.51	-2.71	Light grey very soft silty clay, grading into a yellowish grey fine sandy silt.	Fluvial deposits forming mid channel bars or marginal bank deposits.
4.9	5.2	-2.71	-3.01	Sandy gravel.	Floodplain gravels

WS30					
Location			VDP		
Dimensions			0.2m diameter		
OS National grid coordinates			540,478	180,916	
Modern Ground Level/top of the slab			2.28m OD		
Modern subsurface deposits			Large levelling deposits of modern made ground including demolition material		
Level of base of archaeological deposits observed and/or base of trench			None		
Natural observed			-2.62m OD		
(truncated/not truncated ?)			n/a		
Extent of modern truncation			n/a		
Top (m)	Base (m)	Top (m OD)	Base (m OD)	Description	Interpretation
0	1.2	2.28	1.08	Inspection pit (unknown)	Madeground



1.2	1.7	1.08	0.58	Soft silty clay, mixed, brownish grey, dark grey, occasional gravel.	
1.7	2	0.58	0.28	firm silty clay, mid slightly brownish grey, pocket (<3 cm) of fibrous organics.	Aluvial overbank deposits and episodic marshland deposits.
2	2.06	0.28	0.22	Light to mid grey, silty clay.	
2.06	2.2	0.22	0.08	Clayey organic peat, firm, occasional roots, rare light blue mineral flecks.	
2.2	2.65	0.08	-0.37	VOID	
2.65	3.7	-0.37	-1.42	Blue grey silty clay, mottled brown in air, some Fe formation associated with root channels to base.	
3.7	4.2	-1.42	-1.92	Slightly blue brown (mid), silty clay, very small pockets of fibrous organic peat, thin band of fine sand to the base.	Wooded marshland
4.2	4.3	-1.92	-2.02	VOID	
4.3	4.65	-2.02	-2.37	Soft light brownish grey, pockets of organic matter and fine sand.	
4.65	4.8	-2.37	-2.52	Dark brown fibrous peat.	
4.8	4.9	-2.52	-2.62	Mid to dark grey sandy silt, firm to stiff.	Fluvial deposits forming mid channel bars or marginal bank deposits.
4.9	5	-2.62	-2.72	Stiff mid grey sand, slightly silty gravel to base.	Floodplain gravels

WS31	
Location	VDP
Dimensions	0.2m diameter
OS National grid coordinates	540,515 180,920
Modern Ground Level/top of the slab	2.23m OD
Modern subsurface deposits	Large levelling deposits of modern made ground including demolition material



Level of base of archaeological deposits observed and/or base of trench				None	
Natural observed				-2.37m OD	
(truncated/not truncated ?)				n/a	
Extent of modern truncation				n/a	
Top (m)	Base (m)	Top (m OD)	Base (m OD)	Description	Interpretation
0	1.2	2.23	1.03	Inspection pit (unknown)	Madeground
1.2	1.8	1.03	0.43	Blue grey silty clay, blocky, soft.	Alluvial overbank deposits
1.8	1.9	0.43	0.33	Mid to dark brown, silty clay, large mollusc inclusions.	
1.9	2.9	0.33	-0.67	Blue grey silty clay as above, frequent calcium carbonate formation between -0.07 to -0.37 m OD.	
2.9	3	-0.67	-0.77	Dark brown peaty clay, woody.	Wooded marshland
3	3.4	-0.77	-1.17	VOID	
3.4	3.7	-1.17	-1.47	Blue grey silty clay, gravelly pea sized (Backfill?)	
3.7	4.3	-1.47	-2.07	Dark brown peat spongy small twig remains.	
4.3	4.6	-2.07	-2.37	Soft light grey silty clay, occasional organic remains and calcium carbonate.	
4.6	4.8	-2.37	-2.57	Sand and pea sized sub angular gravel.	Floodplain gravel

WS32	
Location	VDP
Dimensions	0.2m diameter
OS National grid coordinates	540,559 180,922
Modern Ground Level/top of the slab	2.28m OD
Modern subsurface deposits	Large levelling deposits of modern made ground

				including demolition material	
Level of base of archaeological deposits observed and/or base of trench				None	
Natural observed				-2.47m OD	
(truncated/not truncated ?)				n/a	
Extent of modern truncation				n/a	
Top (m)	Base (m)	Top (m OD)	Base (m OD)	Description	Interpretation
0	1.2	2.28	1.08	Inspection pit (unknown)	Madeground
1.2	1.65	1.08	0.63	Blue grey silty clay, swift mottled brown in air, soft, massive structure no visible rooting.	Alluvial overbank deposits
1.65	1.8	0.63	0.48	Mid to dark brown, peaty clay, firm slightly fibrous, but no visible organic tissue.	
1.8	2.2	0.48	0.08	Blue grey silty clay, swift mottled brown in air, firm, occasional Fe associated rooting.	
2.2	3.5	0.08	-1.22	Blue grey silty clay as above.	
3.5	4	-1.22	-1.72	Soft mid brown humic clay occasional to frequent wood chips.	Wooded marshland
4	4.2	-1.72	-1.92	Spongy peat woody, dark brown to black.	
4.2	4.25	-1.92	-1.97	Soft grey brown silty clay.	
4.25	4.4	-1.97	-2.12	Dark brown spongy wood peat.	
4.4	4.6	-2.12	-2.32	Brownish grey silty clay.	
4.6	4.75	-2.32	-2.47	Grading into a sandy silt and pea sized gravel.	Floodplain gravel
4.75	5.2	-2.47	-2.92	Sands and gravel	

WS33	
Location	VDP



Dimensions				0.2m diameter	
OS National grid coordinates				540,594	180,925
Modern Ground Level/top of the slab				2.25m OD	
Modern subsurface deposits				Large levelling deposits of modern made ground including demolition material	
Level of base of archaeological deposits observed and/or base of trench				None	
Natural observed				-2.50m OD	
(truncated/not truncated ?)				n/a	
Extent of modern truncation				n/a	
Top (m)	Base (m)	Top (m OD)	Base (m OD)	Description	Interpretation
0	1.2	2.25	1.05	Inspection pit (unknown)	Madeground
1.2	1.4	1.05	0.85	Blue grey silty clay, soft, occasional Fe mottling.	Alluvial overbank deposits
1.4	1.56	0.85	0.69	Dark blue grey silty clay, soft to firm, occasional Fe formation.	
1.56	2.2	0.69	0.05	Blue grey silty clay, firm, occasional Fe nodule formation.	
2.2	2.7	0.05	-0.45	VOID	
2.7	3	-0.45	-0.75	Blue grey silty clay, soft to firm, occasional Fe nodule formation.	
3	3.15	-0.75	-0.90	Dark blue grey silty clay, soft, occasional manganese staining.	
3.15	3.2	-0.90	-0.95	Mid brown clayey peat fibrous.	Wooded marshland
3.2	3.5	-0.95	-1.25	VOID	
3.5	3.7	-1.25	-1.45	Blue grey silty clay, soft.	
3.7	3.9	-1.45	-1.65	Very clayey peat/peaty clay, soft, occasional to frequent reed remains.	
3.9	4.75	-1.65	-2.50	Dark brown peat spongy, visible small twigs.	
4.75	5.2	-2.50	-2.95	Sandy angular to sub	Floodplain gravel

				angular gravel.	
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9.2 North Woolwich Portal

BHNW31R					
Location			NWP		
Dimensions			0.2m diameter		
OS National grid coordinates			542,754	179,989	
Modern Ground Level/top of the slab			2.08m OD		
Modern subsurface deposits			Large levelling deposits of modern made ground including demolition material		
Level of base of archaeological deposits observed and/or base of trench			None		
Natural observed			-0.62m OD		
(truncated/not truncated ?)			n/a		
Extent of modern truncation			n/a		
Top (m)	Base (m)	Top (m OD)	Base (m OD)	Description	Interpretation
0	0.5	2.08	1.58	Friable, mid to dark brown sandy silt. Occasional brick fragments.	Madeground
0.4	1.2	1.68	0.88	Moderately loose, orangey brown silty sand with occasional to moderate, small to medium flint gravel.	
1.2	1.8	0.88	0.28	Moderately soft, mid brownish grey sandy clay silt with heavy mid orangey brown iron mottling and down fine root channels. Sand is fine with very occasional coarse sand and very fine gravel. Deposit becomes more clayey downwards through the profile.	Alluvial overbank deposits



1.8	2	0.28	0.08	Soft brownish grey clay. Becomes browner and more organic downwards through the profile with occasional organic inclusions.	
2	2.7	0.08	-0.62	Soft, friable dark brown clayey peat. Occasional to moderate twigs and wood fragments.	Wooded marshland
2.7	-	-0.62	-	Soft/wet, slightly brownish grey silty fine to medium sand.	Fluvial deposits forming mid channel bars or marginal bank deposits.

BHNW32R					
Location			NWP		
Dimensions			0.2m diameter		
OS National grid coordinates			542,837	179,972	
Modern Ground Level/top of the slab			1.84m OD		
Modern subsurface deposits			Large levelling deposits of modern made ground including demolition material		
Level of base of archaeological deposits observed and/or base of trench			None		
Natural observed			-2.86m OD		
(truncated/not truncated ?)			n/a		
Extent of modern truncation			n/a		
Top (m)	Base (m)	Top (m OD)	Base (m OD)	Description	Interpretation
0	1.7	1.84	0.14	Madeground	Madeground
1.7	1.8	0.14	0.04	Silty clay, greenish grey, firm, occ (occasional) Fe staining.	Alluvial overbank deposits
1.8	2.3	0.04	-0.46	Silty clay, greenish grey, firm but more malleable than above), occ Manganese staining.	
2.3	2.8	-0.46	-0.96	Brownish grey silty clay, slightly friable and grading into a clayey peat with occ reed remains.	



2.8	4.3	-0.96	-2.46	Peat brown, occ to frequent remains of small twigs and reeds, larger light coloured wood fragments at the upper interface, occasional reddish (alder?) wood remains within the peat.	Wooded marshland
4.3	4.5	-2.46	-2.66	Pale brown/grey silty clay. Firm-moderately plastic. Fe staining possibly in root channels. Increasing to base.	
4.5	4.7	-2.66	-2.86	Pale grey sand, occ rooting to the top, fine to medium sand, firm.	Fluvial deposits forming mid channel bars or marginal bank deposits.
4.7	-	-2.86	-	Wet brown silty sand grading into sands and gravel.	Floodplain gravels

BHNW33R					
Location			NWP		
Dimensions			0.2m diameter		
OS National grid coordinates			542,945	179,95	
Modern Ground Level/top of the slab			1.64m OD		
Modern subsurface deposits			Large levelling deposits of modern made ground including demolition material		
Level of base of archaeological deposits observed and/or base of trench			None		
Natural observed			-3.06m OD		
(truncated/not truncated ?)			n/a		
Extent of modern truncation			n/a		
Top (m)	Base (m)	Top (m OD)	Base (m OD)	Description	Interpretation
0	0.4	1.64	1.24	Friable, mid to dark brown sandy silt.	Madeground
0.4	1	1.24	0.64	Moderately loose, orangey brown silty sand with occasional to moderate, small to medium flint gravel.	



1	1.7	0.64	-0.06	Soft to firm, light blue grey silty clay. Occasional small yellowish calcareous inclusions.	Alluvial overbank deposits
1.7	4.7	-0.06	-3.06	Soft, slightly friable, mid brown organic clay silt. Moderate small organic inclusions but generally fairly amorphous. Occasional thin blue grey clay laminae at top. Becomes more woody downwards through the profile.	Mudflat to Wooded marshland
4.7	-	-3.06	-	Loose grey and white flint gravel with sand. Gravel is sub angular to sub rounded.	Floodplain gravels

WS34					
Location			NWP		
Dimensions			0.2m diameter		
OS National grid coordinates			542,550	180,031	
Modern Ground Level/top of the slab			2.13m OD		
Modern subsurface deposits			Large levelling deposits of modern made ground including demolition material		
Level of base of archaeological deposits observed and/or base of trench			None		
Natural observed			Not reached		
(truncated/not truncated ?)			n/a		
Extent of modern truncation			n/a		
Top (m)	Base (m)	Top (m OD)	Base (m OD)	Description	Interpretation
0	1.2	2.13	0.93	Soft brownish grey silty clay. Occasional gravel.	Madeground
1.2	3.85	0.93	-1.72	Very soft, dark grey gleyed clay. Darker (near black) in places. Moderate to frequent fine root inclusions.	Disturbed alluvium



3.85	3.95	-1.72	-1.82	Moderately firm, mid to dark grey clay.	Alluvial overbank deposits to mudflats
3.95	4.2	-1.82	-2.07	As above but lighter in colour.	
4.2	4.45	-2.07	-2.32	Very soft, dark brown/black clay with occasional organics.	
4.45	5	-2.32	-2.87	Very soft, light to mid grey clay.	

WS35					
Location			NWP		
Dimensions			0.2m diameter		
OS National grid coordinates			542,641	180,014	
Modern Ground Level/top of the slab			2.35m OD		
Modern subsurface deposits			Large levelling deposits of modern made ground including demolition material		
Level of base of archaeological deposits observed and/or base of trench			None		
Natural observed			Not reached		
(truncated/not truncated ?)			n/a		
Extent of modern truncation			n/a		
Top (m)	Base (m)	Top (m OD)	Base (m OD)	Description	Interpretation
0	1.2	2.35	1.15	Inspection pit (unknown)	Madeground
1.2	1.7	1.15	0.65	Slightly silty fine sand, yellowish grey, mollusc fragments, (madeground?)	
1.7	4	0.65	-1.65	Blue grey, silty clay, heavily manganese mottling, firm.	Alluvial overbank deposits
4	4.2	-1.65	-1.85	As above, less manganese mottling (rare to base), slight Fe staining around some root channels at 2.7m b GL, light grey from 3.2m b GL, possibly gleyed.	



4.2	5.2	-1.85	-2.85	Peat, dark brown, visible round wood, fibrous organics, slightly diffuse upper boundary, C14 sample at 4.0m b GL.	Wooded Marshland
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WS36					
Location			NWP		
Dimensions			0.2m diameter		
OS National grid coordinates			542,667	180,008	
Modern Ground Level/top of the slab			2.38m OD		
Modern subsurface deposits			Large levelling deposits of modern made ground including demolition material		
Level of base of archaeological deposits observed and/or base of trench			None		
Natural observed			Not reached		
(truncated/not truncated ?)			n/a		
Extent of modern truncation			n/a		
Top (m)	Base (m)	Top (m OD)	Base (m OD)	Description	Interpretation
0	0.5	2.38	1.88	Friable, mid to dark brown sandy silt.	Madeground
0.5	1.2	1.88	1.18	Moderately loose, orangey brown silty sand with occasional to moderate, small to medium flint gravel.	
1.2	2.2	1.18	0.18	Firm, dark slightly yellowish brown sand. Colour changes gradually to grey at 2m depth.	
2.2	2.3	0.18	0.08	Soft, friable grey brown silty clay with black speckling.	
2.3	2.4	0.08	-0.02	Firm, dark grey black medium sand.	



2.4	4.2	-0.02	-1.83	Soft to firm brownish grey silty clay. Moderate to frequent iron mottling at the top of the deposit becoming more gleyed downwards through the profile.	Alluvial overbank deposits
4.2	4.3	-1.83	-1.93	Soft, dark brown to black woody peat. Includes big lumps of wood.	Wooded marshland
4.3	-	-1.93	-	Firm greyish brown medium sand.	Fluvial deposits forming mid channel bars or marginal bank deposits.

WS37					
Location			NWP		
Dimensions			0.2m diameter		
OS National grid coordinates			542,715	179,999	
Modern Ground Level/top of the slab			2.21m OD		
Modern subsurface deposits			Large levelling deposits of modern made ground including demolition material		
Level of base of archaeological deposits observed and/or base of trench			None		
Natural observed			Not reached		
(truncated/not truncated ?)			n/a		
Extent of modern truncation			n/a		
Top (m)	Base (m)	Top (m OD)	Base (m OD)	Description	Interpretation
0	1.2	2.21	1.01	Inspection pit (unknown)	Madeground
1.2	1.8	1.01	0.41	Silty sand, yellow brown	
1.8	2.2	0.41	0.01	Blue grey silty clay, occ mottled black (contamination?)	Disturbed alluvium
2.2	3.1	0.01	-0.89	Slightly sandy blue grey silty clay, grading into blue grey silty clay, occ manganese formation and Fe mottling slightly blocky structure.	Alluvial overbank deposits

3.1	3.4	-0.89	-1.19	Brownish grey, silty clay organic, twig and fibre inclusions, soft, no inclusions lower down.	
3.4	3.9	-1.19	-1.69	Brownish grey, silty clay, freq to abundant fibrous organics, 0.5cm diameter pieces of round wood.	Wooded marshland
3.9	4.35	-1.69	-2.14	Diffuse upper boundary, slightly clayey peat, 1 cm diameter pieces of round wood, brown, occasional wood/fibrous inclusions	
4.35	5.19	-2.14	-2.98	Dark brown to black, spongy peat, occ small round wood twigs, occ reed, slightly friable.	
5.19	-	-2.98	-	Fine dark grey sands	

WS38					
Location			NWP		
Dimensions			0.2m diameter		
OS National grid coordinates			542,794	179,982	
Modern Ground Level/top of the slab			1.97m OD		
Modern subsurface deposits			Large levelling deposits of modern made ground including demolition material		
Level of base of archaeological deposits observed and/or base of trench			None		
Natural observed			-2.63m OD		
(truncated/not truncated ?)			n/a		
Extent of modern truncation			n/a		
Top (m)	Base (m)	Top (m OD)	Base (m OD)	Description	Interpretation
0	1.2	1.97	0.77	Inspection pit (unknown)	Madeground



1.2	2.5	0.77	-0.53	Blue grey silty clay, firm, blocky, frequent dark Fe staining associated with root channels, less Fe staining from 1.9m b GL.	Alluvial overbank deposits
2.5	2.8	-0.53	-0.83	Organic clay brownish grey, no visible large plant remains.	
2.8	3.15	-0.83	-1.18	Spongy peat, visible round wood, slightly fibrous, dark brown.	Wooded marshland with high energy fluvial deposition
3.15	3.2	-1.18	-1.23	Grey very fine sand	
3.2	3.8	-1.23	-1.83	Wet soft, slightly clayey peat, dark brown to grey.	
3.8	4.6	-1.83	-2.63	Yellow grey fine sand, no gravel	Fluvial deposits forming mid channel bars or marginal bank deposits.
4.6	-	-2.63	-	Sands and sub angular gravel	Floodplain gravel

WS39					
Location			NWP		
Dimensions			0.2m diameter		
OS National grid coordinates			542,860	179,968	
Modern Ground Level/top of the slab			1.70m OD		
Modern subsurface deposits			Large levelling deposits of modern made ground including demolition material		
Level of base of archaeological deposits observed and/or base of trench			None		
Natural observed			-3.40m OD		
(truncated/not truncated ?)			n/a		
Extent of modern truncation			n/a		
Top (m)	Base (m)	Top (m OD)	Base (m OD)	Description	Interpretation
0	1.2	1.70	0.50	Inspection pit (unknown)	Madeground
1.2	1.95	0.50	-0.25	Blocky, slightly greenish blue grey, silty clay. Fe mottling.	Alluvial overbank deposits



1.95	3	-0.25	-1.30	Brown (reddish peat), spongy visible round wood remains, darker brown to base.	Wooded marshland
3	4.3	-1.30	-2.60	Wet very organic clay, grey brown, occ wood remains (round wood), occ fibrous organic remains.	
4.3	5.1	-2.60	-3.40	Clayey peat, wet, wood chips (occ), soft fibrous.	
5.1	-	-3.40	-	Gravelly sandy, brownish yellow, subangular gravel.	Floodplain gravel

WS40					
Location			NWP		
Dimensions			0.2m diameter		
OS National grid coordinates			542,918		179,956
Modern Ground Level/top of the slab			1.63m OD		
Modern subsurface deposits			Large levelling deposits of modern made ground including demolition material		
Level of base of archaeological deposits observed and/or base of trench			None		
Natural observed			-3.21m OD		
(truncated/not truncated ?)			n/a		
Extent of modern truncation			n/a		
Top (m)	Base (m)	Top (m OD)	Base (m OD)	Description	Interpretation
0	1.1	1.63	0.53	Inspection pit (unknown)	Madeground
1.1	1.75	0.53	-0.12	Blue grey silty clay, occ Fe mottling firm but malleable, occ fragments of possible molluscs or CaCo3 formation.	Alluvial overbank deposits
1.75	1.95	-0.12	-0.32	Diffuse boundary into brownish blue grey silty clay, with occasional rooting	
1.95	2	-0.32	-0.37	Organic clay, brownish grey, occ reed remains.	



2	3.8	-0.37	-2.17	Grey soft wet clay, freq to occ twigs and fibrous org remains. Visible laminations to the base.	
3.8	3.9	-2.17	-2.27	Spongy slightly clayey peat, dark brown. C14 sample at 3.9m b GL.	Wooded marshland
3.9	4.7	-2.27	-3.07	Very soft and wet clayey peat no visible organic remains, grey brown.	
4.7	4.84	-3.07	-3.21	Dark brown fibrous peat occ to pea sized gravel, C14 sample at 4.8m b GL.	
4.84	-	-3.21	-	Coarse sand with occasional to frequent gravel. Light yellow and gravel rare to base.	Floodplain gravel