C263 ARCHAEOLOGY LATE EAST
Interim Statement
Geoarchaeological Borehole Evaluation
North Woolwich Portal - XSV11

Document Number: C263-MLA-X-RGN-CRG07-50012

Document History:

Revision:	Date:	Prepared by:	Checked by:	Approved by:	Reason for Issue:
2.0	20/02/13	[redacted] (MOLA)	[redacted] (MOLA)	[redacted] (MOLA)	Incorporates CRL comment
		[redacted]	[redacted]	[redacted]	

CROSSRAIL CENTRAL (PDP) REVIEW AND ACCEPTANCE STATUS

This decal is to be used for submitted documents requiring acceptance by Crossrail Central.

☑	Code 1. Accepted. Work May Proceed
☐	Code 2. Not Accepted. Revise and resubmit. Work may proceed subject to incorporation of changes indicated
☐	Code 3. Not Accepted. Revise and resubmit. Work may not proceed
☐	Code 4. Received for information only. Receipt is confirmed

Reviewed/Accepted by:(signature) [redacted]

Print Name: [redacted] Date: 26/3/13

Acceptance by Crossrail Central does not relieve the designer/supplier from full compliance with their contractual obligations and does not constitute Crossrail Central approval of design, details, calculations, analyses, test methods or materials developed or selected by the designer/supplier.

Previous versions

Revision:	Date:	Prepared by:	Checked by:	Approved by:	Reason for Issue:
1.0	10/08/11	[redacted] (MOLA)	[redacted] (MOLA)	[redacted] (MOLA)	For Crossrail review

Contents

List of Figures *(at back of document)*

1 Introduction

This document reports briefly on the results of a geoarchaeological borehole evaluation which forms part of the scope of works at North Woolwich Portal. It is recorded under site code XSV11, NGR 542749,179975 (centre of site). The borehole survey was designed to assess the potential for the survival of archaeological and palaeoenvironmental remains. The fieldwork was carried out on 03/08/2011.

The requirements for the work were set out in the C263 Archaeology Late East Method Statement, Watching Briefs, Non Listed Building Recording and Geoarchaeological Borehole Survey–Victoria Dock Portal and North Woolwich Portal, July 2011, document number C263-MLA-X-RGN-CRG07-50003, Revision 3.1.

2 Aims and Objectives

These are defined in the Method Statement and are reproduced below.

2.1 Research Aims

The overall objectives of the evaluation are to assess the level of preservation and significance of archaeological and/or palaeoenvironmental remains, revise the landscapes zones determined by the previous geoarchaeological deposit model, and recover core samples suitable for off site palaeoenvironmental work.

Specifically, the evaluation has the potential to recover:

- Peat and alluvial deposits preserving a wide range of proxy palaeoenvironmental indicators (i.e. pollen, diatoms, plant macro fossils) that can be utilised to reconstruct past landscape, palaeoecology, hydrology, geomorphology and past landforms.
- Prehistoric structural timber remains such as trackways, fish traps and revetments possibly occurring within the thick peat deposits
- Mesolithic to Neolithic dryland activity horizons above gravel high points, consisting of ephemeral scatters of animal bone and lithic material.
- Evidence of floodplain stabilisation and soil formation of a Roman to Medieval date within the upper minerogenic alluvium, and associated archaeology consisting of pits, ditches etc.

3 Methodology

All on-site geoarchaeological work was carried out in accordance with the C263 Archaeology Late East Method Statement, Watching Briefs, Non Listed Building recording and Geoarchaeological Borehole Survey–Victoria Dock Portal and North Woolwich Portal, July 2011, document number C263-MLA-X-RGN-CRG07-50003, Revision 3.1, and the Museum of London *Archaeological Site Manual 3rd edition* (1994).

Three geoarchaeological boreholes (BH1-3) located along an east/west transect across the site were monitored and recorded by a MOLA geoarchaeologist. Starter pits were hand excavated down to 1.2m bGL (below ground level) and then bored by a terrier rig to varying depths so that research aims could be addressed. The various sediments encountered in the boreholes were logged by a geoarchaeologist according to standard geoarchaeological criteria.

4 Results of the borehole evaluation

The interpreted results of the monitoring are tabulated below. All levels in this interim report are quoted in metres Above Tunnel Datum (m ATD). Tunnel Datum is calculated as being 100m above Ordnance Datum e.g. 1m OD = 101m ATD. The term 'natural' in the tables below refers to naturally deposited layers such as alluvial deposits rather than just terrace gravels and solid geology.

BH1					
Location				North Woolwich Portal	
OS National grid coordinates				542627.457; 180016.092	
Surface Level				102.56m ATD (2.56m OD)	
Natural observed				99.96m ATD (-0.04m OD)	
Top (m)	**Base (m)**	**Top (m ATD)**	**Base (m ATD)**	**Description**	**Interpretation**
0	0.6	102.56	101.96	Grey aggregate ROADSTONE. Sharp horizontal contact with unit below.	Consolidation fill
0.6	0.8	101.96	101.76	Orange SAND & GRAVEL. Grades into unit below.	Consolidation fill
0.8	2.55	101.76	100.01	Light brown becoming black fine sand (MADE GROUND). Grades into unit below.	Consolidation fill
2.55	2.6	100.01	99.96	Spongy black ORGANICS. Sharp horizontal contact with unit below.	Turf line

2.6	2.85	99.96	99.71	Soft, brown organic becoming dark grey laminated SILTY CLAY with manganese staining. Grades into unit below.	Soil profile developed from historic alluvial deposits
2.85	4	99.71	98.56	Light brownish grey SILTY CLAY. Sharp contact with unit below.	Estuarine muds / tidal channel
4	4.2	98.56	98.36	Firm black fine sand. Sharp contact with unit below.	Estuarine muds / tidal channel
4.2	4.3	98.36	98.26	Very soft brown SILTY CLAY. Sharp contact with unit below.	Estuarine muds / tidal channel
4.3	4.65	98.26	97.91	Firm black fine sand with occasional organic fragments near base of unit. Sharp contact with unit below.	Estuarine muds / tidal channel
4.65	8.45	97.91	94.11	Very soft, brown SILTY CLAY (hole collapse, unknown depth, probed to 8.45mbgl)	Estuarine muds / tidal channel

BH2					
Location				North Woolwich Portal	
OS National grid coordinates				542722.739; 179994.318	
Surface Level				102.23m ATDD (2.23m OD)	
Natural observed				100.93m ATD	
Top (m)	**Base (m)**	**Top (m OD)**	**Base (m OD)**	**Description**	**Interpretation**
0	0.8	102.23	101.43	Grey aggregate ROADSTONE. Sharp horizontal contact with unit below.	Consolidation fill
0.8	1.3	101.43	100.93	Light brown fine SAND. Sharp horizontal contact with unit below.	Consolidation fill
1.3	1.35	100.93	100.88	Spongy dark brown ORGANICS. Sharp horizontal contact with unit below.	Turf line
1.35	1.6	100.88	100.63	Soft, brown organic becoming dark grey laminated SILTY CLAY with manganese staining. Grades into unit below.	Soil profile developed from historic alluvial deposits

1.6	3.55	100.63	98.68	Grey, soft, plastic, sticky SILTY CLAY becoming grey and firmer with depth. Grades into unit below.	Estuarine muds
3.55	3.75	98.68	98.48	Mid brownish grey, soft, ORGANIC SILTY CLAY. Grades into unit below.	Estuarine muds flooding peat surface.
3.75	5.8	98.48	96.43	Dark brown clayey fibrous PEAT with moderately frequent wood fragments. Sharp horizontal contact with unit below.	Channel marginal wetland
5.8	6.8	96.43	95.43	Dark grey medium SAND (hole collapse, unknown depth)	Early to mid Holocene channel fill

BH3					
Location				North Woolwich Portal	
OS National grid coordinates				542627.457; 180016.092	
Surface Level				102.02m ATD (2.02m OD)	
Natural observed				101.27m ATD	
Top (m)	**Base (m)**	**Top (m OD)**	**Base (m OD)**	**Description**	**Interpretation**
0	0.6	102.02	101.42	Grey aggregate ROADSTONE. Sharp horizontal contact with unit below.	Consolidation fill
0.6	0.75	101.42	101.27	Light brown fine SAND , some clay. Sharp horizontal contact with unit below.	Consolidation fill
0.75	1.5	101.27	100.52	Dark grey, firm, CLAY SILT with oxidised root channels, manganese staining and fine sand component. Blocky at top with $CaCO_3$ concretions at base of unit. Grades into unit below.	Soil profile developed from historic alluvial deposits
1.5	1.9	100.52	100.12	Greyish blue becoming light green plastic, sticky clay. Grades into unit below.	Estuarine muds
1.9	2.4	100.12	99.62	Mid brownish grey, soft, plastic ORGANIC CLAY. Grades into unit below.	Estuarine muds flooding peat surface.
2.4	2.55	99.62	99.47	Dark brown clayey PEAT. Sharp horizontal contact with unit below.	Channel marginal wetland

2.55	2.75	99.47	99.27	Mid brownish grey, soft, plastic ORGANIC CLAY. Grades into unit below.	Channel marginal wetland overbank floodplain deposit
2.75	3.5	99.27	98.52	Dark brown clayey fibrous PEAT with moderately frequent wood fragments. Sharp horizontal contact with unit below.	Channel marginal wetland
3.5	3.85	98.52	98.17	Mid brownish grey, soft, plastic ORGANIC CLAY. Grades into unit below.	Channel marginal wetland overbank floodplain deposit
3.85	4.8	98.17	97.22	Dark brown clayey fibrous PEAT with moderately frequent wood fragments. Sharp horizontal contact with unit below.	Channel marginal wetland
4.8	5	97.22	97.02	Grey clast supported GRAVEL granular to 30mm subrounded to angular, with coarse sand matrix (unknown depth)	River terrace

5 Significance of Results (provisional)

5.1 Summary of Fieldwork Results

Three terrier rig boreholes were undertaken in an east/west transect across the site. Basal Pleistocene gravels were encountered at 99m ATD in borehole BH3 but not in BH2 or BH1 due to hole collapse. Peats and organic clays were encountered overlying the gravels in BH3 extending to 99.62m ATD. In BH2 these deposits occurred at 96.48m ATD extending up to 98.68m ATD overlying fluvial sands. BH1 revealed very soft silty clays and bands of sand from -97.91m ATD up to 98.56m ATD. All these deposits where overlain by estuarine silty clays to 100.52m ATD (BH1), 100.88m (BH2) and 99.96m ATD (BH3). Semi-terrestrial deposits (soil profiles) were seen in all boreholes with turf lines existing at approximately 99.91m and 100m ATD in BH2 and BH1, respectively. Overlying all the floodplain deposits in each borehole were made ground deposits consisting of sand and roadstone at a level of c 102m ATD.

5.2 Importance of Resources

The floodplain deposits identified in the survey are provisionally assessed as being of low to moderate importance. They represent a series of naturally occurring sedimentary and biogenic deposits ranging from the Mesolithic through to the post medieval periods.

5.3 Provisional Assessment of Results against Aims and Objectives

Peats and alluvial deposits were encountered that could be utilised to reconstruct past landscape, palaeoecology, hydrology, geomorphology and past landforms.

No direct evidence for prehistoric structural timber remains such as trackways, fish traps and revetments was found.

There was no evidence for dry land surfaces or Mesolithic to Neolithic activity horizons above the gravel high point sampled by BH3.

An upper minerogenic alluvium consisting of estuarine silty clays giving way to accretionary soils was recorded, possibly providing evidence of floodplain stabilisation and soil formation of a Roman to post medieval date

5.4 Provisional conclusions for future work

The information retrieved on the sedimentary sequence will be used to update and refine the landscape zones defined in the previous geoarchaeological deposit model. The core samples can also be retained for any future mitigation.

6 Future Deliverables

The remaining deliverables for the site and their delivery dates as specified by *Crossrail, Archaeology, Specification for Evaluation & Mitigation (including Watching Brief, Doc No. CR-PN-LWS-EN-SP-00001*, v. 0.3, 26.06.09, are:

- **Survey Report** by Wednesday 17th August 2011
- **Fieldwork Report** (including OASIS Summary Sheet) by Wednesday 14th September 2011
- **Summary Report** by Wednesday 28th September 2011

Glossary

bGL	below ground level (depth/level)
Bronze Age	*c* 2000–650 BC
Holocene	Geological era from 10,000 BP to the present day
Iron Age	*c* 650 BC–AD 43
m OD	Metres above Ordnance Datum (Newlyn). To obtain Tunnel Datum heights (m TD) add 100m to OD heights.
Mesolithic	*c* 12,000–4000 BC
Neolithic	*c* 4000–2000 BC
Pleistocene	Geological era from 2,000,000 to 10,000 BP, characterised by fluctuating cold (Glacial) and warm (Interglacial) climatic cycles
Post-medieval	AD 1485 to present
Roman (Romano-British)	AD 43–*c* 410

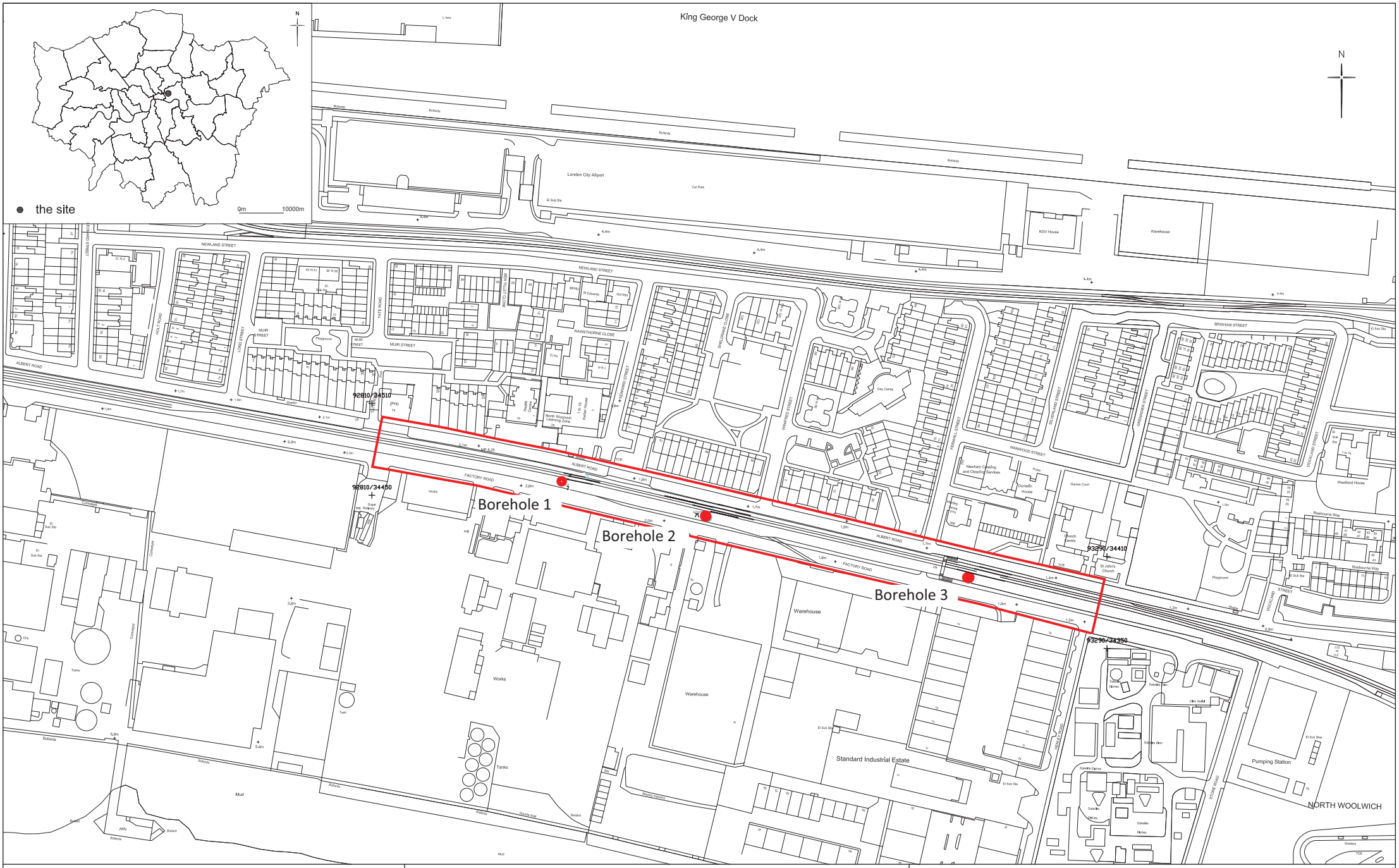

Fig 1: Site and borehole locations

Area of ground reduction

Location of borehole