LAND AT RATHBONE MARKET, CANNING TOWN, E16 1EH

AN ARCHAEOLOGICAL EVALUATION OF PHASES I, II & III



LOCAL PLANNING AUTHORITY: LONDON BOROUGH OFNEWHAM

PLANNING APPLICATION NUMBER: 08/02263/LTGDC/LBNM

PCA REPORT NO: 11989

SITE CODE: RBO10

**FEBRUARY 2015** 



**PRE-CONSTRUCT ARCHAEOLOGY** 

### LAND AT RATHBONE MARKET, CANNING TOWN, E16 1EH

# AN ARCHAEOLOGICAL EVALUATION OF PHASES I, II & III

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## LAND AT RATHBONE MARKET, CANNING TOWN, E16 1EH

#### AN ARCHAEOLOGICAL EVALUATION OF PHASES I, II & III

Site Code:	RBO10
Local Planning Authority:	London Borough of Newham
Planning Application Number:	08/02263/LTGDC/LBNM
Central National Grid Reference:	TQ 3965 8167 (539650,181670)
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#### 1 ABSTRACT

- 1.1 This report details the results of three phases of an archaeological evaluation undertaken out by Pre-Construct Archaeology Ltd; on land at Rathbone Market, Canning Town, London Borough of Newham, E16 1EH (Figure 1). The work was commissioned by CgMs Consulting on behalf of the client, Muse Developments.
- 1.2 Phase I of the work was undertaken from August to September 2010 and March 2011; Phase II of the work was undertaken between January and June 2013; Phase III of the work was undertaken in January 2015. Three trenches were excavated during Phase I, two trenches in Phase II and two trenches in Phase III.
- 1.3 Phase I and Phase II have been the subject of summary reports (Haslam & Frickers 2011; Jorgensen 2013) and this report combines the results from these and the final phase of work.
- 1.4 Fluvial sand and gravel was found at the base of the sequence, which was sealed by alluvial clays and silts ('Lower Alluvium'), capped by a deposit of peat. This was in turn sealed by alluvial clay ('Upper Alluvium'). The alluvial deposits and the topography of the superficial drift geology is considered to reflect the presence of a north-south aligned palaeochannel, which may have had its deepest part towards the west of the Rathbone Market site (Phase I area) before inclining gradually to a surface level approximately in the Phase II and III areas. It is suggested that undulating gravels in the eastern side of the site may also reflect a small channel, perhaps associated with the larger entity to the west.
- 1.5 A deposit of post-medieval made ground was found above the alluvium, which was superseded by modern strata.
- 1.6 Combined with geoarchaeological investigations carried out by QUEST (Young *et al* 2013) and PCA, this report outlines particulars of the former topography of site and the suggested location of a north south aligned palaeochannel crossing the study area, along with interpretations of the surrounding environment.

#### 2 INTRODUCTION

- 2.1 An archaeological evaluation was conducted by Pre-Construct Archaeology Limited (PCA) at Rathbone Market, Canning Town, E16 1EH in the London Borough of Newham (Figure 1). The work was commissioned by CgMs Consulting on behalf of the client, Muse Developments. The site is bordered to the north by Barking Road, to the south by Newham Way, to the east by Aviary Close and to the west by retail units.
- 2.2 Development at the site is permitted by planning consent granted by the London Borough of Newham under application number 08/02263/LTGDC/LBNM. The site is subject to a standard pre commencement condition (see Chapter 3).
- 2.3 The Phase 3 field investigation was supervised by the author, Aidan Turner and the site was project managed by Chris Mayo of PCA. The work was undertaken following an approved Written Scheme of Investigation prepared by CgMs (Gailey 2014), and the site works were monitored by Adam Single of the Greater London Archaeological Advisory Service (GLAAS) on behalf of the London Borough of Newham..
- 2.4 This report details the results of three phases (henceforth termed Phases I, II & III) of the archaeological evaluation (Figure 2). Phase I and Phase II have been the subject of summary reports (Haslam & Frickers 2011; Jorgensen 2013). This report details the results of all three phases of work, combining the results from the summary reports and the information gained in Phase III of the archaeological evaluation. It also refers to a geoarchaeological investigation at the site undertaken by QEST for CgMs Consulting, and includes the report from that work at Appendix 4.
- 2.5 Three trenches were excavated during Phase I. Trenches 1 and 2 were excavated between 31st August and 7th September 2010 prior to demolition of the existing market. Trench 3 was excavated post-demolition on the 22nd and 23rd March 2011. This phase of work was supervised by Phillip Frickers of PCA. The Phase 1 site was centred at TQ 3960 8164 (539601,181642).
- 2.6 Two further trenches were excavated during Phase II. Due to site constraints the fieldwork was carried out in two stages with Trench 4 excavated in January 2013 and Trench 5 excavated in June 2013. This phase of work was supervised by Paw Jorgensen of PCA. The Phase 2 site was centred at TQ 3965 8167 (839650,181670).
- 2.7 The final two trenches were excavated during Phase III. This phase of work consisted of two trenches, Trenches 6 and 7, and was conducted during January 2013. This phase of work was supervised by Aidan Turner of PCA. The Phase 3 site is centred at TQ 3974 8167 (539741,181677).
- 2.8 The site has been the subject of an Archaeological Desk-Based Assessment (Gailey 2007)

which contains a full background to the site, which is located within an Archaeological Priority Area as defined by the London Borough of Newham in their Unitary Development Plan.

2.9 Upon approval of this report and the discharge of the archaeological condition the entire site archive will be deposited at the London Archaeological Archive and Research Centre under the site code RBO10.

#### 3 PLANNING BACKGROUND

#### 3.1 National Planning Policy Framework (NPPF)

- 3.1.1 In March 2012 the Department for Communities and Local Government issued the National Planning Policy Framework (NPPF),replacing Planning Policy Statement 5 (PPS5) 'Planning for the Historic Environment' which itself replaced Planning Policy Guidance Note 16 (PPG16) 'Archaeology and Planning'. It provides guidance for planning authorities, property owners, developers and others on the investigation and preservation of heritage assets.
- 3.1.2 In considering any planning application for development, the local planning authority will be guided by the policy framework set by government guidance, in this instance NPPF, by current Unitary Development Plan policy and by other material considerations.

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

3.2.1 The over-arching strategies and policies for the whole of the Greater London area are contained within the Greater London Authority's London Plan (July 2011) which includes the following statement relating to archaeology.

#### Policy 7.8: Heritage assets and archaeology

#### <u>Strategic</u>

- A London's heritage assets and historic environment, including listed buildings, registered historic parks and gardens and other natural and historic landscapes, conservation areas, World Heritage Sites, registered battlefields, scheduled monuments, archaeological remains and memorials should be identified, so that the desirability of sustaining and enhancing their significance and of utilising their positive role in place shaping can be taken into account.
- B Development should incorporate measures that identify, record, interpret, protect and, where appropriate, present the site's archaeology.

#### Planning decisions

- C Development should identify, value, conserve, restore, re-use and incorporate heritage assets, where appropriate.
- D Development affecting heritage assets and their settings should conserve their significance, by being sympathetic to their form, scale, materials and architectural detail.
- E New development should make provision for the protection of archaeological resources, landscapes and significant memorials. The physical assets should, where possible, be

made available to the public on-site. Where the archaeological asset or memorial cannot be preserved or managed on-site, provision must be made for the investigation, understanding, recording, dissemination and archiving of that asset.

#### LDF preparation

- F Boroughs should, in LDF policies, seek to maintain and enhance the contribution of built, landscaped and buried heritage to London's environmental quality, cultural identity and economy as part of managing London's ability to accommodate change and regeneration.
- G Boroughs, in consultation with English Heritage, Natural England and other relevant statutory organisations, should include appropriate policies in their LDFs for identifying, protecting, enhancing and improving access to the historic environment and heritage assets and their settings where appropriate, and to archaeological assets, memorials and historic and natural landscape character within their area.

#### 3.3 Local Policy: Archaeology in the London Borough of Newham

3.3.1 The study aims to satisfy the objectives of the London Borough of Newham, which fully recognises the importance of the buried heritage for which they are the custodians. These objectives are set out in the Borough's Core Strategy (2012) which incorporates saved polices from the previous 'Unitary Development Plan' of 2001:

(<u>http://www.newham.gov.uk/Documents/Environment%20and%20planning/SavedUDPPoliciesF</u> ebruary2012.pdf)

The following is one such saved policy:

#### Archaeology: Investigation, Excavation and Protection

- 3.114 Archaeological remains often provide the only evidence of the Borough's past. These are a finite and fragile resource very vulnerable to modern development and land use. The archaeology of the Borough is a community asset which should be preserved and the needs of the development balanced and assessed against this. Early considerations of and consultation on archaeological issues will maximise preservation in accordance with 'PPG 16 Archaeology and Planning'. The destruction of such remains should be avoided if possible and either left in situ if the remains are of national, or particular local interest, or excavated and recorded prior to development where remains are of lesser importance. Site layouts designed to retain archaeological features intact will be considered favourably by the Council.
- 3.115 The Greater London Archaeological Advisory Service (GLAAS-part of English Heritage)

provides impartial advice to Newham Council. Sites of potential archaeological importance, to which this policy relates, can be defined as any site within and Archaeological Priority Area (APA). APAs are defined by GLAAS as areas having particular interest or value (please refer to Map EQ6), or as sites where it can be reasonably shown from existing sources of information (most notably the Greater London Sites and Monuments Record) that some remains of archaeological importance may survive. For further information please refer to the SPG Note No. 19 'Archaeological Code of Practice'. An archaeological assessment (either a desktop or a primary field investigation) will normally be required for any development involving a site more than 0.4 acres within an APA. The Council will also require such an assessment for smaller sites within the APAs, and sites outside the APAs, where this is clearly justified by the archaeological sensitivity of the site. Developers should undertake early consultation with the Council, and recognised archaeological organisations, to avoid uncertainty and later delays.

- POLICY EQ43: THE COUNCIL WILL PROMOTE THE CONSERVATION, PROTECTION AND ENHANCEMENT OF THE ARCHAEOLOGICAL HERITAGE OF THE BOROUGH. DEVELOPERS OF SITES OF POTENTIAL ARCHAEOLOGICAL IMPORTANCE WILL BE REQUIRED TO PRODUCE A WRITTEN REPORT, AS PART OF THE APPLICATION FOR PLANNING PERMISSION, ON THE RESULTS OF AN ARCHAEOLOGICAL ASSESSMENT OR FIELD EVALUATION CARRIED OUT BY A SUITABLY QUALIFIED ARCHAEOLOGICAL CONTRACTOR; AND WHEN REMAINS OF IMPORTANCE ARE IDENTIFIED, THE COUNCIL WILL SEEK PRESERVATION OF THE REMAINS IN SITU. ON OTHER IMPORTANT SITES, WHERE THE BALANCE OF OTHER FACTORS IS IN FAVOUR OF GRANTING PLANNING PERMISSION BY MEANS OF THE IMPOSITION OF CONDITIONS ON THE GRANT OF PLANNING PERMISSION, AND POSSIBLY BY LEGAL AGREEMENTS, THE COUNCIL WILL ENSURE THAT ADEQUATE PROVISION IS MADE FOR THE PROTECTION, EXCAVATION AND RECORDING OF REMAINS, AND THE SUBSEQUENT PUBLICATION OF THE RECORDS OF EXCAVATION, PROVIDING A WRITTEN ACCOUNT OF THE ARCHAEOLOGICAL EXPLORATION. INCLUDING RECORDS OF FINDS.
- 3.116 The council will promote co-operation between land owners, developers and archaeological organisations in accordance with the British Archaeologists' and Developers' Liaison Group Code.

#### 3.4 Site Specific Planning Constraints and Planning Background

- 3.4.1 The site is located within an 'Archaeological Priority Area' as defined by the London Borough of Newham. There are no Scheduled Ancient Monuments within the development area.
- 3.4.2 Development at the site is permitted by planning consent granted by the London Borough of Newham under application number 08/02263/LTGDC/LBNM. The site is subject to a standard pre commencement condition which states:

24. No development shall commence until:

- i) a scheme and programme of archaeological investigation and works on the site has been submitted to and approved by the Local Planning Authority (the archaeological Scheme) and
- ii) the Archaeological Scheme has been implemented in full by a suitably qualified archaeological body approved by the Local Planning Authority

The development herby permitted shall not be constructed otherwise than in accordance with the archaeological scheme.

3.4.3 In accordance with the phased nature of the proposed development the English Heritage advisor to the London Borough of Newham agreed that the archaeological evaluation could be undertaken in phases. An outline specification referring to an archaeological evaluation across the entire site was prepared ahead of the Phase 1 works (Gailey 2010). The Phase 2 archaeological evaluation was undertaken in 2013 in accordance with an approved specification (Gailey 2012). The Phase 3 evaluation herein reported was undertaken in accordance with a further approved specification (Gailey 2014).

#### 4 GEOLOGY AND TOPOGRAPHY

- 4.1 The geological background to the site is described succinctly in the Geoarchaeological Fieldwork Report prepared by QUEST (Young *et al* 2013) further to their site fieldwork undertaken in tandem with the Phase2 evaluation (see Appendix 4). In summary the BGS records the site to be underlain by alluvium atop London Clay, although it recognised that locally the alluvium in fact rests upon Shepperton Gravel.
- 4.2 The site is located in the lower valley of the River Lea, in fact only approximately 200m from it, and close to the confluence of the Lea and the River Thames.
- 4.3 The site slopes gently towards the south, from a maximum height of 1.90m OD in the northwest corner to a minimum of 1.60m OD within the south of the site on Maud Street.

#### 5 ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

The following archaeological and historical background is summarised from the site specific desk-based assessment (Gailey 2007).

#### 5.1 **Prehistoric**

- 5.1.1 The remains of a fossil forest, with associated floral and faunal remains including an elephant's tooth, were found at East India Dock to the southwest. Palaeolithic implements were also found on the east bank of the River Lea in the Plaistow area.
- 5.1.2 No Mesolithic or Neolithic remains have been unearthed in the vicinity.
- 5.1.3 The terrace gravels and the overlying silts, clays and peats of the Rivers Thames and Roding represent a series of palaeoenvironments that possessed considerable biodiversity, capable of providing rich resources to past populations. Characterised by relatively dry gravel eyots interspersed with channels and marshes, this environment provided areas of dry land suitable for settlement in close proximity to the bountiful plant and animal life that could be found in the adjacent wet areas. The archaeological record suggests that environments of this nature were often exploited by man throughout prehistory and it is therefore not surprising that evidence of Bronze and Iron Age activity has been found near the site. Notable structures include several timber trackways, which were presumably constructed across the marshes for ease of access, perhaps to fishing and hunting grounds. Other Bronze and Iron Age artefacts recovered from the area include wood, burnt flint and pottery from Butchers Row to the northeast, a "broadward" spearhead from Plaistow marshes, a sword that was recovered from Bow Creek, a socketed axe from Canning Town and a gold "stater" coin of Cunobelinus, unearthed in the Plaistow area.

#### 5.2 Roman

5.2.1 Two drainage or boundary ditches and a cremation burial of Roman date were found at Cumberland School, Alexandra Street, to the northeast. No other Roman remains have been found in the vicinity of the site.

#### 5.3 Anglo-Saxon and Medieval

5.3.1 No Anglo-Saxon remains have been unearthed in the Canning Town area. Although some medieval remains have been unearthed to the southwest and east, it is likely that the site itself was situated in marginal wetland at this time.

#### 5.4 **Post-Medieval and Modern**

5.4.1 The site continued to be situated in marshy environment throughout the early post-medieval period up to at least 1777, remaining in open land until the 1860s when it was eventually developed.

- 5.4.2 Canning Town began to grow in the early 1850s, accommodating workers from the mills and manufacturing industries distributed along Bow Creek and the Victoria Dock.
- 5.4.3 Rathbone Street and Swanscombe Street, which respectively crossed the centre and western sections of the site from north to south, had been constructed by 1869. Terraced housing fronting these streets therefore took up the bulk of the western half of the site at this time. By 1896 the entire site had been developed for residential purposes.
- 5.4.4 A block of shops fronting Barking Road had been cleared and replaced with a "Picture Theatre" by 1916.
- 5.4.5 The western section of the site was affected by bombing during World War II and was therefore subjected to clearance shortly afterwards, followed by some rebuilding in the 1950s. A second pocket of bomb damage may be situated to the east of Rathbone Street, which was left as open land.
- 5.4.6 The Rathbone Market was constructed by the architect T. E. North between 1961 and 1963 in the western section of the site. All residential housing had been cleared from the area by this time. Thomas North Terrace, a ten storey block of flats, was built to the immediate east, a public convenience was constructed to the east of Maud Street and a block of commercial units were erected to the north of this road.
- 5.4.7 By 1975, the properties situated along Aviary Street had been demolished and the eastern corner of the site became a car park.

#### 6 METHODOLOGY

- 6.1 In accordance with the Written Scheme of Investigation (Gailey 2010), the trenches were arranged in order to fully investigate the underlying drift geology and the presence or absence of significant archaeological remains. CgMs Consulting had agreed with GLAAS that the work could proceed over 3 phases in line with the phased development of the site.
- 6.2 The evaluation comprised the excavation and investigation of seven trenches in three phases, designed to assess the archaeological sequence at the site (Figure 2). The trenches excavated had the following dimensions:

Fieldwork Phase	Trench	North-South	East-west	Max depth (BGL)
	1	19.50m	7.00m	3.08m
1	2	7.00m	19.50m	4.32m
I	3	8.60m	2.00m	2.00m (from previously reduced GL)
2	4	7.22m	15.90m	3.17m
	5	17.46m	7.62m	3.02m
3	6	17.00m	7.00m	3.00m
	7	17.00m	7.00m	3.00m

6.3 The trenches were excavated with a 360° mechanical excavator fitted with a flat-bladed bucket under the supervision of an archaeologist. Excavation progressed through modern material until the top of the natural geology was discernable. The trenches were stepped at a gradient of approximately 1:1 to reach the natural geology, with the exception of Trench 3, which was excavated from a reduced ground level associated with a newly installed piled foundation.



Plate 1: Trench 7, work in progress, looking west

- 6.4 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 PCA's 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. A photographic record was also kept during the works in colour/monochrome slide and digital formats.
- 6.5 The trenches were surveyed using a GPS surveying system and tied into the Ordnance Survey Grid. A temporary benchmark was also established using the GPS in the northern portion of the site, which had a value of 4.18m OD.
- 6.6 The complete archive produced during the evaluation, comprising written, drawn, photographic records and artefacts will be deposited with LAARC, identified by site code RBO10.

#### 7 ARCHAEOLOGICAL SEQUENCE

The character of this site consisted almost entirely of a sequence of natural gravels beneath Lower alluvium, peat and Upper Alluvium. These were locally sealed by post-medieval ground reclamation and capped with 20<sup>th</sup> century ground.

#### 7.1 **Phase 1: Holocene Fluvial Gravel**

- 7.1.1 The earliest deposit encountered in Trench 1 was a loose mid orange brown sandy gravel, [1], seen in the base of the trench at a height of -0.75m OD. The sandy gravel presumably represents a relatively high energy fluvial deposit that may have formed in a fast flowing river channel.
- 7.1.2 The earliest deposit encountered in Trench 4 was a loose deposit of bluish grey sandy gravel, [25], first seen at -1.46m OD. It extended across the entire trench and was excavated to a depth of 0.82m (-2.28m OD). Sealing it was another loose gravel deposit, [24], comprising rounded pebbles of medium to high sphericity and averaging 5-10mm in diameter. These were contained within a reddish brown slightly silty sand matrix. This gravel horizon was first encountered at a height of -1.20m OD and like the lower gravel extended across the entire trench. Overlying this and extending across the entire trench at -0.91m OD was a 0.30m thick light yellowish brown layer of moderately loose well sorted rounded gravel, [23], measuring up to 5mm in diameter.
- 7.1.3 In Trench 5 the earliest deposit was a loose layer of mid-brownish grey coarse sandy gravel, [32], with horizontal lenses of finer yellowish red sandy gravel. This extended across the entire trench and was first seen at a height of -0.57m OD in the northeastern part of the trench. From this point it sloped down towards the south and west where, at the lowest point, it was recorded at -1.05m OD. The surface of the gravel horizon undulated heavily throughout the trench.
- 7.1.4 The earliest deposit encountered in Trench 6 was formed of a loose, light grey brown fluvial sandy gravel, [305], seen in the base of the trench at a depth of -0.89m OD. The sandy gravel presumably represents a relatively high energy fluvial deposit that may have formed on the edge of a fast flowing river channel. The gravel was occasionally penetrated by in situ peaty root fragments at the base suggesting the development of a terrestrial environment here at a later date. These were observed towards the southern end of the trench.
- 7.1.5 The earliest deposit encountered in Trench 7 was formed of a loose light bluish grey fluvial gravels [310], seen in the base of the trench at a depth of greater than -1.56m OD. This gravel presumably represents a relatively high energy fluvial deposit that may have formed on the edge of a fast flowing river channel. The gravel was encountered at a relatively high level in the western corner of the trench at -0.86mOD and was steeply sloping to the east. This may be indicative of the formation of a river channel here as this slope was filled and overlain by a deposit of alluvial clay silt [309].



Plate 2: Trench 6, looking northwest. Showing Lower and Upper Alluvium, Peat and Gravels

#### 7.2 Phase 2: Lower Alluvium

- 7.2.1 A layer of light blue-grey clayey sand, [2], sealed the gravel in Trench 1, which sloped down gently from north to south. The top of this was observed at a level of -0.55m OD. The layer was interpreted as river alluvium, indicative of a reduction in the energy levels of the fluvial system.
- 7.2.2 The earliest deposit seen in Trench 2 was a layer of blue-grey clayey sand, [6], seen only at the east end of the trench. The top of the layer was found to be at a height of -1.70m OD. It most probably formed in a riverine environment, indicating that this section of the site was submerged when this layer was deposited.
- 7.2.3 Trench 3 contained several layers of fine natural sand, [20], [19], [18] and [17], which probably represent a series of fluvial channel deposits (Figure 3, Section 7). The base of the trench was at a height of -2.92m OD, and these sand layers filled the section to a height of -1.70m OD.
- 7.2.4 Sealing the gravel sequence in Trench 4 was a 0.18m thick alluvial layer of moderately firm mid-greyish brown sandy silt with moderately frequent sub-rounded pebbles [22]. The layer had been truncated by the construction of basemented buildings within this part of the site during the mid- to late 19th century. As such, the alluvial sequence only survived to a height of -0.73m OD, above which it was sealed by a bedding layer, [21], for the basement floor of the previous buildings.
- 7.2.5 Sealing the gravel in Trench 5 was a deposit soft mid-grey to dark grey moderately fine slightly silty sand, [31], with moderately frequent iron staining and occasional organic material and gravel pockets. At the base of the deposit the break between it and the underlying gravel was sharp and well defined despite the undulating nature of the surface of the gravel horizon. The

top of [31] was recorded at its highest point in the northeast at -0.32m OD from where it sloped down to -0.57m OD at its lowest point in the southwest. A 40 litre environmental bulk sample, <11> was retained for further assessment.

- 7.2.6 A layer of mid blue-grey clayey sand, [304], sealed the gravel in Trench 6, which sloped down gently from north to south. The top of this was observed at a level of -0.50m OD. The layer was interpreted as alluvium, indicative of a reduction in the energy levels of the fluvial environment. It was up to 0.60m thick.
- 7.2.7 A dark blue, slightly blackish, grey alluvial silty clay [309], partially sealed the gravel in Trench 7, forming a level layer which thickened greatly to the east as it filled the postulated channel. The top of this layer was observed at a level of -1.31mOD and is of an unknown thickness. The layer was interpreted as a channel fill or river alluvium, indicative of a reduction in the energy levels of the fluvial environment. Up to 0.35m thickness of the layer was observable. The colour of this deposit suggested an organic rich deposit at the time of deposition, suggestive of very low energy in the fluvial environment. This deposit was then covered by a layer of mid blue-grey alluvial silt clay, [308], again indicative of a series of flooding episodes or a low energy riverine environment. The blue colour demonstrates deposition in anoxic conditions. It therefore indicates a subsequent rise in water levels. The layer was up to 0.45m thick; the top was fairly flat with a maximum height of -0.46mOD.

#### 7.3 Phase 3: Peat

- 7.3.1 Above layer [2] in Trench 1 was a layer of dark reddish brown peat, [3], up to 0.50m in thickness. This shelved off almost completely at the south end of the trench. The maximum height at which this was seen was -0.10m OD. Peat-like deposits typically form in marsh-like facies, suggesting that water levels had dropped in this area of the site by the time this layer formed. This would have enabled vegetation to grow, which is essential to the formation of peaty deposits.
- 7.3.2 Above the Lower Alluvium in Trench 2 at the west end of the trench was a thick layer of peat, [7], the top of which sloped up steeply from east to west in the western side of the trench and sloped steeply from west to east in the eastern side of the trench. The top of this deposit probably slopes in this way as it was recut at some point after it formed, by a channel, which silted up with alluvial clay [8] (described subsequently, see Figure 3, Section 6). The top of the deposit was observed at a maximum height of -0.61m OD, whilst two metres further east it was found at a level of -1.57m OD. A sondage was excavated at the extreme west end of the trench. This showed peat still present at a depth of -3.81m OD. The lack of gravel at this depth in sharp contrast to the sequence found in Trench 1, suggests that Trench 2 may be situated above an old river channel, which had silted up, hence the presence of the thick layer of peat. The channel did not contain flowing water when this deposit formed as it would need to be dry enough to allow vegetation to grow and wet enough to preserve the resulting organic remains in order to enable peat to form. It was therefore probably marshy at this time.

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- 7.3.3 The silty sand deposit [31] in Trench 5 was sealed by a 0.30-0.52m thick firm layer of very dark brown to reddish black silty peat [30]. Unlike the underlying deposits the top of the peat was relatively level sloping only slightly from -0.09m OD in the northeast to -0.19m OD in the southwest.
- 7.3.4 Above the Lower Alluvium in Trench 6 was a layer of mid brown fibrous Peat [303], up to 0.65m in thickness. This shelved off almost completely at the south end of the trench. The maximum height at which this was seen was -0.10m OD. Peat-like deposits typically form in marsh-like environment, suggesting that water levels had dropped in this area of the site by the time this layer formed. This would have enabled vegetation to grow, which is essential to the formation of organic sedimentary deposits. Moderately frequent wood fragments were observed both during machining and in section during recording. A slightly larger concentration of wood fragments was observed, in section, in the SE corner of the trench. These were investigated by the diligent reduction by machine of the overlying alluvial sediments in this area. Hand excavation of the peat surrounding the wood revealed that they consisted of a mixture of, probably, in situ roots and a split fragment of old growth timber, along with associated young growth branches, one of which was attached to it. The characteristic combination of bark patternation on the young and old fragments appeared to the author to be consistent with the tree species Alnus Glutinosa, common name Alder. This tree species is consistent with a wet woodland or 'fenland' carr environment.

#### 7.4 Phase 4: Upper Alluvium

- 7.4.1 The peat throughout Trench 1 was then covered by a layer of mid blue-grey alluvial clay, [4], indicative of a series of flooding episodes or a low energy aquatic environment. It therefore indicates a subsequent rise in water levels. The layer was up to 0.70m thick; the top was fairly flat with a maximum height of +0.20m OD.
- 7.4.2 Sealing the peat in Trench 2 was a thick layer of blue-grey alluvial clay, [8], which was up to 1.60m thick, indicative of an aquatic environment. The top was fairly flat and was observed at a maximum height of -0.09m OD, whilst the sides and base of the deposit sloped dramatically. The deposit probably silted up within a smaller, later river channel that cut through peat layer [7]. This is clearly illustrated in section (Figure 3, Sections 5 and 6).
- 7.4.3 A layer of mid blue-grey alluvial clay, [16], sat directly above the fluvial sands in Trench 3, with no peat below (Figure 3, Section 7). This suggests that this area of the site remained underwater, although the energy levels of the fluvial system must have dropped somewhat in this location in order to enable these finer particles to settle. It is probable that this deposit represents silting up of the channel. Nominally the top of this deposit was -0.90m OD, the level form which the trench was initially excavated.
- 7.4.4 Sealing the peat layer in Trench 5 was a sequence of alluvial layers comprising [26], [27], [28] and [29]. At the bottom of the alluvial sequence there was a clear, well defined break between layer [29] and the peat horizon. Deposit [29] comprised dark bluish grey still silty clay with

frequent dark brown specks, frequent iron staining and very occasional rounded pebbles. The top of this layer was seen at between +0.03m OD and +0.11m OD although it was difficult to define the exact height at which this deposit ceased and the overlying deposit, [28] began due to the diffuse break between them. Deposit [28] consisted of mottled soft mid-brown to midbluish grey slightly silty clay with moderate iron staining. The top of this layer varied from +0.20m OD to +0.11m OD. There was a gradual transition between [28] and the deposit which sealed it, [27]. Layer [27] comprised stiff mid-bluish grey to mid-brown silty clay with frequent iron staining. The top of the layer was seen at +0.38m OD at the highest point and +0.26m OD at the lowest. A 40 litre environmental bulk sample, <8>, was extracted from [27] for further assessment. Sealing this was another alluvial layer, [26], although unlike the preceding alluvial deposits there was a sharp well defined break between this and the underlying layer, [27]. This upper alluvial deposit, [26], comprised stiff light greyish brown silty clay with frequent iron staining and very occasional sub-angular pebbles. The top of this deposit was virtually level and varied only from +0.78m OD to +0.75m OD across the trench. A column sample comprising two 1m long units, <9> and <10>, was taken through deposits [26]-[31] and into the gravel deposit [32]. Unit <9> covered the part of the sequence between +0.29m OD and -0.71m OD while unit <10> covered from -0.20m OD to -1.20m OD.

- 7.4.5 The peat in Trench 6 was then covered by a layer of mid blue-grey alluvial silt clay, [302], indicative of a series of flooding episodes or a low energy aquatic environment. The blue colour demonstrates deposition in anoxic conditions. It therefore indicates a subsequent rise in water levels. The layer was up to 0.40m thick; the top was fairly flat with a maximum height of +0.20m OD. This deposit was overlain by a similar layer of light reddish grey brown, oxidised alluvial silt clay [311]. Although this deposit undoubtedly represented the continuation of the same depositional processes as the underlying deposit, the colour of the deposit is indicative of formation in a more oxygen rich environment, or the product of process of indicative of a series of flooding episodes or a low energy aquatic environment. It therefore demonstrates a continued rise in water levels. The layer was up to 0.45m thick; the top was fairly flat with a maximum height of +0.20m OD.
- 7.4.6 The Lower Alluvium [308] in Trench 7 was overlain by a similar layer of light reddish grey brown, oxidised alluvial silt clay [307]. Although this deposit undoubtedly represented the continuation of the same depositional processes as the underlying deposit, the colour of the deposit is indicative of formation in a more oxygen rich environment, or the product of process of indicative of a series of flooding episodes or a low energy aquatic environment. It therefore demonstrates a continued rise in water levels. The layer was up to 1.45m thick; the top was fairly flat with a maximum height of +0.96m OD.



Plate 3: Alluvial sequence in Trench 6, looking west

#### 7.5 Phase 5: Late Post-Medieval Ground Reclamation

- 7.5.1 The alluvial layers described above in Trench 1 were sealed by [5], a thick layer of dumped mid brown clayey-silt up to 1.20m in thickness, the top of the deposit being at a height of +1.48m OD. This was interpreted as ground-raising material, dumped in order to reclaim the site from the river (Figure 3, Sections 2 and 3).
- 7.5.2 Mirroring the sequence in Trench 1, a thick layer of mid brown clayey-silt, [9], sealed the alluvial deposits in Trench 2 (Figure 3, Section 5). This dumped layer was up to 1.40m thick with a top height of +1.37m OD. It was interpreted as a layer of made ground, dumped in order to reclaim this wet land from the river.
- 7.5.3 Due to the previously reduced level from which Trench 3 was excavated this phase was not represented in the stratigraphic sequence in this location. It was also absent from Trenches 5, 6 and 7; it is assumed that ground reduction for the construction of the existing car park will have removed any such deposits.

#### 7.6 Phase 6: 20th Century

- 7.6.1 A modern ceramic pipe, [14], was found in alluvial layer [4] in Trench 1. No obvious construction cut to ground level was visible suggesting that the pipe had been tunnelled through this deposit in horizontal bore hole [12] (Figure 3, Section 2). Above this was a layer of modern demolition rubble [10], which extended upwards to ground level, the top being at a height of +2.12m OD (Figure 3, Section 3).
- 7.6.2 At the top of the sequence in Trench 2, a modern ceramic pipe, [15], was observed, which was

sealed by a layer of modern demolition debris, [11] (Figure 3, Section 4). This deposit extended up to the very top of the trench, where it was observed at a maximum height of +2.51m OD (modern ground level).

- 7.6.3 Due to the previously reduced level from which Trench 3 was excavated this phase was not represented in the stratigraphic sequence in this location.
- 7.6.4 In Trench 4 the bedding layer for the basements, previously located here, [21], comprised firm greyish brown to black gravely-silt containing moderately frequent hard coal fragments and clinker, survived to a height of -0.46m OD where it had been capped by a 20th century concrete floor over which was brick rubble sealed by the concrete slab forming the current ground surface within this part of the site a height of +0.90m OD.
- 7.6.5 Overlying the alluvial sequence in Trench 5 was a layer of modern made ground overlain by a concrete slab capped forming the bedding for the current tarmac road surface at +1.69m OD.
- 7.6.6 The alluvial deposits in Trench 6, described earlier, had been truncated by a series of modern drainage services associated with the construction of the existing car park. Where possible, these were maintained intact to avoid surface water run- off flooding the trench during the evaluation process. The underlying deposits and structures were capped with a 0.20m thick layer of made ground [301], consisting of Type 2 hardcore overlain with Type 1 ballast and topped with a 0.20m thick reinforced concrete slab.
- 7.6.7 The remains of a pair of small structures were identified in the northern most corner of Trench 7. These were interpreted as being the iron framed concrete bases of Anderson type bomb shelters from the Second World War period. From their position and orientation it seems likely that they were located in the back gardens of houses fronting a street, then in existence, known as Aviary Street. It is possible, from the orientation, that the shelters could have been constructed next door to each other with a garden wall between them, in the northern end of this street. The alluvial deposits, described earlier, had been truncated by a series of modern drainage services associated with the construction of the existing car park. Where possible, these were maintained intact to avoid surface water run-off flooding the trench during the evaluation process. The underlying deposits and structures were capped with a 0.2m layer of made ground [306], consisting of Type 2 hardcore overlain with Type 1 ballast and topped with a 0.20m thick reinforced concrete slab.

#### 8 ARCHAEOLOGICAL TRENCH DESCRIPTIONS

#### 8.1 Trench 1

- 8.1.1 The earliest deposit encountered in Trench 1 was a loose mid orange brown sandy gravel, [1], seen in the base of the trench at a height of -0.75m OD.
- 8.1.2 A layer of light blue-grey clayey sand, [2], sealed the gravel, which sloped down gently from north to south. The top of this was observed at a level of -0.55m OD.
- 8.1.3 Above this was a layer of dark reddish brown peat, [3], up to 0.50m in thickness. This shelved off almost completely at the south end of the trench. The maximum height at which this was seen was -0.10m OD.
- 8.1.4 The whole trench was then covered by a layer of mid blue-grey alluvial clay [4]. The layer was up to 0.70m thick; the top was fairly flat with a maximum height of +0.20m OD.
- 8.1.5 The alluvial layers described above were sealed by [5], a thick layer of dumped mid brown clayey-silt up to 1.20m in thickness, the top of the deposit being at a height of +1.48m OD.
- 8.1.6 A modern ceramic pipe, [14], was found in alluvial layer [4]. No obvious construction cut for this was visible [12]. (Figure 3, Section 2). Above this was a layer of modern demolition rubble [10], which extended upwards to ground level, the top being at a height of +2.12m OD (Figure 3, Section 3).

#### 8.2 Trench 2

- 8.2.1 The earliest deposit seen in Trench 2 was a layer of blue-grey clayey sand, [6], seen only at the east end of the trench. The top of the layer was found to be at a height of -1.70m OD.
- 8.2.2 Above this at the west end of the trench was a thick layer of peat, [7], the top of which slopes to form a N-S channel within the trench. This was silted up with alluvial clay [8] Figure 3, Section 6). The top of the deposit was observed at a maximum height of -0.61m OD, whilst two metres further east it was found at a level of -1.57m OD The peat was observed still present at a height of -3.81m OD.
- 8.2.3 Sealing these deposits was a thick layer of blue-grey alluvial clay, [8], which was up to 1.60m thick. The top was fairly flat and was observed at a maximum height of -0.09m OD, whilst the sides and base of the deposit sloped dramatically. The deposit was within a channel that cut through peat layer [7]. (Figure 3, Sections 5 and 6).
- 8.2.4 A thick layer of mid brown clayey-silt, [9], sealed the alluvial deposits in Trench 2 (Figure 3, Section 5). This dumped layer was up to 1.40m thick with a top height of +1.37m OD.
- 8.2.5 At the top of the sequence, a modern ceramic pipe, [15], was observed, which was sealed by a layer of modern demolition debris, [11] (Figure 3, Section 4). This deposit extended up to the very top of the trench, where it was observed at a maximum height of +2.51m OD (modern ground level).

#### 8.3 Trench 3

- 8.3.1 This trench contained several layers of fine natural sand, [20], [19], [18] and [17], which probably represent a series of fluvial channel deposits (Figure 3, Section 7). The base of the trench was at a height of -2.92m OD, and these sand layers filled the section to a height of -1.70m OD.
- 8.3.2 A layer of mid blue-grey alluvial clay, [16], sealed these deposits. The top of this deposit was recorded as -0.90m OD, the reduced level from which the trench was initially excavated.

#### 8.4 Trench 4

- 8.4.1 The earliest deposit encountered in this trench was a loose deposit of bluish grey sandy gravel, [25], first seen at -1.46m OD. It extended across the entire trench and was excavated to a depth of 0.82m (-2.28m OD). Sealing this was a loose gravel deposit, [24], contained within a reddish brown slightly silty sand matrix. This gravel horizon was first encountered at a height of -1.20m OD and like the lower gravel extended across the entire trench. Overlying this and extending across the entire trench at -0.91m OD was a 0.30m thick light yellowish brown layer of moderately loose gravel, [23], measuring up to 5mm in diameter.
- 8.4.2 Sealing the gravel sequence was a 0.18m thick alluvial layer, [22], of moderately firm midgreyish brown sandy silt with moderately frequent pebbles. The layer had been truncated by the construction of basemented buildings within this part of the site during the mid- to late 19<sup>th</sup> century. As such, the alluvial sequence only survived to a height of -0.73m OD, above which it was sealed by a bedding layer, [21], for the basement floor of the previous buildings. This bedding layer, comprised firm greyish brown to black gravelly silt containing moderately frequent hard coal fragments and clinker, survived to a height of -0.46m OD where it had been capped by a 20<sup>th</sup> century concrete floor over which was brick rubble sealed by the concrete slab forming the current ground surface within this part of the site a height of +0.90m OD.

#### 8.5 Trench 5

- 8.5.1 In Trench 5 the earliest deposit was a loose layer of mid-brownish grey coarse sandy gravel, [32], with horizontal lenses of finer yellowish red sandy gravel. This extended across the entire trench and was first seen at a height of -0.57m OD in the northeastern part of the trench. From this point it sloped down towards the south and west where, at the lowest point, it was recorded at -1.05m OD. The surface of the gravel horizon undulated heavily throughout the trench.
- 8.5.2 Sealing the gravel was a deposit soft mid-grey to dark grey moderately fine slightly silty sand,[31. The highest point was recorded at -0.32m OD from where it sloped down to -0.57m OD at its lowest point in the southwest
- 8.5.3 This was sealed by a 0.30-0.52m thick layer of very dark brown reddish black silty peat. This was relatively level sloping slightly from -0.09m OD in the northeast to -0.19m OD in the southwest

- 8.5.4 Sealing the peat layer was a sequence of alluvial layers comprising [26], [27], [28] and [29]. At the bottom of the alluvial sequence there was a clear, well defined break between layer [29] and the peat horizon.
- 8.5.5 This alluvium was sealed by dark bluish grey still silty clay [29]. The top of this layer was seen at between +0.03m OD and +0.11m OD. This was overlain by [28] consisted of soft mid-brown to mid-bluish grey slightly silty clay. The top of this layer varied from +0.20m OD to +0.11m OD. There was a gradual transition between [28] and the deposit which sealed it, [27]. Layer [27] comprised stiff mid-bluish grey to mid-brown silty clay. The top of the layer was seen at +0.38m OD at the highest point and +0.26m OD at the lowest. The overlying deposit, [26], comprised stiff light greyish brown silty clay. The top of this deposit was virtually level and varied only from +0.78m OD to +0.75m OD across the trench.
- 8.5.6 Overlying the alluvial sequence was a layer of modern made ground overlain by a concrete slab capped forming the bedding for the current tarmac road surface at +1.69m OD.

#### 8.6 Trench 6:

- 8.6.1 The earliest deposit encountered in Trench 6 was formed of a loose, light grey brown fluvial sandy gravel, [305], seen in the base of the trench at a depth of -0.89m OD. Peaty root fragments were observed penetrating this layer towards the southern end of the trench.
- 8.6.2 A layer of mid-blue-grey clayey sand, [304], sealed the gravel, which sloped down gently from north to south. The top of this was observed at a level of -0.50m OD. The layer was up to 0.60m thick.
- 8.6.3 Above this was a layer of mid brown fibrous peat [303], up to 0.65m in thickness. This shelved off almost completely at the south end of the trench. The maximum height at which this was seen was -0.10m OD. A concentration of wood fragments was observed, in section, in the SE corner of the trench
- 8.6.4 This deposit was then covered by a layer of mid blue-grey silt clay, [304]. The layer was up to 0.40m thick; the top was fairly flat with a maximum height of +0.20m OD. This deposit was overlain by a similar layer of light reddish grey brown, oxidised alluvial silt clay [311]. The layer was up to 0.45m thick; the top was fairly flat with a maximum height of +0.20m OD.
- 8.6.5 The alluvial deposits, described earlier, had been truncated by a series of modern drainage services. The underlying deposits and structures were capped with a 0.2m layer of made ground [301], consisting of Type 2 hardcore overlain with Type 1 ballast and topped with a 020m thick reinforced concrete slab.

#### 8.7 Trench 7

8.7.1 The earliest deposit encountered in Trench 7 was formed of loose light bluish grey gravels [310], seen in the base of the trench at a depth of greater than -1.56m OD. The gravel was encountered at a relatively high level in the western corner of the trench at -0.86mOD and was

steeply sloping to the east. This slope was filled and overlain by a deposit of alluvial clay silt [309].

- 8.7.2 A dark blue, slightly blackish, grey alluvial silty clay, [309], partially sealed the gravel, forming a level layer which thickened greatly to the east. The top of this layer was observed at a level of 1.31mOD and is of an unknown thickness. Up to 0.35m thickness of this layer was observable. This deposit was then covered by a layer of mid blue-grey silt clay, [308]. The layer was up to 0.45m thick; the top was fairly flat with a maximum height of -0.46mOD. This deposit was overlain by a similar layer of light reddish grey brown, oxidised alluvial silt clay [307. The layer was up to 1.45m thick; the top was fairly flat with a maximum height of +0.96m OD.
- 8.7.3 The remains of a pair of small structures were identified in the northern most corner of Trench 7. These were interpreted as being Anderson type bomb shelters from the Second World War period. The alluvial deposits, described earlier, had been truncated by a series of modern drainage services associated with the construction of the existing car park. The underlying deposits and structures were capped with a 0.20m layer of made ground [306], consisting of Type 2 hardcore overlain with Type 1 ballast and topped with a 0.20m thick reinforced concrete slab.

#### 9 CONCLUSIONS

- 9.1 The findings of this work show that the trenches excavated by PCA in Phases I, II and III of the archaeological evaluation are broadly consistent with those of the Phase II geo-archaeological boreholes by QUEST. Further, more detailed discussions of these geoarchaeological findings are included at Appendix 4 in this document.
- 9.2 Natural sandy gravel, presumably a Holocene, fluvial deposit, was seen across the site, though this was absent in Trench 1 indicative of the formation of a north–south aligned channel in the western central area of the site.
- 9.3 A moderately steep decline to the gravel, filled with alluvial deposits, was seen in Trench 7 which may indicate the edge of a river channel in this location, perhaps on a smaller scale than the major channel to the west. Alluvial or semi fluvial sands ('Lower Alluvium') were found overlying the gravels, indicative of a period of inundation, suggesting a raising of relative sea levels.
- 9.4 Peat sealed these deposits across much of the western and central part of the site, as seen in Trenches 1, 2, 5, and 6, suggesting that for a time relative sea levels allowed vegetation to form in a marshy environment. Further west, where the gravel seemed to drop away rapidly, a thickness of three metres of peat was recorded. This is considered to represent the filling of a large antiquated natural channel, which may have been aligned approximately N-S.
- 9.5 The peat horizon seen in both the boreholes and previous archaeological trenches did appear in Trench 5 at a maximum height of -0.03m OD from where it sloped down towards the west to -0.18m OD. Here the peat horizon and the underlying alluvial sand seemed to fill a roughly north-south aligned channel. The eastern edge of this channel was most visible in the underlying gravel horizon, which sloped steeply from -0.57m OD in the east to -1.05m OD in the west. Geoarchaeological borehole QBH01 approximately 30m to the west of Trench 5 (Figure 2) recorded the top of the gravel at -1.13m OD suggesting a slight downward slope towards the centre of the channel, which was likely in the vicinity of Trench 2 some 100m to the west.
- 9.6 In Trench 6 natural fragments of a decayed tree and decayed roots were observed, suggesting that during this period the land here was free enough from inundation for a higher order of vegetation to be established, such as a wet-woodland or fen carr environment. This is consistent with higher level of the peat here recorded at between 0.14 and 0.18m OD, perhaps indicative of a more stable terrestrial environment in this location.
- 9.7 In the eastern part of the site, in Trench 4, there was no evidence of the peat filled palaeochannel. This maybe the result of truncation from the construction of basemented buildings within this portion of the site during the mid- to late-19th century. This had led to the complete truncation of archaeological and natural deposits to a height of approximately -0.72m

OD in this area. However peat was also absent from Trench 7, also in the far east of the site. This area seems largely undisturbed by post medieval and modern developments. It may be that here another process of north – south channel formation, as demonstrated by the shelving gravel, prevented peat formation, perhaps through erosional scouring of the channel edge.

- 9.8 The last natural layers consisted of substantial deposits of blue-grey alluvial clay ('Upper Alluvium'), the result of flooding episodes from the nearby Rivers Thames and Lea. A similar deposit also appears to infill a small natural channel that cuts through the peat in Trench 2.
- 9.9 Human activity was marked by the thick layer of dumped clayey silt laid, no doubt, to reclaim a previously marshy area adjacent to the rivers. This was evident in the west and centre of the site, but not in the east, where the uppermost deposits immediately below the made ground appeared to consist of undisturbed oxidised alluvium. These slightly yellower, browner deposits were recorded at the top of the alluvial sequence in Trenches 6 and 7. It is unclear if the oxidation is a post-depositional weathering process, or whether it simply represents higher oxygen content in the water at the time of deposition. These deposits appear to be consistent with the suggestion that this area was away from the major processes of channel formation.
- 9.10 Finally on the western and central parts of site was a layer of modern demolition. This is considered to have originated from intense bombing which the area suffered during the Second World War or from the subsequent demolition of the surviving buildings prior to the construction of Rathbone Market in the 1960s.
- 9.11 The demolition or bomb damage material seems to be absent from eastern area of the site, though this may be due to the removal of these materials during the construction of the car park in this location. Evidence for wartime activity also included the possible remains of two Anderson shelters found in the far east of the site. These may have been located in the backgardens or yards of houses fronting the northern end of Aviary Street
- 9.12 Upon completion of all phases of the archaeological work and the discharge of the archaeological condition, the site records will be archived at the London Archaeological Archive and Research Centre under the site code RBO10. Until then it will be stored at PCA's headquarters at Brockley, London.
- 9.13 The results of the archaeological investigation will be published as an entry in the London Archaeologist 'Round Up'.

#### 10 ACKNOWLEDGEMENTS

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- 10.2 We also thank Adam Single of GLAAS for monitoring the Phase II and III works, and Jane Sidell of EH for monitoring Phase I.
- 10.3 PCA thanks the demolition contractors Squibb for their assistance during Phases I and II, and Sisk and their ground works contractors Hiretest for their assistance during Phase III.
- 10.4 The author would like to thank Phil Frickers, Becky Haslam and Paw Jorgenson for their contributory Phase I and II summary reports which have been used as the basis for this final combined Phase III report.
- 10.5 The author would like to thank Maria Buczak and James Webb of PCA for their work on-site during Phase III, Sophie White and Chris Cooper for logistics, Rik Archer for survey and Chris Mayo for project management and editing.

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> Figure 1 Site Location 1:20,000 at A4



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Section 8 Trench 4 South Facing

W



© Pre-Construct Archaeology Ltd 201 02/02/15 JB Figure 3 Sections 8 and 11 1:40 at A4



1.84m OD





S

1.84m OD

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Ν

1.37m OD

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Figure 4 Sections 13 and 16 1:80 at A4

1.37m OD

S

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[311]

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#### APPENDIX 1: OASIS DATA COLLECTION FORM

#### OASIS ID: preconst1-203762

Project details	
Project name	Land at Rathbone Market, Canning Town, E16 1EH: An Archaeological Evaluation of Phases I, II and III
Short description of the project	This details the results of three phases of an archaeological evaluation undertaken out by Pre-Construct Archaeology Ltd; on land at Rathbone Market, Canning Town. Phase I of the work was undertaken from August to September 2010 and March 2011; Phase II of the work was undertaken between January and June 2013; Phase III of the work was undertaken in January 2015. Three trenches were excavated during Phase I, two trenches in Phase II and two trenches in Phase III. Fluvial sand and gravel was found at the base of the sequence, which was sealed by alluvial clays and silts ('Lower Alluvium'), capped by a deposit of peat. This was in turn sealed by alluvial clay ('Upper Alluvium'). The alluvial deposits and the topography of the superficial drift geology is considered to reflect the presence of a north-south aligned palaeochannel, which may have had its deepest part towards the west of the Rathbone Market site (Phase I area) before inclining gradually to a surface level approximately in the Phase II and III areas. It is suggested that undulating gravels in the eastern side of the site may also reflect a small channel, perhaps associated with the larger entity to the west. A deposit of post-medieval made ground was found above the alluvium, which was superseded by modern strata.
Project dates	Start: 31-08-2010 End: 16-01-2015
Previous/future work	Yes / Not known
Any associated project reference codes	08/02263/LTGDC/LBNM - Planning Application No.
Any associated project reference codes	RBO10 - Sitecode
Any associated project reference codes	preconst1-100824 - OASIS form ID
Type of project	Field evaluation
Site status	Local Authority Designated Archaeological Area
Current Land use	Residential 1 - General Residential
Current Land use	Industry and Commerce 3 - Retailing
Current Land use	Transport and Utilities 2 - Other transport infrastructure
Current Land use	Other 11 - Thoroughfare
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 NEWHAM CANNING TOWN LAND AT RATHBONE MARKET, CANNING TOWN, E16 1EH
Postcode	E16 1EH
Study area	18297.00 Square metres
Site coordinates	TQ 3965 8167 51.5161662777 0.0128783896627 51 30 58 N 000 00 46 E Point

Land at Rathbone Market, Canning Town, E16 1EH: An Archaeological Evaluation of Phases I, II & III ©Pre-Construct Archaeology Ltd., February 2015

Lat/Long Datum	Linknown
	Min: -1 56m Max: -0 57m
Project creators	
Name of Organisation	Pre-Construct Archaeology Limited
Project brief originator	Local Authority Archaeologist and/or Planning Authority/advisory body
Project design originator	CaMs Consulting
Project director/manager	Chris Mayo
Project supervisor	Phil Frickers
Project supervisor	Paw Jorgensen
Project supervisor	Aidan Turner
Type of sponsor/funding body	Developer
Name of sponsor/funding body	Muse Developments
Project archives	
Physical Archive recipient	LAARC
Physical Archive ID	BBO10
Physical Contents	"Ceramics"
Digital Archive recipient	LAARC
Digital Archive ID	RBO10
Digital Contents	"Stratigraphic"
Digital Media available	"Images raster / digital photography","Images vector","Spreadsheets","Survey","Text"
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#### **APPENDIX 2: CONTEXT INDEX**

Context No.	Туре	Description	Trench No.	Plan No.	Section / Elevation	(m) S-N	E-W (m)	Thickness (m)	Highest Level (mOD)	Lowest Level (mOD)	Phase
1	Layer	Mid yellowish orange sandy gravel, fluvial	1	1	1	19.5	7	0.25	-0.75	-0.84	1
2	Layer	Light blue grey clayey sandy alluvium	1	N/A	1	19.5	7	0.28	-0.55	-0.88	2
3	Layer	Dark reddish brown peat-like deposit	1	1	1	7.5	1.2	0.48	-0.1	-0.73	3
4	Layer	Mid blue grey alluvial clay	1	1	1	19.5	7	0.77	0.2	0.07	4
5	Layer	Mid brown clay dump layer	1	1	2, 3	19.5	7	1.27	1.48	1.22	5
6	Layer	Light blue grey clayey silty sandy alluvium	2	N/A	6	7	0.5	0.1	-1.7	-1.7	2
7	Layer	Dark reddish brown peat-like deposit	2	2	6	7	19.5	3.2	-0.61	-3.81	3
8	Layer	Mid blue grey alluvial clay	2	2	5, 6	7	19.5	1.57	-0.09	-0.19	4
9	Layer	Mid brown clayey silt dump layer	2	2	4, 5	7	19.5	1.6	1.37	1.16	5
10	Layer	Demolition debris	1	N/A	1	19.5	7	0.6	1.8	1.25	6
11	Layer	Demolition debris	2	N/A	4	7	19.5	0.5	0.71	1.66	6
12	Cut	Modern cut for a ceramic pipe	1	1	2	1	0.3	0.3	0.2	-0.1	6
13	Fill	Fill of [12], surrounding pipe [13]	1	1	2	1	0.3	0.3	0.2	-0.1	6
14	Pipe	Ceramic Sewage or water pipe	1	1	2	1	0.3	0.3	0.2	-0.1	6
15	Pipe	Ceramic Sewage or water pipe	2	N/A	5	N/A	0.2	0.2	0.51	0.31	6
16	Layer	Mid blue grey alluvial clay	3	N/A	7	8.5	2	0.7	-0.89	-1.19	4
17	Layer	Loose light grey sand	3	N/A	7	8.5	2	0.85	-1.7	-2.32	2
18	Layer	Loose mid grey brown sand	3	N/A	7	8.5	2	0.25	-2.24	-2.52	2
19	Layer	Loose light yellowish brown sand	3	N/A	7	8.5	2	0.25	-2.48	-2.54	2
20	Layer	Loose mid grey sand	3	3	7	8.5	2	0.27	-2.7	-2.74	2

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Context No.	Туре	Description	Trench No.	Plan No.	Section / Elevation	(m) S-N	E-W (m)	Thickness (m)	Highest Level (mOD)	Lowest Level (mOD)	Phase
21	Layer	Greyish black gravelly silt, made ground	4	4	8	5	12.9	0.35	-0.46	-0.49	6
22	Layer	Mid greyish brown sandy silt, alluvium	4	4	8	5	12.9	0.18	-0.73	-0.76	2
23	Layer	Loose light yellowish brown sandy gravel	4	4	8	5	12.9	0.3	-0.91	-0.97	1
24	Layer	Loose reddish brown sandy gravel	4	4	8	5	12.9	0.27	-1.2	-1.24	1
25	Layer	Loose bluish grey sandy gravel	4	4	8	5	12.9	0.82	-1.46	-1.56	1
26	Layer	Light brownish grey silty clay, poss. reworked	5	5	9,12	20.16	8.68	0.35	0.78	0.75	4
27	Layer	Mid blue grey alluvial silty clay, alluvium	5	5	9,12	12.41	4.94	0.12	0.38	0.26	4
28	Layer	Mid blue grey alluvial silty clay, alluvium	5	5	9,12	12.41	4.94	0.15	0.2	0.11	4
29	Layer	Dark blue grey alluvial silty clay, alluvium	5	5	9,12	12.41	4.94	0.19	0.11	0.03	4
30	Layer	Mid brown fibrous peat	5	5	9, 10, 11, 12	12.41	4.94	0.52	-0.09	-0.18	3
31	Layer	Mid blue grey silty sand, alluvium	5	5	10,11	8.46	3.38	0.4	-0.32	-0.57	2
32	Layer	Loose brownish grey to yellowish red sandy gravel	5	5	10,11	8.46	3.38	0.7	-0.57	-1.05	1
301	Layer	Yellow -brown sandy gravel &rubble, made ground	6	TR6	15 & 16	17	7	0.2	1.13	1.13	6
302	Layer	Mid blue grey alluvial silty clay	6	TR6	15 & 16	12.6	4.6	0.4	0.3	0.3	4
303	Layer	Mid brown fibrous peat	6	TR6	15 & 16	12.6	4.6	0.65	0.14	0.18	3
304	Layer	Mid blue grey alluvial clayey sand	6	TR6	15 & 16	12.6	4.6	0.6	0.5	0.5	2
305	Layer	Light grey brown fluvial sandy gravels	6	TR6	15 & 16	11.6	2.1	-0.89	-1	-1.1	1
306	Layer	Yellow -brown sandy gravel &rubble, made ground	7	TR7	13 & 14	17	7	0.35	1.34	1.27	6
307	Layer	Light reddish grey brown oxidised alluvial silty clay	7	TR7	13 & 14	15	7	1.45	0.92	0.84	4
308	Layer	Mid blue grey alluvial silty clay	7	TR7	13 & 14	8.5	4.6	0.45	-0.46	-0.56	2

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Context No.	Туре	Description	Trench No.	Plan No.	Section / Elevation	(m) S-N	E-W (m)	Thickness (m)	Highest Level (mOD)	Lowest Level (mOD)	Phase
309	Layer	Dark blue grey alluvial silty clay	7	TR7	13 & 14	5.4	4.6	0.35	-1.31	-1.31	2
310	Layer	Light bluish grey fluvial gravels	7	TR7	13 & 14	6.8	5.8	>0.64	-0.86	-1.56	1
311	Layer	Light reddish grey brown oxidised alluvial silty clay	6	TR6	15 & 16	17	7	0.45	1.08	1.08	4
312	Structure	Metal frame with cement base, Anderson shelter	7	TR7	N/A	2.72	1.84	0.1	0.1	0.1	6
313	Structure	Metal frame with cement base, Anderson shelter	7	TR7	N/A	1.8	2.4	0.1	0.1	0.1	6
314	Fill	Yellow -brown sandy gravel &rubble, made ground	7	TR7	N/A	2.72	1.84	0.2	0.1	0.1	6
315	Cut	Rectangular cut filled by (312) & (315)	7	TR7	N/A	2.72	1.84	0.2	0.1	N/A	6
316	Fill	Yellow -brown sandy gravel &rubble, made ground	7	TR7	N/A	1.8	2.4	0.2	0.1	0.1	6
317	Cut	Rectangular cut filled by (313) & (317)	7	TR7	N/A	1.8	2.4	0.2	0.1	N/A	6

#### **APPENDIX 3: SITE MATRIX**

	Trend	:h 1	Trench 2	Trench 3	Trench 4	Trench 5	Trench 6	Tr	ench 7
	+		+	+	+	+	+		+
Dhasa Ci	10	12	11 15		21		201		200
20th Century	10	15	11 15		21		301		300
zour century		14							
		Ť						314	316
		12							
								312	313
								315	317
Phase 5:	5		9						
Late P-M Ground Reclamation	Ť								
Phase 4: Upper Allluvium	4		8	16		26	311		307
						27	302		
						28			
						20			
						29			
Phase 2: Peat	3		7			30	303		
Phase 2: Lower Alluvium	2		6	17	22	31	304		308
Thuse 2. Lower Anavian					22		504		300
				18					309
				19					
				20					
Phase 1:	1				23	32	305		310
Holocene Fluvial Gravel									
					24				
					25				
	NE	_	NEE	NEE	NEE	NEE	NEE	- F	NEE
	INF								

APPENDIX 4: GEOARCHAEOLOGICAL FIELDWORK REPORT

#### PHASE 2, RATHBONE MARKET, CANNING TOWN, LONDON BOROUGH OF NEWHAM (SITE CODE: RBO10): GEOARCHAEOLOGICAL FIELDWORK REPORT

#### D.S. Young, C.R. Batchelor and C.P. Green

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#### INTRODUCTION

This report summarises the findings arising out of the geoarchaeological borehole investigations undertaken by Quaternary Scientific (University of Reading) in connection with the proposed development at Rathbone Market, Canning Town, London Borough of Newham (National Grid Reference: TQ 3961 8162; Site Code: RBO10; Figure 1). The site is in the lower valley of the River Lea, to the east of the river and close to the confluence of the Lea with the River Thames. The western boundary of the site is only *ca*. 200m from the present-day channel of the Lea at a point where the river, known here as Bow Creek, follows a very convoluted meandering course. The mouth of Bow Creek, at its confluence with the Thames, lies about 0.7km to the south of the site. The British Geological Survey (1:50,000 Sheet 257 Romford 1996) shows the site underlain by Alluvium, described as comprising mainly sand, silt and clay with some gravel, resting on London Clay bedrock. In fact, the Holocene alluvium of the Lower Thames and its tributaries is almost everywhere underlain by Late Devensian Late Glacial Gravels (in the Thames valley, the Shepperton Gravel of Gibbard, 1985, 1994; in the Lea valley, the Lea Valley Gravel of Gibbard, 1994), and this gravel is widely recorded in boreholes in the vicinity of Canning Town.

The site is located within Landscape Zone LZ1.1 of the Lea Valley Mapping Project (Corcoran *et al.*, 2011), in which they describe the deposits as 'consistent with in-channel sediments, suggesting that the Zone has always been an area of active channels. Consequently marginal marshland and wetland deposits did not develop across the Zone, and where such environments did take hold, channel activity and river scour are likely to have eroded these deposits'. Further archaeological, geoarchaeological and geotechnical investigations have subsequently been undertaken locally to Rathbone Market in Landscape Zone LZ1.1 (Figure 1), including Canning Town Regeneration Area 7/1C (Green and Young, 2011) and along the Ironbridge-Canning Town section of the A13 (Stafford, 2012). The results from these sites are broadly consistent, but enhance the interpretations of the Lea Valley Mapping Project.

The Rathbone Market site itself is divided into a number of phases of investigation (Figure 2);

this report focusses on the findings arising from the Phase 2 geoarchaeological investigations, but also considers the results from previous archaeological excavations that concentrated on Phase 1 (Frickers and Haslam, 2011). Three archaeological trenches were put down in the western part of the Phase 1 site. Trench 1 recorded the Lea Valley Gravel surface at approximately -0.80m OD and was overlain by a thin (<1m) sequence of alluvium and peat. To the west in Trenches 2 and 3, the Lea Valley Gravel surface was still not reached at -3.81m OD, indicating a deep palaeochannel aligned approximately north-south in this area of the site. The palaeochannel was infilled with a thick sequence of Peat in Trench 2 (>3m) and mineral-rich alluvium in Trench 3. Recent geotechnical investigations indicate that the Lea Valley Gravel surface is also at around -1m OD across the current Phase 2 site, and is overlain by a thin sequence of alluvium and peat. The geotechnical data from Phase 2 is therefore broadly consistent with the presence of a north-south aligned channel beneath the western side of the Phase 1 area, but also provides important enhancement of the findings from the Lea Valley Mapping Project and work on the Ironbridge-Canning Town section of the A13.

Corcoran *et al.* (2011) believe that the potential for significant archaeological evidence surviving in Landscape Zone 1.1 is low due to the environmental conditions that prevailed and subsequent construction. However, a limited number of archaeological interventions have taken place in the Zone, and small pockets of archaeology may exist.

The aim of the geoarchaeological investigations on the Phase 2 part of the Rathbone Market site was to clarify the nature of the sub-surface stratigraphy, and evaluate the potential of the sedimentary sequences for reconstructing the environmental history of the site and its environs. In order to achieve this aim, two new geoarchaeological borehole locations were proposed (<QBH1> and <QBH2>; Figure 2) to: (1) confirm the expected sedimentary sequence in the Phase 2 area of the site (in particular the surface of the Sand and Gravel and the presence of any significant organic horizons); and (2) to investigate the relationship of the sub-surface stratigraphy beneath both the Phase 1 and Phase 2 areas of the site (with particular reference to the possible presence of a north-south aligned palaeochannel, the centre of which is located within the western part of the Phase 1 area).



Figure 1: Location of (1) Rathbone Market, Canning Town and other geoarchaeological and archaeological sites nearby: (2) Canning Town Regeneration Area 7/1C (CTR12; Green & Young, 2012); (3) area of the Lower Lea Valley Mapping Project (Corcoran et al., 2011); (4) Preston Road (PPP06; Branch et al., 2007); (5) East India Docks (Pepys, 1665); (6) Victoria Deep Water terminal (TUA02; Corcoran, 2002); (7) Millenium Festival Site, Greenwich (BWP97; Bowsher & Corcoran, unknown); (8) A13 Ironbridge-Canning Town (Stafford, 2012); (9) the Cable Car route ((A) North Station; (B) North Intermediate Tower; (C) North Tower; (D) South Tower; (E) South Station) (Batchelor et al., 2012); (10) Greenwich Peninsula, Tunnel Approach (Batchelor, in prep.); (11) 118 Victoria Dock Road (Barnett et al., 2012); (12) Silvertown (BWC96; Wilkinson et al., 2000); (13) Fort Street (HW-FO94; Wessex Archaeology, 2000); (14) Royal Docks Community School (PRG97; Holder, 1998); (15) The Pitts Head (PHD12; Batchelor et al., 2013); (16) Fords Park Road (FDP07; Eastbury et al., 2009); (17) Crediton Road (CDZ07; Eastbury et al., 2009); (18) Butchers Road (BUZ07; Eastbury et al., 2009); (19) Fife Road (FIH12; Killock, 2012); (20) Butchers Road Garages (BCQ97; Eastbury et al., 2009) (21) Vandome Close (VAD07; Eastbury et al., 2009). Contains Ordnance Survey data © Crown copyright and database right [2012]



Figure 2: Locations of borehole <QBH1> and <QBH2> and previous archaeological, geoarchaeological and geotechnical investigations at Rathbone Market (Site Code: RBO10). Original figure provided by Ramboll/CgMs Consulting.

#### METHODS

#### Field investigations

Two boreholes (boreholes <QBH1> and <QBH2>) were put down at the site in January 2013 (Figure 2). Borehole core samples were recovered using an Eijkelkamp window sampler and gouge set using an Atlas Copco TT 2-stroke percussion engine. This coring technique is a suitable method for the recovery of continuous, undisturbed core samples and provides sub-samples suitable for not only sedimentary and microfossil assessment and analysis, but also macrofossil analysis. The recovered core samples were wrapped in clear plastic to prevent moisture loss, labelled with the depth (metres from ground surface) and orientation (top and base) and returned to Quaternary Scientific for storage in a purpose built facility at 2°C. This temperature prevents fungal growth on the core surface, which may lead to anomalous radiocarbon dates, and moisture loss. The spatial attributes of each borehole could not be recorded at the time of the fieldwork, due to a lack of satellite visibility at their locations. The spatial attributes of the boreholes have therefore been estimated based on data from previous work in the Phase 1 area of Rathbone Market (Figure 2). A surface elevation of 1.90m OD has been estimated for both boreholes.

#### Lithostratigraphic descriptions

The lithostratigraphy of boreholes <QBH1> and <QBH2> was described in the laboratory using standard procedures for recording unconsolidated sediment and organic sediments, noting the physical properties (colour), composition (gravel, sand, clay, silt and organic matter) and inclusions (e.g. artefacts) (Tröels-Smith, 1955). The procedure involved: (1) cleaning the samples with a spatula or scalpel blade and distilled water to remove surface contaminants; (2) recording the physical properties, most notably colour using a Munsell Soil Colour Chart; (3) recording the composition; gravel (Grana glareosa; Gg), fine sand (Grana arenosa; Ga), silt (Argilla granosa; Ag) and clay (Argilla steatoides); (4) recording the degree of peat humification and (5) recording the unit boundaries e.g. sharp or diffuse. The results are displayed in Tables 1 and 2.

#### **RESULTS AND INTERPRETATION OF THE LITHOSTRATIGRAPHIC DESCRIPTIONS**

The results of the geoarchaeological borehole investigation (Tables 1 to 2; Figure 3) have enhanced the previous geotechnical and archaeological investigations, and permitted an investigation of the sub-surface stratigraphy in the Phase 2 area of the Rathbone Market site (Figure 3).

The basal unit at the site is a horizon of sand and gravel (the Lea Valley Gravel). These

sediments were deposited during the Late Glacial, within a high energy braided river system. The new geoarchaeological boreholes record the Gravel surface between -1.13 (borehole <QBH1>) and -1.44m OD (<QBH2>). This compares with the recent geotechnical window samples which record the surface between an estimated -0.90 and -1.10m OD, whilst a British Geological Society (BGS) borehole record (TQ38SE/476; Figure 1) located within the site records it at *ca*. -1.66m OD. The combined results therefore indicate that across the Phase 2 and eastern side of Phase 1 the Lea Gravel surface is relatively even, before falling sharply towards the western part of the Phase 1 site and the aforementioned north-south aligned palaeochannel identified by Frickers and Haslam (2011). Towards the eastern side of the Phase 2 site, BGS borehole TQ38SE/475 indicates that the Gravel surface also falls sharply eastwards, to *ca*. -5.32m OD; however, this is inconsistent with the geotechnical records in this part of the site, which record the Gravel surface at an estimated -0.95m (WS110) and -0.80m OD (WS108).

Overlying the Lea Valley Gravel in boreholes <QBH1> and <QBH2> was a unit of variably silty sand, 0.53 and 0.36m thick respectively, containing occasional gravel clasts and detrital herbaceous material. These sediments most likely represent in-channel deposition during the Early to Mid-Holocene and are overlain in both boreholes by Peat, between -0.25 and -0.60m OD in borehole <QBH1> and above -1.08m OD in <QBH2>. The Peat is indicative of a transition towards a semi-terrestrial environment, supporting the growth of wetland vegetation including herbaceous and woodland taxa. In both boreholes the Peat is silty, indicating that periods of inundation of the Peat surface were frequent at this location. In borehole <QBH2> the Peat is truncated by Made Ground at -0.98m OD; however, in borehole <QBH1>, the full thickness of the Peat (0.35m) is observed. These results are reasonably consistent with those from geotechnical window samples WS11A and WS112 which record *ca*. 0.6m of Peat between an estimated -0.3 and -0.9m OD.

Brown, mottled silty clay overlies the Peat in <QBH1> between -0.25 and 1.35m OD, representative of flooding of the wetland environment. In both boreholes the uppermost Unit was Made Ground, 2.88m thick in borehole <QBH2>, and 0.55m thick in borehole <QBH1>, to approximately 1.90m OD.

Table 1: Lithostratigraphic description of borehole QBH1, Rathbone Market, Canning	
Town, London Borough of Newham (Site Code: RBO10)	

Depth (m bgs)	Depth (m OD)	Description
0.00 to 0.55	1.90 to 1.35	Made ground
0.55 to 0.90	1.35 to 1.00	7.5YR 3/3; As3 Ag1; brown silty clay. Sharp contact in
		to:
0.90 to 1.40	1.00 to 0.50	7.5YR 3/3; As3 Ag1; brown silty clay with iron
		nodules. Diffuse contact in to:
1.40 to 1.72	0.50 to 0.18	7.5YR 3/3; As3 Ag1; brown silty clay with mottling.
		Diffuse contact in to:
1.72 to 2.15	0.18 to -0.25	7.5YR 5/1; Ag2 As2; grey silt and clay with occasional
		iron staining. Diffuse contact in to:
2.15 to 2.50	-0.25 to -0.60	2.5YR 2.5/1; Sh3 Ag1 Th+; humo. 4; well humified
		reddish black silty peat with traces of detrital
		herbaceous material. Diffuse contact in to:
2.50 to 3.03	-0.60 to -1.13	7.5YR 4/1; Ga2 Ag2 Gg+; dark grey silt and sand with
		occasional gravel clasts. Sharp contact in to
3.03 to 4.40	-1.13 to -2.50	10YR5/6; Gg2 Ga2; yellowish brown sand and gravel.

Table 2: Lithostratigraphic description of borehole QBH2, Rathbone Market,	Canning
Town, London Borough of Newham (Site Code: RBO10)	_

Depth (m bgs)	Depth (m OD)	Description
0.00 to 1.60	1.90 to 0.30	Made ground
1.60 to 2.88	0.30 to -0.98	Made ground (including redeposited alluvium, sand and gravel)
2.88 to 2.98	-0.98 to -1.08	2.5YR 2.5/1; Sh2 Ag1 TI1; humo. 3; well humified reddish black silty peat with wood macrofossils. Sharp contact in to:
2.98 to 3.02	-1.08 to -1.12	10YR 6/3; Ga4; pale brown sand. Sharp contact in to:
3.02 to 3.11	-1.12 to -1.21	2.5YR 2.5/1; Ag2 Sh1 DI1; reddish black organic silt with detrital wood. Diffuse contact in to:
3.11 to 3.34	-1.21 to -1.44	10YR 4/2; Ag2 Ga1 Gg1; dark greyish brown sandy silt with gravel clasts. Sharp contact in to
3.34 to 3.42	-1.44 to -1.52	Gg4; gravel. Sharp contact in to
3.42 to 3.60	-1.52 to -1.70	10YR 4/3; Gg3 Ga1; brown sandy gravel.



Figure 3: Lithostratigraphic description of boreholes <QBH1> and <QBH2> (Phase 2), incorporating the results of the archaeological excavations at the Phase 1 site (Frickers and Haslam, 2011).

#### DISCUSSION

The results of the geoarchaeological investigations enhance previous work on the Rathbone Market site, and within the local area (Corcoran *et al.*, 2011; Stafford, 2012, Green & Young, 2012). The Late Devensian Lea Valley Gravel forms the platform upon which Holocene alluvial sediments have accumulated. Across Phase 2 and eastern part of Phase 1, this surface is relatively high between -0.75 and -1.66m OD. Towards the western side of Phase 1 a depression in the Lea Valley Gravel is recorded at a depth below -3.81m OD, most likely representative of a former palaeochannel. This interpretation is consistent with that made by Stafford (2012), following investigations along the Ironbridge-Canning Town section of the A13, just to the south of the site; here, the Lea Valley Gravel surface drops sharply from west (*ca.* -1m OD) to east (*ca.* -3.5m OD). Similarly, a transect of boreholes across this general area of Landscape Zone LZ1 suggests a depression in the Lea Valley Gravel in this general area. A single BGS borehole TQ38SE/480 to the southwest of the site suggests the palaeochannel may have been as deep as -5.3m OD.

Further to the south of the Rathbone Market site, geoarchaeological investigation of the Canning Town Regeneration Area 7/1C site (Green and Young, 2011; Figure 1) revealed a Gravel surface that reduced in height from south (*ca.* -0.50m OD) to north (-1.21 to -2.81m OD). Unlike the results from the Rathbone Market/Ironbridge-Canning Town sites, this depression is suggestive of an east-west aligned palaeochannel. However, it is unclear at this stage whether the north-south and east-west channel features were contemporaneous, and if so whether the Rathbone north-south channel was a tributary into the east-west channel identified on the Canning Town Regeneration Area 7/1C site, as opposed to representing part of the same meandering channel.

Within the Phase 1 palaeochannel, a thickness of more than 3.0m of Peat was recorded in Trench 2; however, *ca.* 10m to the south in Trench 3 the sequence was entirely different, comprising sand overlain by clay between -2.92 and -0.90m OD (Figures 2 & 3). It is thus hypothesised here that the palaeochannel was initially abandoned, enabling Peat to accumulate in a semi-terrestrial environment; the thick sequence of Peat suggests that this accumulation may have lasted for a considerable period of time. Within the same palaeochannel to the west, a 1.5m thick horizon was dated to between 5410-5310 and 3470-3160 cal BP; a period of nearly 2000 years spanning the Neolithic and Bronze Age cultural periods. The sedimentary sequence recorded in Trench 3 is hypothesised to represent erosion and redistribution of sediments by a subsequent channel. These hypotheses are broadly consistent with the interpretation made by Corcoran *et al.* (2011) for an active channel environment in Landscape Zone 1. It also correlates with the interpretations made,

for an absence of Peat recorded at the Canning Town Regeneration Area 7/1C site (Green & Young, 2012).

On the eastern part of Phase 1, and the Phase 2 area of the site, the Holocene Alluvium overlying the Lea Valley Gravel is typical of the tripartite sequence found across most of the Lower Thames Valley, where in many places Lower Alluvium is overlain by a Peat bed, representing the development of a more stable terrestrial surface across the floor of the valley; the uppermost unit almost everywhere is a silty alluvium (Upper Alluvium) in which visible organic remains are uncommon. The age of this Peat is uncertain, but due to its elevation is considered likely to either correlate with the upper part of the Peat in the palaeochannel, or represent a subsequent phase of accumulation.

#### **CONCLUSIONS AND RECOMMENDATIONS**

In summary therefore, the combined results of the recent investigations at Rathbone Market and surrounding area indicate a complex stratigraphic architecture including a highly variable Lea Valley Gravel topography, and subsequent deposition of Holocene Alluvium and Peat. Corcoran *et al.* (2011) consider the archaeological potential to be limited in this Landscape Zone due to active channels, river scouring and more recently, development. Pockets of palaeoenvironmental and archaeological potential are considered to exist however, and at Rathbone Market, a thick sequence of peat deposits was recorded in Phase 1, Trench 2, that is likely to be contemporaneous with at least the Neolithic and Bronze Age cultural periods (according to recent determinations carried out on a less substantial peat horizon to the southwest; Stafford, 2012). The limited survival of such thick Peat horizons in this general area is demonstrated by its probable erosion in Trench 3. The Rathbone Market site is also clearly located on the margins of a deep palaeochannel with an area of higher ground to the east (Phases 1 and 2).

It is intended that environmental samples will be assessed once all phases of archaeological fieldwork at the site are complete. It is recommended that at this stage the alluvium and peat in borehole <QBH1> should also be considered for potential assessment.

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