LEE TUNNEL, THAMES WATER, TRIANGLE SITE
Beckton Sewage Treatment Works
London IG 11

London Borough of Newham

Evaluation Report

December 2009

MUSEUM OF LONDON ARCHAEOLOGY

REGISTERED ORGANISATION IfA

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Beckton Sewage Treatment Works
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Evaluation Report

Site Code: LBT09
National Grid Reference: 544525 182200

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Summary (non-technical)

This report presents the results of an archaeological evaluation carried out by Museum of London Archaeology (MOLA) on the site of The Lee Tunnel at Thames Water Beckton Sewage Treatment Works (STW), Beckton, London, IG11. The report was commissioned from MOLA by Thames Water.

Following the recommendations of the Archaeological Advisor to the London Borough of Newham (Greater London Archaeological Advisory Service - GLAAS) a single evaluation trench was excavated on the site between 28.10.2009–03.11.2009.

The results of the field evaluation have helped to refine the initial assessment of the archaeological potential of the site. The adjacent geoarchaeological borehole BH13 recorded the presence of late Pleistocene gravels at c.–2.2m OD (4.5m below present ground level). This lay at a height beyond the achievable depth of the trench. The surface of (fluvial) sandy clay/clay sand channel deposits of potential late Pleistocene/early Holocene date formed the trench base, at c. –0.9m OD. The high incidence of organic matter within the clay sand was a result of rooting down by later vegetation contemporary with the early stages of peat formation. Root bowls and tree bases (probably alder) were recorded truncating the layer along the east face of the trench. A shallow channel, running approximately 2m north–south at the north end of the trench shows a brief episode of fluvial erosion or scour. Deposits of peat were recorded in the trench section and were present throughout the trench extent to a surface height of –0.2m OD. During the Neolithic to Bronze Age, woodland existed within the floodplain of the Thames in East London and peat developed across its floor. The characteristics of the peat in the evaluation trench reflect its location within, or adjacent to, ancient river channels. Alluvial clays and silts accumulated above the organic deposits, probably during the Iron Age and historic period, which might represent seasonally flooded meadowland or estuarine environments. A compressed layer of topsoil and turf representing historic open grassland survived at the top of the alluvial profile at 1.2m OD. Modern made ground, 1.3m thick sealed the alluvial sequence.

The trench showed no evidence of prehistoric human activity or environmental interaction. However, the deposits examined have good potential for reconstructing the prehistoric environment. Bulk samples were taken for off-site examination of plant and insect remains, which could provide information about the prehistoric environment of the site that would supplement the information already obtained and potentially available from pollen and other microfossil remains, preserved in the evaluation core samples.

In the light of revised understanding of the archaeological potential of the site the report concludes the impact of the proposed redevelopment is low.

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Front cover: north-east facing view of the evaluation trench during machine excavation

1 Introduction

1.1 Site background

The evaluation took place on the location of a proposed shaft for the Lee Tunnel at the Beckton Sewage Treatment Works (STW), Area B3 [Triangle site], in the London Borough of Newham, hereafter called 'the site'. It is bounded by the main access road of the sewage works on the west side, settling tanks to the south and east, and an office building to the north. The OS National Grid Ref. for centre of site is 544525 182200. The level of the surrounding grassed area varied between 2.23m OD and 2.30m OD. Modern road level immediately adjacent to the site is 2.8m OD. The site code is LBT09.

This evaluation trench forms one part of the archaeological investigation. A geoarchaeological borehole survey formed the second part and was conducted on the adjacent 'Rectangle Site'. The results of the borehole survey will be reported separately. A foreshore survey originally planned as part of the archaeological investigation could not be carried out due to safety reasons.

An Environmental Statement (ES) which was previously prepared to accompany the planning application submission for the Lee Tunnel and Beckton STW Extension, contained a Cultural Heritage chapter (Scott Wilson 2008, Chapter 11) which covers the whole area of the site. The *Cultural Heritage chapter of the ES* should be referred to for information on the natural geology, archaeological and historical background of the site, and the initial interpretation of its archaeological potential. The depth, distribution and potential of the alluvial deposits across the site was examined in a geoarchaeology deposit model (Halsey 2009), which formed a preliminary stage of archaeological evaluation of the site, as recommended in the Brief (GLAAS 2008).

This document, and the previous *Environmental Statement*, informed the design (*Method Statement*) for the evaluation which was eventually carried out (MOLA 2009).

1.2 Planning and legislative framework

The legislative and planning framework in which the archaeological exercise took place was summarised in the *Method Statement* which formed the project design for the evaluation (see Section 1.2, MOLA, 2009).

1.3 Planning background

The archaeological evaluation was carried out as part of the programme of archaeological work secured in accordance with a scheme of investigation, which has been submitted to and approved by the Local Planning Authority. The evaluation was undertaken as part of the discharge of the condition placed upon the planning application (ref: 08/01162/FUL) for the site by the Greater London Archaeological Advisory Service (GLAAS ref LAG 25/420) on behalf of the London Borough of Newham's Planning dept.

1.4 Origin and scope of the report

This report was commissioned by Thames Water and produced by the Museum of London Archaeology Service (MOLA). The report has been prepared within the terms of the relevant Standard specified by the Institute for Archaeologists (IFA, 2001).

Field evaluation, and the *Evaluation report* which comments on the results of that exercise, are defined in the most recent English Heritage guidelines (English Heritage, 1998) as intended to provide information about the archaeological resource in order to contribute to the:

- formulation of a strategy for the preservation or management of those remains; and/or
- formulation of an appropriate response or mitigation strategy to planning applications or other proposals which may adversely affect such archaeological remains, or enhance them; and/or
- formulation of a proposal for further archaeological investigations within a programme of research

1.5 Aims and objectives

All research is undertaken within the priorities established in the Museum of London's *A research framework for London archaeology*, 2002

The following research aims and objectives were established in the *Method Statement* for the evaluation (Section 2.2):

- Is there any evidence for the untruncated surface of natural gravels and to what extent can the proposed fieldwork refine our understanding of the topographic template formed by the surface of the gravels/overlying sand?
- What evidence is there to suggest the presence of a prehistoric, possible Bronze Age land surface?
- Is there any evidence on site for prehistoric/Bronze Age flint working on the site?
- Is there any evidence of occupation on the site relating to the Bronze Age?
- Is there any evidence to indicate the presence of prehistoric trackways?
- Is there any geoarchaeological evidence to provide information on the environmental conditions in and around the area of the site during the prehistoric period and, in particular, the Bronze Age?
- Is there evidence of peat, waterlogged organic layers or other deposits of potential for past environmental reconstruction on the site? If such deposits are present a contingency will be activated to test for the presence of environmental indicators, such as: seeds, snails, insects, pollen, diatoms and ostracods/foraminifera and to provide dating evidence (radiocarbon).
- Archaeology, if it exists on the site, is likely to lie within the natural deposit sequence. What are the characteristics of the natural stratigraphy and can fieldwork refine the interpretation of the natural deposit sequence on the site discussed in the geoarchaeological deposit model (Halsey 2009)?
- What are the earliest deposits identified?
- What are the latest deposits identified?

- Evidence for prehistoric or post-medieval channels was identified in the deposit model across the area of the proposed borehole survey. Can the date and origin of these channels be clarified and what is their potential for past environment reconstruction?
- To what extent can evidence from the alluvial deposits and environmental remains they contain refine our understanding of the past environment of the site and its surroundings?

2 Topographical and historical background

A detailed description of the geology, archaeology and history of the local area was provided in the earlier Cultural Heritage section of the Environmental Statement (Scott Wilson 2008, Chapter 11). This was updated for the deposits present on the site itself in the geoarchaeological deposit model (Halsey 2009). A brief resume is provided here:

2.1 Topography

The site is situated on the alluvial floodplain of the Thames. The underlying deposits consist of the Pleistocene floodplain gravels deposited within a cold climate braided river system between 18,000 to 15,000 years ago. The surface of the gravel forms an undulating surface topography which dips away sharply towards the south of the site where the Holocene Thames incised through the gravel surface. The overlying deposits consist of a series of fine grained minerogenic deposits, representing in-channel deposition in the Late Glacial and early Holocene freshwater river (i.e. 15,000 to 10 000 years ago). These are sealed by a thick sequence of prehistoric wetland peat and alluvial clays of estuarine origin.

The peats began to develop across the southern part of the site initially in the Mesolithic period (i.e. 10 000 years ago), as dry landsurfaces became waterlogged at progressively higher elevations, due to rising river levels and the effects of relative sea level rise. The peats expanded onto the higher ground to the north until the early Iron Age (i.e. 3000 years ago) when evidence from previous work in the area suggests that peat formation ceased. The peats represent a range of wetland environments from alder carr wet woodland to reed swamp.

By the early Iron Age, the rate of sea level rise outstripped that of peat formation, resulting in a transition from vegetated wetland deposits to tidal mudflats and salt marsh environments. By the medieval period, drainage and land reclamation resulted in the build up of semi-terrestrial accretionary floodplain soils, deposited through seasonal overbank flooding.

Across parts of the site, sequences of minerogenic deposits and thin organic units suggest the possibility of channels dissecting the wetland landscape. These channels may be associated with former courses of Barking Creek, or may represent much later drainage channels of a Medieval to modern date cutting through the wetland deposits.

Dryland occupation from a Mesolithic to possibly an Early Bronze Age date may be expected to occur beneath the peat horizon, albeit at different times across the site and within a rapidly encroaching wetland environment. Prehistoric use and exploitation of the wetlands may have occurred and could be represented by the presence of trackways, platforms or other timber structures used to access and transverse the wetlands. Such structures may be encountered within the peat deposits and also at the interface of the peat and the over and underlying clays. Similar riverside or channel edge structures, but of later date, may occur within the alluvial clays and channel fills, and might consist of revetments, bridges, jetties, wharfs, boats or fishtraps.

Within the area of the evaluation trench, a dry prehistoric landsurface that might be associated with occupation horizons of Mesolithic to Late Neolithic date appears to

exist at a level of –2m OD to –3.5m OD. Alluvial clay and peat deposits with palaeo-environmental potential, but lower potential for prehistoric archaeology, may be encountered between c +1m and –3.5m OD.

2.2 Prehistoric

There is one Mesolithic find from the site itself. An animal bone from '*Bos primegenius*' recovered during dredging. Mesolithic material was also recovered during geoarchaeological prospecting to the north of the site.

A layer of peat and naturally fallen yew trees, radiocarbon dated to the Neolithic/Early Bronze Age, was discovered at Beckton Sewage Treatment works. A single piece of burnt flint suggests human activity, and evidence of a north-south river channel possibly represents an earlier channel of Barking Creek (Divers 1995). A late Neolithic/Early Bronze Age stone axe (hammer) was found at Barking Creek to the east of the site.

Wooden trackways, dated to the Middle Bronze Age, have been found in the marshes of East London within the Upper Peat, and are usually covered by alluvial deposits. Upper Peat was identified at Beckton Sewage Treatment Works at a level of –1.01m to 1.79m OD. Upper Peat has been identified *c.* 1 km to the north-east of the site, between –1.03m to –1.53 m OD, *c.* 2.70 m below ground level and contained palaeo-environmental material of Late Neolithic – Bronze Age date. In 2004, a pit was recorded during excavation at the former Icon Warne works, Gascoigne Road, Dagenham, radiocarbon dated to the Bronze Age. Finds from the site and study area include a number of bronze axes, and a bronze sword hilt.

A model Greek water pitcher, dated to the 6th century BC, was recovered from the River Thames in 1923. This item may indicate long distance trade links during the Iron Age or it could have been a later collector's piece. An Early–Middle Iron Age settlement recorded to the south of the River Thames may have continued in use into the later Iron Age – Roman period (Turner, 1994). Environmental evidence from Summerton Way, to the south of the river, suggests that the local environment during this period was damp marshland with natural ditches and channels (Lakin 1999, 314).

2.3 Roman

Roman remains recorded within the vicinty include: Iron Age – Roman enclosure ditches and a Roman cremation cemetery comprising two groups of burials found on the site of an Early-Middle Iron Age settlement (Turner 1994); excavations at Summerton Way, to the south of the River Thames, produced evidence that the marshes became dry enough for seasonal settlement (Lakin 1999, 336-8); aerial photographs indicate the presence of a possible disused dock just west of Barking Creek. This has been interpreted as being Romano-British in date

2.4 Saxon

There are no early medieval finds from the site or its vicinity.

2.5 Medieval

Medieval remains recorded within the site and its immediate area include a house known as Galyonshope in 1466.

2.6 Post-medieval

A late medieval/early post-medieval dock is recorded in this area as early as 1545. Kings Bridge also existed by 1608 and spanned an unknown tributary of the River Roding. A house dating to the post-medieval period is recorded on Adams' map of 1588. Two landfill sites are recorded in this area and date to the post-medieval period. Documentary and cartographic evidence suggests that Barking Magazine was first constructed in *c.* 1719 and was used to store gunpowder. A jute mill in this area is also evident from documentary and cartographic sources.

By 1896, the site of the former jute mill mentioned above is occupied by a rubber factory. The development of Beckton as a Sewage Treatment Works is evident from the 1860. The Engine house and other associated buildings appear on site from the late 19th century. A Victorian bottle dump was uncovered during a watching brief in this area.

3 The evaluation

3.1 Methodology

All archaeological excavation and monitoring during the evaluation was carried out in accordance with the preceding *Method Statement* (MOLA, 2009), and the *Archaeological Site Manual* (MoLAS, 1994).

The ground was cleared by contractors under MOLA supervision. The trench was excavated by machine by the contractors, and monitored by a member of staff from MOLA.

The location of the evaluation trench was laid out by MOLA geomatic staff with coordinates relevant to the OS grid. The heights of observations and/or archaeological remains were recorded relative to Ordnance Datum established at the top of the trench. Further levels during trench excavation were provided by direct measurement from a Temporary Benchmark (TBM) located by MOLA geomatic staff on the kerb of the adjacent access road. The value of the TBM was 2.87m OD.

Where relevant, sections were drawn at a scale of 1:10 or 1:20; numbered contexts were allocated where appropriate.

Bulk samples were taken from the exposed section faces for off-site examination of plant, snail and insect remains. These samples have not yet been examined but are held in the MOLA store. A written and drawn record of all archaeological deposits encountered was made in accordance with the principles set out in the MOLA site recording manual (MOLAS, 1994).

The site has produced: 1 trench location plan; 10 context records; 2 section drawings at 1:20 and 1:10; and 16 film photographs, in colour and black and white and 32 digital images. No finds were recovered from the site.

The site finds and records can be found under the site code LBT09 in the MOL archive.

3.2 Results of the evaluation

The evaluation of the 'Triangle Site' comprised two separate interventions, made for the purposes of fulfilling the archaeological evaluation design. These comprise a preliminary geoarchaeological borehole (BH13) which acted as a guide to the anticipated deposits and depth of underlying natural gravels; and an archaeological evaluation trench. The Beckton STW evaluation also included a geoarchaeologcal borehole investigation, carried out on the 'Rectangle Site', which will be reported on separately and the results tied in to those of the trench and BH13 (Halsey in prep). For the purpose of completing the fieldwork requirement, however, a short summary of the initial results of the borehole investigation is included here.

See Fig 2 for a detailed plan of the evaluation trench

3.2.1 The Geoarchaeologiocal Borehole Investigation

The geoarchaeological borehole (BH13) was undertaken prior to the excavation of the trench in order to assess the depth of deposits of archaeological potential. Twelve geoarchaeological boreholes were also excavated on the 'Rectangle Site'. The boreholes were drilled by PJ Drilling Limited with a Terrier rig fitted with a windowless core sampler, under the supervision of a MOLA Senior

Geoarchaeologist. The boreholes were drilled to the surface of the Pleistocene sand and gravel deposits in order to recover a complete sequence of the Holocene floodplain deposits. The borehole investigation here and on the 'Rectangle Site', was undertaken to assess the level of palaeoenvironmental potential of the sub-surface floodplain deposits, and to reconstruct the floodplain geomorphology. The core samples were opened on site and preliminary interpretations were made on the deposit sequences. Core samples representative of the major depositional units identified across the site were retained for further off-site work. The borehole logs associated with the geoarchaeological survey will be presented in a forthcoming geoarchaeological assessment report. The deposit sequence in the borehole undertaken adjacent to the trench is presented below.

Top of borehole at 2.42m OD

Unit Number	Depth below ground level	Description	Interpretation
13.1	0–0.95	Firm to friable mid to dark brown gritty sandy silt. Moderate to frequent brick and gravel. **Made ground.**	Modern made ground.
Sharp			
13.2	0.95–1.45	Friable black silty sand with moderate brick fragments. **Made ground.**	
Sharp			
13.3	1.45–1.9	Firm light grey **clay silt** with occasional very fine root channels and occasional Mn staining.	Alluvial clays. Lower units probably represent tidal inundations and development of saltmarsh, tidal mudflat environments. Upper units represent seasonal overbank flooding and development of accretionary soils.
Diffuse			
13.4	1.9–2.26	Very firm dark bluish grey **silty clay** with fine blocky ped structure and frequent Mn staining.	
Very diffuse			
13.5	2.26–2.34	Very firm dark bluish grey **silty clay** with fine blocky ped structure and frequent Mn staining. Distinctive yellowish brown mottling also present.	
Very diffuse			
13.6	2.34–2.5	Very firm mottled mid grey/mid greyish brown **silty clay.**	
Contact not visible			
13.7	2.5–2.6	Firm dark brown **organic clay**	Development of alder carr woodland.
Contact not visible			
13.8	2.6–3.1	Friable dark reddish brown **humified peat**, with moderate lignified and detrital organic remains.	
Diffuse			
13.9	3.1–3.4	Soft mid greyish brown massive **sandy silty**. Coarsens with depth.	Late Pleistocene/Early fluvial sands. Massive structure suggests high viscosity debris flows.
Gradational			
13.10	3.4–4.7	Soft mid greyish brown massive **silty sand**, with	

		localised lenses of medium to coarse sand increasing with depth. Occasional detrital organics presents. Tends towards medium to coarse silty sand with depth. Occasional fine gravel present in lower 0.2m of the unit.	
Gradational			
13.11	4.7–5	Loose mid greyish brown moderately sorted fine **sandy gravel**. Gravel fine to medium, angular, sub-angular and sub-rounded.	Late Devensian Shepperton floodplain gravels.

Table 1 Deposits recorded in BH13

The preliminary borehole investigation interpretations have defined three different depositional sequences across the site. Towards the southern part of the site a series of weakly laminated clay silts were recorded buried beneath alluvial overbank flood deposits. The lower laminated clay silts are likely to represent tidal mudflat/salt marsh deposits. On the eastern periphery of the site, the basal Pleistocene sand and gravels were overlain by a series of well bedded fluvial silts and sands deposited within in-channel areas. These deposits are likely to represent a former course of the River Roding. The previous geoarchaeological deposit model (Halsey 2009) had suggested the existence of a palaeochannel on this part of the site. Towards the western part of the site, peat deposits were recorded sealed beneath alluvial overbank flood deposits. These peats represent the development of wetland alder carr/ sedge fen environments developing on the margins of the Thames and the River Roding. The peat accumulation is likely to date from the Bronze Age, and relates to the waterlogging of previously dry terrestrial land surfaces as a result of Relative Sea Level rise, and increase in overall river levels.

Further examination and sub-sampling of the retained core samples is in progress to assess the level of palaeoenvironmental potential, and to refine the chronology of the deposits identified in the three areas.

3.2.2 Evaluation Trench 1

Location	Approximate centre of Beckton western triangle, over proposed tunnel access shaft position (Lee Tunnel pumping station).
Dimensions	16m N–S by 8m E–W by 3m depth. Trench base 12m N–S by 4m E–W.
Modern ground level/top of slab	2.30m OD
Base of modern fill/slab	1.0m OD
Depth of archaeological deposits seen	2.2m deep
Level of base of deposits observed and/or base of trench	– 0.91m OD
Natural observed	N/A

Modern turf topsoil was cut and the underlying modern made ground excavated by 360º mechanical excavator. Removal of deposits below modern truncation was carried out with a flat bladed ditching bucket until the surface of the first peat horizon [8] was uncovered. The deposits were consequently graded down in spits of up to 100mm, stopping where layers contained potential archaeological activity. The

trench was reduced by a series of 1m wide steps to the centre providing a trench base at 3.2m below ground level. The dimensions at the trench base were approximately 12m by 4m.

Ground water seepage was a limiting factor and the trench proved incapable of being dried out for a sustained period. In consequence the trench base could not be recorded fully in plan.

Soft, mid grey clay sand [9] was present across the trench base at *c.* –0.8m OD, sloping sharply across the southern part of the trench to *c.* –1.0m OD. Several tree roots and their root bowls were recorded along the eastern side of the trench, bedded into the clay sand. In one instance there was evidence of the uprooting of the tree, followed by soil subsidence and later infilling by overlying peat. It is unsure whether the vegetation growth colonised the clay sand during a brief dry episode or rooted down either at the start of peat formation or later. The tree growth is consistent with an alder carr environment. In addition to the tree growth, a shallow (0.2m deep), sub linear scoop [11] was present in the north of the trench base, measuring 2.0m north–south by 1.2m east–west. Soft, light grey clay sand with frequent organic matter [10] filled the feature. This material was observed to rise up to the north during machining, causing a noticeable hump in section between the overlying peat and underlying clay sand. The feature probably represents an episode of fluvial scour and subsequent sand accumulation prior to peat formation.

The clay sand, tree roots and scour feature, were sealed by a 0.5m thick layer of peat [8] that was present across the trench. The peat was present in section to a height of – 0.30m OD at the north end of the trench to – 0.40m OD at the south. The peat was sealed in turn by a firm, mid brown peaty silt [7] measuring *c.* 0.2m thick.

The peaty silt gradually gave way to a firm, yellow grey alluvial silty clay [6], approximately 0.4m thick. The yellow hue indicates a possible stabilisation of the alluvial formation, allowing accretion of mineral salts within the layer. The stabilisation clay was followed by firm, mid grey clay silts [5] and [4]. The clay silts represent two parts of one continuous alluvial formation, measuring 0.7m thick. The lower part [5] showing occasional brownish mottling, turning yellow brown towards the base of the layer. The upper portion [4] had a brown hue and evidence of root activity and iron staining, consistent with exposure to a greater degree of weathering.

Firm, mid–dark grey silty clay containing frequent manganese flecks [3] and a noticeably more gleyed structure than the preceding weathered alluvium. The alluvial sequence was sealed by a 0.2m thick layer of friable (when dry) dark brownish grey clay silt [2]. This layer is associated with a later drying out subsoil formation supporting the compressed topsoil and turf [1] that lay above it. The topsoil and turf, measuring 0.12m thick represents the buried historic topsoil (land surface), present at 1.15m OD.

Approximately 1.2m depth of modern made ground and levelling deposits sealed the archaeological sequence, beneath a 0.1m thick turf. The made ground comprised a variety of tiplines and soils, including ballast, rubble and some industrial waste, doubtlessly sources beyond Beckton and imported into the site prior to present day development.

3.2.3 Geoarchaeological results

Geoarchaeological recording and sampling of the excavated trench was undertaken on the 2nd to the 3rd November 2009. A representative part of the trench section was cleaned and recorded in detail, with associated sampling of the major depositional units. This recording was undertaken in addition to the archaeological recording.

Top of section log at 1.25m OD

Unit Number	Context	Depth from top of recorded section	Deposit characteristics	Interpretation
1.1	1	0–0.1	Friable dark brown/dark grey **humic silty clay** with frequent fine root fragments. Granular ped structure	Buried top soil, 'A' horizon.
Diffuse				
1.15m OD				
1.2	2/3	0.1–0.5	Firm dark grey **silty clay** with frequent manganese flecking (1.2B). Angular blocky ped structure. Appears mid yellowish brown when weathered. Upper 0.1m of the unit (1.2A) appears slightly more friable with dark brownish grey colouration. Slightly less manganese staining. More visible when weathered.	1.2A represents a possible subsoil associated with unit 1.1. Masked by later gleying. 1.2B forms a gleyed accretionary soil, deposited through overbank flooding.
Diffuse				
0.75m OD				
1.3	4	0.5–0.83	Firm mid brownish grey **silty clay**. Angular blocky ped structure. Mottled with moderate mid orangey brown colouration due to iron staining. Fine Fe stained root channels present.	Weathered accretionary soil.
Diffuse				
0.42m OD				
1.4	5	0.83–1.07	Firm mid grey **silty clay** with occasional brownish mottling. Frequent fine hair roots.	Gleyed accretionary soil.
Diffuse				
0.18m OD				
1.5	5	1.07–1.14	Firm/plastic fairly homogenous mid grey **silty clay**.	Episodes of flood inundation and development of a body of standing water.
Diffuse				
0.11m OD				
1.6	5	1.14–1.24	Firm/plastic mid grey **clay**. Frequent yellowish brown mottling present within the ped structure. Frequent fine hair roots.	Tidal mudflat/salt marsh deposits. Possible landsurface forming on the surface of unit 1.6 as indicated by frequent fine hair roots.
Diffuse				
1.7	6	1.24–1.47	Firm/plastic mid grey **clay** with slight yellowish brown mottling. Occasional small to medium lignified and detrital plant remains in lower part.	
Gradational				
-0.22m OD				
1.8	7	1.47–1.57	Soft slightly mottled mid brown/dark grey **organic silty clay** with frequent detrital and occasional lignified plant remains.	Transitional unit marking a gradual change from wet alder carr to tidal mudflat/saltmarsh deposits.
Diffuse				
-0.32m OD				
1.9	8	1.57–1.78	Friable dark brown **humified clayey peat**. Moderate quantities of detrital and lignified plant remains. Peat display a granular soil structure.	Development of wetland Alder Carr/Sedge fen environment. Humified unit 1.9 represents period of floodplain stabilisation and drying out episodes.
Diffuse				
1.10	8	1.78–2.12	Soft friable dark reddish brown fibrous **clayey peat**. Frequent detrital and large lignified plant fragments.	
Diffuse				
-0.87m OD				
1.11	9	2.12–2.20	Soft mid grey fine **sandy silt** with moderate small to large root fragments intruding from deposit above.	Late Glacial/Early Holocene fluvial deposits.

Table 2: Deposits recorded in Geosection 1

The deposits were recorded using standard sedimentary criteria, which attempts to characterise the visible properties of each deposit, in particular relating to its colour,

compaction, texture, structure, bedding, inclusions, clast-size and dip. The identified depositional units were allocated unit numbers which correlate with the archaeological context numbers. A log of the geoarchaeological section is presented in the table below and describes the characteristics of the deposits and the depositional environments.

3.2.4 Sampling

Extensive sampling was carried out on a representative section of the trench sequence. A continuous column of bulk samples of *c.* 20litres were taken from the main units at 10cm intervals down through the profile. The samples were taken to retrieve palaeoenvironmental macro fossils (plant remains, molluscs, ostracods), and to collect larger plant macro fossils suitable for radiocarbon dating. Four monoliths samples (undisturbed columns of sediment) were taken adjacent to the bulk samples. These were taken to recover palaeoenvironmental micro fossils (pollen, diatoms), and to enable further off site sedimentary examination of the deposit sequence (using techniques such as loss on ignition and magnetic susceptibility), which might identify trends and hiatuses in the deposit sequence. The table below presents the sample information.

Sample No.	Sample type	Context Sampled	Unit No sampled
1	Bulk	2	1.2B
2	Bulk	3	1.2A
3	Bulk	3	1.2A
4	Bulk	3	1.2A
5	Bulk	4	1.3
6	Bulk	4	1.3
7	Bulk	4	1.3
8	Bulk	5	1.4
9	Bulk	5	1.4
10	Bulk	5	1.5
11	Bulk	5	1.6
12	Bulk	6	1.7
13	Bulk	6	1.7
14	Bulk	7	1.8
15	Bulk	8	1.9
16	Bulk	8	1.9
17	Bulk	8	1.10
18	Bulk	8	1.10
19	Bulk	8	1.10
20	Monolith	Various	1.9–1.10
21	Monolith	Various	1.7–1.10
22	Monolith	Various	1.4–1.7
23	Monolith	Various	1.2A–1.3

Table 3 Summary of samples recovered from evaluation trench section

3.2.5 Geoarchaeological discussion on trench sequence

The basal unit (1.11) originated as fluvial deposits probably of a Late Glacial/Early Holocene date. The deposits formed as in-channel sediments within a sandy silt bedload river. The change in bedload from the underlying coarse grained gravel

deposits, relates to the warming of the climate at the close of the Devensian cold stage, which saw a reduction in discharge rates and sediment supply. As the channel adopted the lower lying thread of the preceding Devensian braidplain, areas of higher sands developed into dry land surfaces with ephemeral soils beginning to take hold. Given the elevation of the sand in the trench at *c.* -0.87m OD, dry land surfaces are likely to have begun to form here from the early Holocene and existed as dry areas of land into the Neolithic period.

The surface of the sand was heavily rooted with both large and fine root channels present. However it is unclear whether these are intrusive and originate from the heavily vegetated peat horizon above. Evidence of possible woodland cover on the surface of the sand was apparent from a distinctive feature visible in the section. A roughly ovoid area of fine grey sandy silt formed a distinctive lens within the peat unit. Immediately adjacent to this was a small hollow or dip in the silty sand surface infilled with peat. This lens of sandy silt is likely to represent the root ball of a fallen tree, which ripped up the sandy silt substrate creating the adjacent hollow which subsequently infilled with peat.

The overlying peat units (1.9–1.10, see Table 3) represent an increase in river levels, probably associated with the upstream migration of the tidal head and the waterlogging of previously dry terrestrial land surfaces. The peat was fairly woody and fibrous and suggests a fen or wooded alder carr environment. With a continued increase in river levels the area became inundated by tidal waters, and saw a transition to a mudflat or salt marsh environment. As vertical accretion of the floodplain continued this tidal mudflat environment/ salt marsh environment gradually transformed to overbank floodplain environments where flooding was less influenced by regular tidal inundation, and dominated more by seasonal high discharge flood events.

This part of the sequence is represented by the gleyed alluvial deposits 1.2–1.7. There is a marked difference in the sedimentary structure and lithology of these sediments. The lower parts (1.5–1.7) appear more ‘plastic’ and clayey in nature and may relate to the development of saltmarsh environments. The upper units 1.2–1.4 are a firmer silty clay, and display an angular blocky structure more indicative of accretionary soils forming in overbank flood environments. Periods of floodplain stability are also suggested by unit 1.5, which contains calcareous mottling indicative of a relatively prolonged period of soil formation.

The upper part of the sequence consisted of a humic silty clay which represents the development of an ‘A’ horizon (the organic upper part of a soil profile). This marks the top of the original landsurface before the dumping of made ground material.

3.3 Assessment of the evaluation

GLAAS guidelines (English Heritage, 1998) require an assessment of the success of the evaluation ‘in order to illustrate what level of confidence can be placed on the information which will provide the basis of the mitigation strategy’. In the case of this site there is low potential for archaeological features and deposits.

The evaluation trench has shown that the majority of the site would have remained part of a river channel and sides from the early Holocene to medieval periods. No evidence of human interaction within the alluvial deposits was recorded within the trench. No datable finds were recovered from the deposits and only provisional date estimates for the alluvial deposits can currently be made. The deposit sequence shows the gradual silting up and abandonment of a probable channel edge site in the floodplain of the Thames and Barking Creek.

4 Archaeological potential

4.1 Realisation of original research aims

Is there any evidence for the untruncated surface of natural gravels and to what extent does the evaluation refine our understanding of the topographic template formed by the surface of the gravels/overlying sand?

The untruncated surface of natural gravel was seen in BH13, at 4.5m below ground level (*c.* –2.2m OD). This data needs to be combined with the geotechnical data and the geoarchaeological borehole data, before an adequate assessment of the gravel topography can be made. This will be undertaken as part of the forthcoming geoarchaeological assessment report.

What evidence is there to suggest the presence of a prehistoric, possible Bronze Age land surface?

The clay sand at the trench base is associated with the underlying gravel units, and represents the gradual reduction in discharge rates with lower flow regimes as the climate ameliorated at the end of the last cold stage. This surface is likely to have formed a dry terrestrial soil horizon during the early part of the Holocene, probably extending through to the Neolithic. No evidence of pedogenesis was visible on the sand surface. Any soil horizon present may have been masked by later waterlogging and bioturbation from the peat horizon above.

Is there any evidence on site for prehistoric/Bronze Age flint working on the site?

No evidence of prehistoric/Bronze Age flint working was present within the trench.

Is there any evidence of occupation on the site relating to the Bronze Age?

There was no evidence of Bronze Age occupation activity.

Is there any evidence to indicate the presence of prehistoric trackways?

There was no evidence, direct or indirect, of prehistoric timber trackways

Is there any geoarchaeological evidence to provide information on the environmental conditions in and around the area of the site during the prehistoric period and, in particular, the Bronze Age?

The peat deposits are likely to preserve pollen grains which can be utilised to reconstruct the past landscape and wider palaeoecology of the area. However, longer peat sequences with greater chronological resolution are present within the borehole cores retained from the geoarchaeological borehole survey.

Is there evidence of peat, waterlogged organic layers or other deposits of potential for past environmental reconstruction on the site? If such deposits are present a contingency will be activated to test for the presence of environmental indicators, such as: seeds, snails, insects, pollen, diatoms and ostracods/foraminifera and to provide dating evidence (radiocarbon).

A 0.6m thick layer of peat was present across the trench extent to a surface height of –0.20m OD. In addition decayed in situ tree root bowls and tree throws were recorded truncating the surface of underlying sandy clay, indicating formation of an alder carr environment.

Archaeology, if it exists on the site, is likely to lie within the natural deposit sequence. What are the characteristics of the natural stratigraphy and can fieldwork refine the interpretation of the natural deposit sequence on the site discussed in the geoarchaeological deposit model (Halsey 2009)?

The trench excavation has refined the local stratigraphy and given greater understanding to the alluvial sequence in particular. The alluvium overlying the peat consisted of a number of discrete layers which may represent fluctuations in groundwater, flooding episodes and periods of landscape stabilisation. These units would be difficult to recognise within the boreholes cores. This information will be incorporated into the wider geoarchaeological borehole assessment.

What are the earliest deposits identified?

The earliest deposit within the trench was the surface of mid grey clay sand, present at *c.* – 0.80m OD and sealed by peat formation. The terminus *ante quem* for the layer is probably Neolithic.

What are the latest deposits identified?

Modern made ground measuring 1.2m thick sealed a historic topsoil and turf horizon. The made ground was probably imported onto the site from a variety of sources across London.

Evidence for prehistoric or post-medieval channels was identified in the deposit model across the area of the proposed borehole survey. Can the date and origin of these channels be clarified and what is their potential for past environment reconstruction?

The trench excavation did not encounter the channel deposits identified in the previous assessment. However a preliminary scan of the boreholes suggests that the channels are present on the western part of the site. The potential of these deposits will be fully assessed in the forthcoming geoarchaeological borehole assessment report.

To what extent can evidence from the alluvial deposits and environmental remains they contain refine our understanding of the past environment of the site and its surroundings?

The alluvium and peat deposits may preserve a range of proxy environmental indicators which can be utilised to reconstruct the palaeoenvironmetal history of the site. The peat will preserve a range of plant macro and micro fossils such as wood, plant remains and pollen, which can reconstruct the local and wider landscape palaeoecology of the site. Micro fauna remains, such as diatoms, ostracods and foraminifera may be preserved in the overlying alluvial deposits. These can be utilised to reconstruct the environment of deposition, rise in river levels, and the migration of the tidal head.

The following research aims could not be answered as the proposed foreshore survey that was to make up a part of the overall site investigation could not be undertaken for safety reasons.

Can we determine the nature of the geology and topography on the foreshore?

Are there any prehistoric artefacts or structures, surviving on the foreshore?

Is there any evidence for palaeo-environmental deposits on the foreshore? If so are the samples taken suitable for dating/pollen/diatom analysis?

Is there any evidence for Roman activity on the foreshore?

Are there any Saxon or medieval deposits / artefacts surviving on the foreshore?

Are structures or artefacts (relating to maritime activity) dated to the post-medieval period preserved on the foreshore. What is the extent of the post-medieval remains on the foreshore?

Will the surviving visible deposits be adversely affected by the proposed development, in terms of changes in river regime?

4.2 General discussion of potential

The evaluation has shown that the potential for survival of ancient occupation surfaces (horizontal archaeological stratification) on the site is low. There is also low potential for survival of natural cut features below the peat, although the geoarchaeological examination of the deposit sequence suggests that a forested land surface existed at the surface of the sand, prior to the development of the peat. The average depth of archaeological deposits where they do survive is likely to be 2–3m deep. Although no datable material was recovered from the alluvial deposits, radiocarbon dating of suitable environmental samples will provide a chronological framework for the deposits recorded in section. Further analysis of the monolith samples will enable a refined and detailed accounting of the channel activity and landscape formation in the site and its immediate vicinity.

The location of the site, at the margins of the Thames floodplain and close to where the Barking Creek enters the floodplain of the Thames suggests that information from the site might provide useful complimentary evidence to that previously obtained from the confluence of Barking Creek and the Thames in the area.

4.3 Geoarchaeological discussion of potential

The deposit sequence recorded and sampled in the trench section may preserve a range of ecofacts which can be utilised to reconstruct the past landscape development and depositional history of the Thames floodplain. The lower peat units are likely to preserve plant macro fossils and pollen remains which can reconstruct the onsite vegetational communities and the changes to the wider landscape palaeoecology. The upper alluvial deposits may preserve molluscs, diatoms and ostracods, which can be utilised to reconstruct the effects of relative sea level rise and the changes in river levels and depositional environments through time. The application of sedimentary techniques such as loss on ignition and magnetic susceptibility may also be able to identify periods of stabilisation in the floodplain and episodes of prolonged soil formation.

Preliminary recording of the cores suggest that longer sequences of organic deposits and peats may be preserved on other parts of the site than those noted in the trench. An initial phase of off-site geoarchaeological evaluation will involve inputting the core and trench data into the previous geoarchaeological deposit model. This will identify distinctive depositional sequences across the Triangle and Rectangle sites, and seek to choose the most representative samples or best preserved deposits from each sequence for assessment.

An initial impression suggests that in the past the site covered a mosaic of diverse floodplain environments, which differs considerably from the ubiquitous floodplain

sequence normally recorded on this part of the Thames floodplain. This may be due in part to the site's position which lies across a confluence of the Thames and River Roding. This is likely to have created a dynamic floodplain environment where the landscape was affected not only by the changes in the fluvial style of the Thames, but also of the Roding. River confluences are highly attractive locations for human activity due in part to the range of resources the adjacent wetlands provide, but also because of the transport possibilities and routes of access the waterways provide. Although tangible archaeological remains were not found in the trench, the deposits sampled will provide clues from which we can reconstruct the past environment, which would have been well known to and exploited by prehistoric communities – helping us better understand activities represented by occupation evidence in the vicinity of the site.

4.4 Significance

Whilst the archaeological remains are undoubtedly of local significance there is nothing to suggest that they are of regional or national importance. A better understanding of the natural stratigraphy would help to reconstruct the past landscape characteristics of the Beckton area and thus contribute to interpretations of the distribution of archaeological remains.

5 Assessment by EH criteria

The recommendations of the GLAAS 1998 guidelines on *Evaluation reports* suggest that there should be:

'Assessment of results against original expectations (using criteria for assessing national importance of period, relative completeness, condition, rarity and group value) .....' (Guidance Paper V, 4 7)

A set of guide lines was published by the Department of the Environment with criteria by which to measure the importance of individual monuments for possible Scheduling. These criteria are as follows: *Period*; *Rarity*; *Documentation*; *Survival/Condition*; *Fragility/Vulnerability*; *Diversity*; and *Potential*. The guide lines stresses that 'these criteria should not...be regarded as definitive; rather they are indicators which contribute to a wider judgement based on the individual circumstances of a case'.[1]

In the following passages the potential archaeological survival described in the initial Assessment document and Section 3.2 above will be assessed against these criteria.

Criterion 1: period
Taken as a whole, archaeology in the Application site is not characteristic of any particular period. The evaluation indicates a multi period site.

Criterion 2: rarity
There is nothing to suggest that any of the likely archaeological deposits are rare either in a national or regional context.

Criterion 3: documentation
There are no surviving documentary records for remains in the area from the Roman period. Whilst there may be considerable contemporary documentation for the later medieval period from *c.* 1300 on, it is unlikely that any of this will be specific enough to relate to individual features.

Criterion 4: group value
None of the likely archaeological deposits are associated with contemporary single monuments external to the site.

Criterion 5: survival/condition
The results above have demonstrated that archaeological remains have not been horizontally truncated, in fact preserved beneath 1.2m of modern made ground deposits.

Criterion 6: fragility
Experience from other sites has shown that isolated and exposed blocks of stratigraphy can be vulnerable to damage during construction work.

Criterion 7: diversity
Clearly, taken as a whole, the archaeological deposits which are likely to be found in the site do not represent a diverse and heterogeneous group of archaeological

[1] Annex 4, DOE, Planning and Policy Guidance 16, (1990). For detailed definition of the criteria see that document. Reference has also been made to Darvill, Saunders & Startin, (1987); and McGill, (1995)

remains of all types and periods. There is no reason to suggest that the diversity *per se* has any particular value which ought to be protected.

Criterion 8: potential
(the term Potential in this context appears to mean that though the nature of the site, usually below-ground resources, cannot be specified precisely, it is possible to document reasons predicting its existence and importance). The evaluation trench has shown that the site contains alluvial deposits between +1.1m OD to – 2.2m OD, with a preserved historic land surface at the top of the sequence. Peat deposits were identified at *c.* –0.25m OD, sealing earlier fluvial clay sands. No anthropogenic deposits or man made structures were identified however. These deposits have potential to preserve evidence of prehistoric and later activity, including wetland archaeology such as trackways or boats. In addition, past environmental remains might survive within the alluvial deposits, from which indirect evidence of past human activity and of the landscape setting in which past activity took place might be inferred.

6 Proposed development impact and recommendations

The proposed development involves the construction of The Lee Tunnel, which aims to connect Abbey Mills Pumping Station and Beckton Sewage Treatment Works. This will follow the route of the existing Northern Outfall Sewer and will be bored through undisturbed geology, at a depth of between 55m and 75m below ground level (bgl). The tunnel itself will not impact on the archaeological resource, but a number of shafts and culverts of various diameters from 3m to 38m will connect with the tunnel, and these are likely to remove alluvial deposits of archaeological interest. Three main shafts are proposed at Beckton. In addition, an extension to the Beckton STW is proposed which includes settlement tanks to be excavated, as well as piled foundations constructed for a power complex, two settled sludge pumping stations and a new jetty, all of which might impact on deposits of archaeological significance. In the instance of the location around evaluation Trench 1 the impact of such redevelopment on the surviving archaeological deposits will be to wholly remove subsurface deposits within the proposed 38m diameter shaft.

The assessment above (Section 5) does not suggest that preservation *in situ* would be an appropriate mitigation strategy. Samples have been taken from the sites that are likely to have significance for reconstructing the past environment, which provided a context for prehistoric and later activity in the local area. Although it is envisaged that the borehole cores from the Rectangle part of the evaluation (Halsey in prep) will provide the most useful sequence for detailed micro palaeoenvironmental work (i.e. pollen, diatoms, and foraminifera), the bulk samples recovered from the trench through the peat will provide larger samples more suitable for statistically viable investigations of the plant macro fossils, and for the recovery of datable plant macro fossils. In addition, the alluvial sequence sealing the peat provides a clear picture of the upper part of the floodplain sequence and may be more suitable than similar deposits preserved elsewhere in the cores for off-site sedimentary techniques (loss on ignition and magnetic susceptibility) on the monolith samples obtained.

The environmental samples taken from the trench are currently being examined off site with the core samples retained from the borehole investigation of the Rectangle part of the site. The results will be combined in a geoarchaeological assessment report (Halsey in prep), which will provide an evaluation of the potential of the samples collected from the site for past environment reconstruction.

The decision on the appropriate archaeological response to the deposits revealed within the site rests with the Local Planning Authority (London Borough of Newham planning dept.) and their designated archaeological advisor (English Heritage Greater London Archaeology Advisor-GLAAS).

7 Acknowledgements

The author would like to thank Nick Butler, Suzanne Burgoyne, and Claire Hallybone from Thames Water for their help in setting up, commissioning and funding the archaeological investigation. Thanks also to David Divers of Greater London Archaeology Advisory Service for his guidance on this project. The author would also like to extend his gratitude to the ground crew from Squibb Demolition for their assistance in the successful completion of the evaluation trench, under occasional periods of difficulty. The MOL Archaeology team comprised the author, assisted by Steve White; environmental sampling was undertaken by senior geoarchaeologist Craig Halsey and geoarchaeologist Tom Hoyle.

8 Bibliography

Cultural Heritage Committee of the Council of Europe, 2000 *Code of Good Practice On Archaeological Heritage in Urban Development Policies; adopted at the 15th plenary session in Strasbourg on 8-10 March 2000* (CC-PAT [99] 18 rev 3)

Divers, D. 1995. Archaeological Evaluation at the Site of the Proposed East London Sludge Incinerator Plant, Beckton Sewage Treatment Works, London E6. Newham Museum Service unpublished client report

English Heritage, 1991 *Management of Archaeological Projects (MAP2)*

English Heritage Greater London Archaeology Advisory Service, June 1998 *Archaeological Guidance Papers 1-5*

English Heritage Greater London Archaeology Advisory Service, May 1999 *Archaeological Guidance Papers 6*

GLAAS December 2008 Lea Tunnel - Outline brief for archaeological work

Halsey, C, 2009 Lee Tunnel, Thames Water, Beckton Sewage Treatment Works, London Borough of Newham. Geoarchaeological Deposit Model. Museum of London Archaeology unpub. report

Halsey, C, in prep Lee Tunnel, Thames Water, Rectangle Site, Beckton Sewage Treatment Works, London Borough of Newham. Geoarchaeological and palaeo-environmental assessment. Museum of London Archaeology forthcoming

Institute for Archaeologists, (IFA), 2001 *By-Laws, Standards and Policy Statements of the Institute for Archaeologists, (*rev. 2001), *Standard and guidance: field evaluation*

Institute for Archaeologists (IFA), supplement 2001, *By-Laws, Standards and Policy Statements of the Institute for Archaeologists: Standards and guidance – the collection, documentation conservation and research of archaeological materials*

Jones, AP, Tucker, ME and Hart, JH, 1999 *The description and analysis of Quaternary stratigraphic field sections* Technical Guide 7, Quaternary Research Association

Lakin, D. 1999 *Romano-British Site at Summerton Way, Thamesmead, London Borough of Bexley*, Archaeologia Cantiana vol 119 311-341

Museum of London, 1994 *Archaeological Site Manual 3rd edition*

Museum of London, 2002 *A research framework for London archaeology 2002*

Museum Of London Archaeology, 2009 Lea Tunnel, Thames Water Beckton Sewage Treatment Works: Method statement for an archaeological evaluation, geoarchaeological investigation and foreshore survey Unpublished report.

Scott Wilson Ltd, 2008 *Lee Tunnel and Beckton STW Extension. Environmental Statement*

Thompson, A, Westman A, and Dyson, T (eds), 1998 *Archaeology in Greater London 1965-90: a guide to records of excavations by the Museum of London*, Archaeol Gazetteer Ser Vol 2, London

Turner, M, D. 1994 Fairlop Quarry: An Archaeological Excavation, Newham Museum Service unpublished client report

9 NMR OASIS archaeological report form

9.1 OASIS ID: molas1-68840

Project details

Project name	Lea Tunnel, Beckton Sewage Treatment works
Short description of the project	A single trench archaeological evaluation was carried out by Museum of London Archaeology (MOLA) on the site of The Lee Tunnel access shaft at Thames Water Beckton Sewage Treatment Works (STW), Beckton, London, IG11. An adjacent geoarchaeological borehole recorded the presence of late Pleistocene gravels at *c.*-2.2m OD (4.5m below present ground level). The surface of (fluvial) sandy clay/clay sand channel deposits of potential late Pleistocene/early Holocene date formed the trench base, at *c.* -0.9m OD. Root bowls and tree bases (probably alder) were recorded truncating the layer along the east face of the trench. A shallow channel, running approximately 2m north-south at the north end of the trench shows a brief episode of fluvial erosion or scour. Deposits of peat were recorded in the trench section and were present throughout the trench extent to a surface height of -0.2m OD. The characteristics of the peat in the evaluation trench reflect its location within, or adjacent to, ancient river channels. Alluvial clays and silts accumulated above the organic deposits, probably during the Iron Age and historic periods which might represent seasonally flooded meadowland or estuarine environments. A compressed layer of topsoil and turf representing historic open grassland survived at the top of the alluvial profile at 1.2m OD. Modern made ground, 1.3m thick sealed the alluvial sequence. The trench showed no evidence of prehistoric human activity or environmental interaction. However, the deposits examined have good potential for reconstructing the prehistoric environment.
Project dates	Start: 28-10-2009 End: 03-11-2009
Previous/future work	No / Not known
Any associated project reference codes	LBT09 - Sitecode
Type of project	Field evaluation
Site status	None
Current Land use	Transport and Utilities 3 - Utilities
Monument type	WATERCOURSE Early Prehistoric
Monument type	PEAT Bronze Age
Monument type	ALLUVIUM Late Prehistoric
Monument type	BURIED SOIL Uncertain
Methods & techniques	'Environmental Sampling','Sample Trenches','Test Pits'
Development type	Service infrastructure (e.g. sewage works, reservoir, pumping station, 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 EAST HAM Triangle site, Thames water Beckton Sewage Treatment Works, Jenkins lane, Beckton
Postcode	IG11
Study area	3000.00 Square metres
Site coordinates	TQ 44525 82200 51.5196999237 0.08331366400470 51 31 10 N 000 04 59 E Point
Height OD / Depth	Min: 4.50m Max: 5.00m

Project creators

Name of Organisation	MOL Archaeology
Project brief originator	Greater London Archaeology Advisory Service
Project design originator	MOL Archaeology
Project director/manager	Stewart Hoad
Project supervisor	Raoul Bull
Type of sponsor/funding body	Water Utilities company
Name of sponsor/funding body	Thames Water

Project archives

Physical Archive recipient	LAARC
Physical Contents	'Environmental'
Digital Archive recipient	LAARC
Digital Contents	'Environmental','Stratigraphic','Survey'
Digital Media available	'Images raster / digital photography','Survey','Text'
Paper Archive recipient	LAARC
Paper Contents	'Environmental','Stratigraphic','Survey'
Paper Media available	'Context sheet','Drawing','Map','Notebook - Excavation',' Research',' General Notes','Photograph','Plan','Report','Section','Survey ','Unpublished Text'

Project bibliography 1

Publication type	Grey literature (unpublished document/manuscript)
Title	Lee Tunnel, Thames Water Triangle Site, Beckton Sewage Treatment Works, London Borough of Newham, A report on the evaluation
Author(s)/Editor(s)	'Bull, R.'
Date	2009
Issuer or publisher	Museum Of London Archaeology
Place of issue or publication	London
Description	A4 spiral bound slip cased, card backed, paper report, colour front cover
Entered by	MOL Archaeology Archive (molas.archive@museumoflondon.org.uk)
Entered on	3 December 2009

Fig 1 Site location

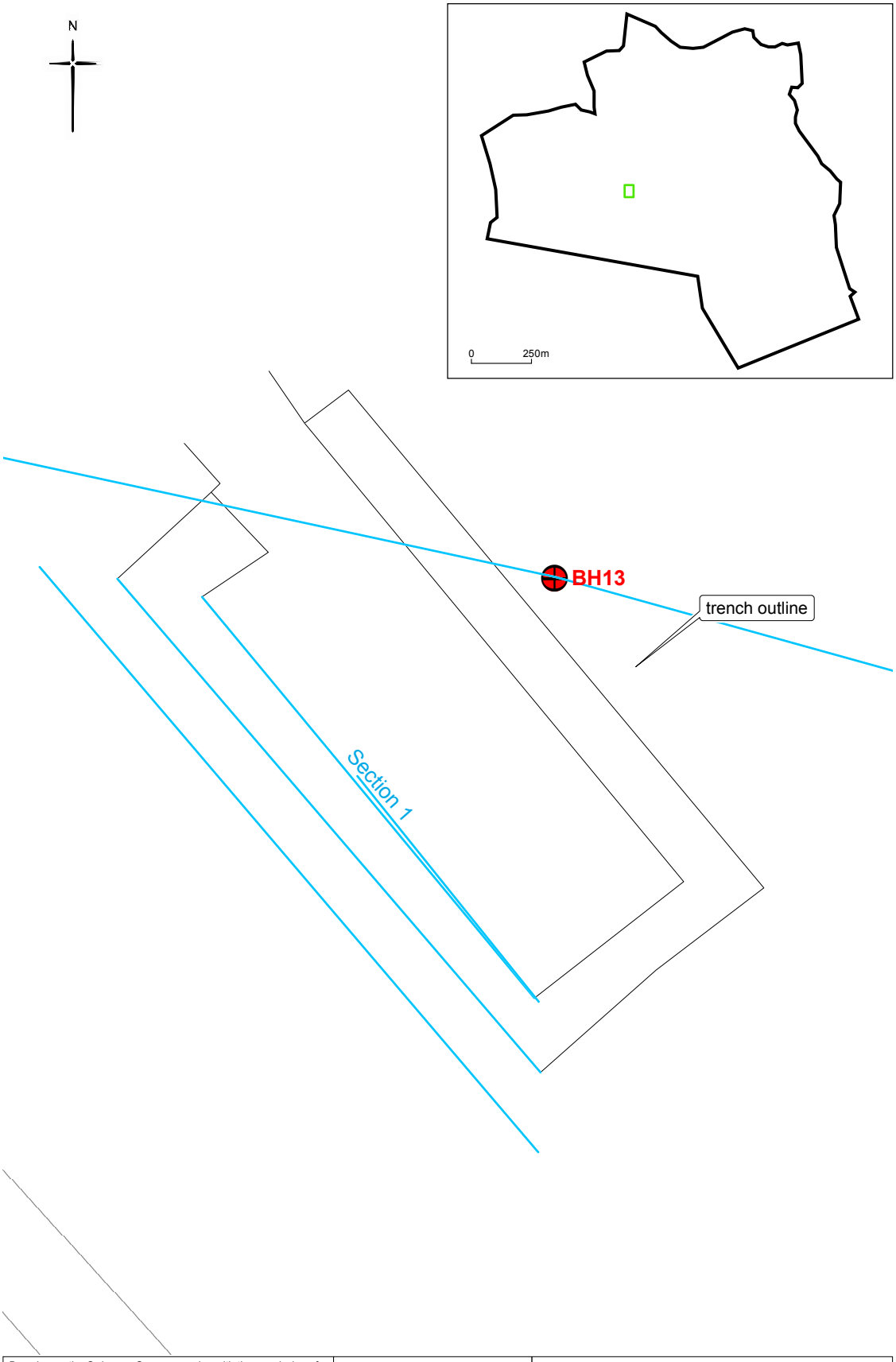

Fig 2 The evaluation trench and Borehole13

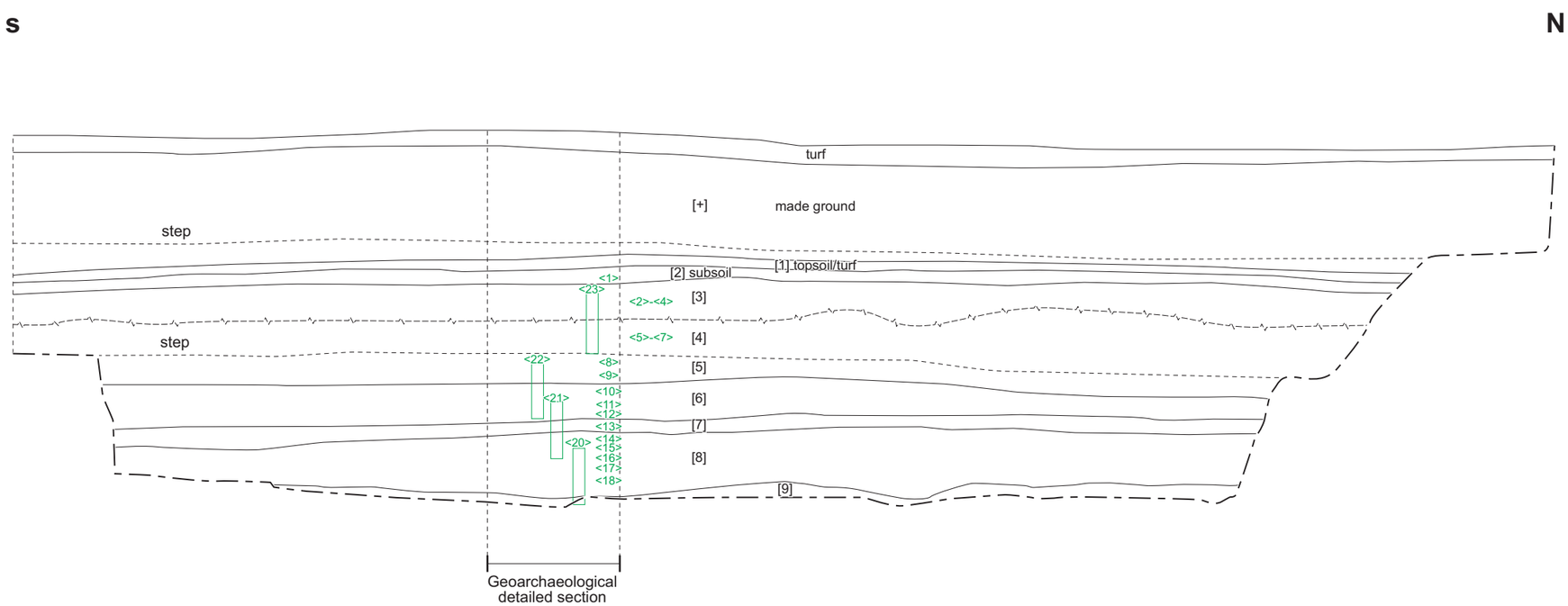

Fig 3 East facing section of the evaluation trench