



Planning, Transport
and Environment

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DEPARTMENT OF TRANSPORT
LONDON REGIONAL OFFICE

A13 ISLE OF DOGS SCHEME PACKAGE
IRONBRIDGE/CANNING TOWN

ENVIRONMENTAL STATEMENT
VOLUME 2

ARCHAEOLOGY REPORT

Issue and Revision Record

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Director Docklands

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1.0 INTRODUCTION

1.1 Background

1.1.1 This report has been prepared in conjunction with the Environmental Statement to present detailed information regarding the archaeological aspects of the Department of Transport's (DOT) proposed scheme to improve the A13 between Leamouth Road and Canning Town.

1.1.2 The A13 Trunk Road is one of the main routes through East London, serving the local communities, Docklands and the industrial and commercial developments on the north side of the Thames, and linking them with the M25. It connects with a number of important routes including the A102 Blackwall Tunnel and the A406 North Circular Road at Barking, where the proposed East London River Crossing link to the A2 Rochester Way would connect. The Ironbridge to Canning Town Improvement forms part of the Department's comprehensive programme of works to improve the A13.

1.2 Methodology

This report is principally concerned with archaeology. The listed buildings are the subject of a separate study, but are noted here as part of the historic context.

1.2.1 The part of the road to which the proposals relate crosses the River Lea from the London Borough of Tower Hamlets in the west to the London Borough of Newham in the east.

1.2.2 The policies of the London Boroughs of Tower Hamlets and Newham require that there should be an assessment of the archaeological impact of the proposed development and construction, in line with the DoE's guidance published in 1990 (Planning Policy Guidance on Archaeology and Planning, PPG16). The archaeological authority advising the London Borough of Newham is the Passmore Edwards Museum, and the London Borough of Tower Hamlets is advised by English Heritage London Division.

1.2.3 The scope of the study is as recommended by English Heritage in their guidance concerning the brief for desk-top studies. The object of an archaeological assessment is to make full and effective use of existing information in the identification and quantification of the need to conserve, study or excavate archaeological sites where such might survive. Desk-top studies should not be obtrusive (ie no below ground investigation should take place) and they therefore offer the most rapid, inexpensive and easily arranged means of obtaining archaeological information.

2.0 SOURCES OF INFORMATION

2.1 Consultations

2.1.1 The sources of information consulted have been:

the English Heritage London Division sites and monuments record
the Passmore Edwards Museum
geological maps
Ordnance Survey maps
other early maps
historical and archaeological publications
air photographs
borehole and trial pit data
the Museum of London
the Royal Commission on Historic Monuments

2.1.2 Consultations have been held with personnel at English Heritage, the Passmore Edwards Museum, the Museum of London and the Royal Commission on Historic Monuments (Survey of London).

2.1.3 The Museum of London Archaeological Service has prepared a report on the borehole information available for the study area, refer to Appendix 1.

2.1.4 A report from the Passmore Edwards Museum is still awaited.

3.0 BRIEF ARCHAEOLOGICAL AND HISTORICAL SUMMARY OF AREA

3.1 Area Description

- 3.1.1 The study area lies athwart the River Lea on the reach called Bow Creek. The river here has developed pronounced meanders with the arms of the loops separated in places by only 60 metres. The Thames is about 750 m away from the Lea bridge as the crow flies but the confluence of the two rivers is about 2 km downstream of the bridge. The ground level is very low and flat, as the whole area is in the flood plain of the Thames and the Lea Rivers. The area is covered with alluvium over gravel, which itself overlies London Clay. The borehole data¹ shows that the alluvium layer is up to 4 m thick, and the gravel is a similar thickness and in one place there appears to be evidence of a buried channel and peat preservation above the gravels.

3.2 Palaeolithic Period

- 3.2.1 The palaeolithic period in this area is represented by chance finds in the gravel, laid down by the rivers which formed the gravel terrace in the last glaciation. Axes were discovered during the excavation of the Blackwall tunnel.

3.3 Mesolithic Period

- 3.3.1 The mesolithic period is also sparsely represented in the east London area. In the early part of the period, when the sea level was considerably lower than today, hunter-gatherer groups probably established seasonal camps along the banks of the Thames, then flowing in a channel now buried by later gravel deposits. In the latter part of the mesolithic period when sea levels rose the area was probably flooded and became marshland at the confluence of the Thames and its tributary. No mesolithic artefacts are known from the study area, although one of the heavy flint implements known as a "Thames pick" was found upstream in the Lea valley.

¹ Mott MacDonald, Oakley Soils and Concrete Engineering Limited - A13 Isle of Dogs Scheme Package, April 1990

3.4 Neolithic Period

- 3.4.1 The neolithic farmers established permanent settlements, and evidence of them has been found on the Thames' banks both down stream at West Ham and upstream at Putney, Twickenham, Brentford and elsewhere. The study area in this period was in the flood plain of the Thames and Lea rivers, and neolithic artefacts are not known there, although evidence of river based activity might be expected.

3.5 Bronze Age

- 3.5.1 The same is true for the bronze age, with the added possibility that in the later part of the period rivers seem to have become the focus of ritual activities as well as serving the usual commercial and economic functions. A considerable quantity of bronze age metal work has been retrieved from the Thames and at least one object has been recovered from the east bank of the River Lea just south of the study area. Further east a small wooden figure - the Dagenham Idol - dug out of the marshes is also interpreted as a ritual deposit. The deposition of the alluvium now covering the gravel terraces probably began in earnest late in the bronze age, as primitive plough marks of the period 2000 -1000 BC have been found under the alluvium at Bermondsey.
- 3.5.2 The late bronze age and the transition to the iron age saw increasing territoriality, and this can be seen in the rise of "hillforts" - defensive settlements - and territorial boundaries. In London there are defended settlements at Wimbledon Common, Carshalton, Enfield, Keston and Ilford. The latter site on the River Roding about 5 km east of the study area occupies at least 19 hectares. The study area has no evidence of iron age activities, but rivers and marshes seem to have continued to attract ritual depositions so there is the potential for discoveries from the flood plain silts.

3.6 Roman Period

- 3.6.1 The Roman period saw the establishment of Londinium as a flourishing city in the area utilised by the later medieval City, with a suburb at Southwark, and an outpost at Old Ford upstream of the study area on the River Lea. A signal station is known at Shadwell just east of the city and there is the suggestion that the terrace of dry ground north of the Isle Dogs may have been used by a Roman road leading to a settlement in the East Ham area, using a ford in the study area.

3.7 Saxon Period

- 3.7.1 In the Saxon period the area appears to have been marsh. The area east of London is named Stepney in the domesday survey and refers to the whole stretch between the city and the River Lea. East of the River Lea was Ham. Old Ford and Stratford appear as named places in Saxon documents.

3.8 Medieval Period

- 3.8.1 The earliest evidence for settlement near the study area is in the later medieval period when the village of Poplar with its manor house were situated on the gravel terrace above the marshes of the Isle of Dogs. The lowest bridging point of the River Lea in the medieval period was at Bromley, where a settlement grew up which included a Benedictine convent as well as a manor house. The remainder of the large medieval parish of Stepney was open country, with the study area being a marsh.
- 3.8.2 The Armada scare in the 16th century led to the construction of a fort at the mouth of the River Lea. No evidence for it or any related services have come to light.

3.9 Development of the Docks

- 3.9.1 In 1612-14 the East India Company built new docks at Blackwall to overcome the congestion and other problems associated with the Port of London facilities. This led to the development of Poplar in the latter half of the 17th century. The West India Docks were built in 1799-1802 and the East India Docks in 1805-6. The Commercial and East India Dock Roads bypassing Poplar High Street were built to link the new docks with the city. The increase in population in the area was such that Poplar was made a separate parish in 1817.
- 3.9.2 The River Lea, was crossed by a toll bridge, the New Iron Bridge shown on Cruchley's 1829 map. This had four piers and was sited about 50 m to the south of the present road crossing. Its site is presently occupied by a double gas pipe bridge. Two subsequent crossings can be seen, one on either side of the Ironbridge site. The one nearest the present road bridge is a late 19th century iron pipe bridge with decorated brick abutments. The further bridge is a redundant railway bridge, dating from the mid-19th century. The docks became a focus of shipbuilding in the 19th century, reaching their apogee around 1900, but declining subsequently because of competition from the Clyde and elsewhere.

3.9.3 The area to the north of Barking Road west of the River Lea remained marsh until the middle of the 19th century when it was drained for market gardens to serve the metropolis. Mackintosh Farm was built about 200 m north of Barking Road, now the site of the gas works, and cottages sprang up at the foot of the Ironbridge and along the north side of Barking Road. Around 1865 the present road pattern north of Barking Road was laid out. The east side of the River Lea was also marsh with wharfs along the river. The area to the north was called Westham Abbey Marsh and the area to the east and south was called Plaistow Level, after the nearest settlements on the edge of the marsh. It was not until the early 19th century that the levels on the east side of the River Lea began to be drained and houses were built at Canning Town for the workers in the docks and the shipbuilding industry.

3.9.4 The present road bridge was built in the 1930's, and the old Ironbridge was dismantled. The railway network crossed the River Lea from the Great Eastern Railway Wharf (later the London and North Eastern Railway Wharf) west and south of the bridge to join the Great Eastern Railway (N. Woolwich Branch) on the east side of the River Lea, squeezed into the narrow space between the road and the riverside north of the meander. The Lea River railway bridge seems to have become defunct by 1937.

3.10 Recent Development

3.10.1 The area is currently the scene of considerable activity, with the docklands light railway already occupying the line of the old railway south of the road bridge, and works proposed for the Jubilee Line extension in the south west part of the study area. These activities are related to the general redevelopment of the docklands over the last decade.

4.0 THE ARCHAEOLOGY OF THE STUDY AREA

4.1 Borehole Data and Archaeological Evidence

- 4.1.1 The study area is entirely within the flood plain, and as such any surviving prehistoric evidence would be beneath the alluvium. None has been located to date and the prediction of the location of surviving material is practically impossible. Borehole information¹ was made available by Mott MacDonald, for locations refer to Figure 1. This information shows the interface between made-ground and alluvium occurring at depths varying between 2 m above OD and 1 m below OD. The alluvium deepens to about 3 m below OD towards the east and localised pockets of peat frequently occur. The interface between the gravel and the London Clay occurs mainly between 5 m and 6 m below OD, with an indication of an early buried channel cut into the clay towards the eastern end of the proposed works.
- 4.1.2 The peat layer is probably prehistoric, and it may contain environmental evidence which would illuminate this little understood period of London's development, particularly the area near the River Lea where bronze age levels seem to survive. East of the River Lea there is the possibility that earlier channels exist.
- 4.1.3 There is no material evidence for a Roman crossing point here although there is the suggestion of a minor road in the vicinity. In the Saxon, medieval and post-medieval periods the area was marsh with no evidence for settlement or utilisation for any purpose other than agriculture, which would leave little archaeological trace. In the modern period the construction of the East India Dock took place on the extreme west side of the study area. A listed (Grade II) wall of the Great Eastern Railway Wharf survives along Leamouth Road. Part of the south wall leading to the west side of the old Iron Bridge survives north of the pylon enclosure. No other significant historical features survive above ground.

5.0 THE EFFECT OF THE PROPOSALS

5.1 Construction

- 5.1.1 The aspects of the proposals which may have an impact on the archaeology of the area are the piles for the bridge abutments and piers approximately 20 and two areas of excavations at the western end. The piles at the east end are in the vicinity of the buried channel as indicated by the borehole data. Analysis of these deposits will be required.
- 5.1.2 The bridge piers will be supported on driven piles 600 mm to 900 mm diameter at 2 m - 3 m centres over an area of 5 m x 20 m under the pile-capping. The procedure may also require excavating up to 3 m deep on the site of the piles, which in some areas will penetrate the alluvium and impinge on the prehistoric layers. Agreements made between York City Council, English Heritage and Ove Arup have been generally accepted as a model for situations where piling is proposed, and it is understood that up to 5% loss due to piling is acceptable in normal circumstances. At Canning Town the calculation is difficult because the total area which is to be used in the equation is unclear. If the area under the new road is taken as the "site" then the piling, as understood at present, will damage only about 3% of the underlying deposits, and so extensive evaluation may not be justified.
- 5.1.3 Where preparatory pit digging is required, which may penetrate to archaeological levels, evaluation would be expected in advance of construction.

6.0 RECOMMENDATIONS

6.1 Areas of Archaeological Concern

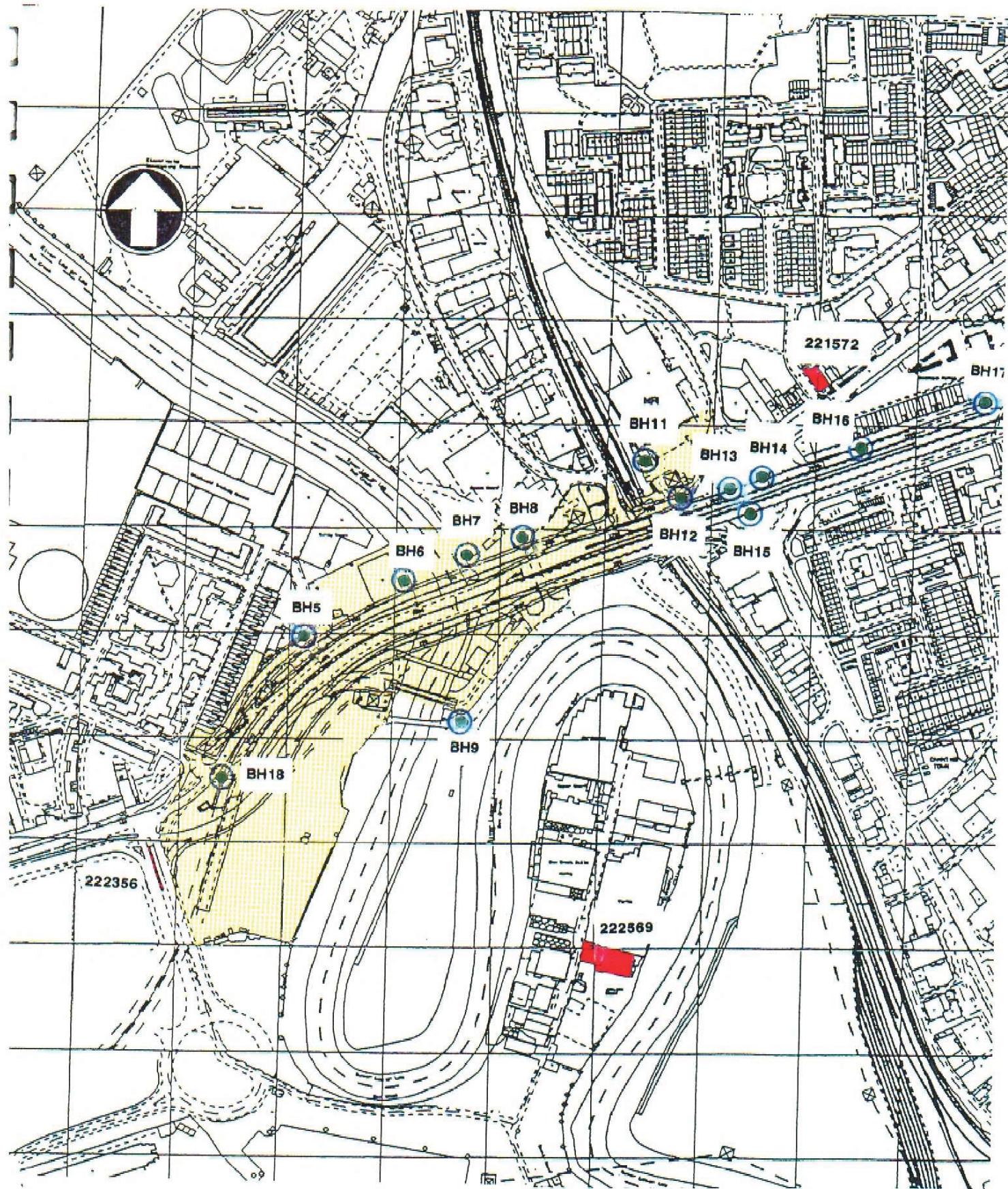
- 6.1.1 There are two principal archaeological concerns. The first is the environmental material, which being waterlogged will preserve organic material, both anthropogenic and natural. The second area of concern is the possibility of historic evidence related to the Armada fort.

6.2 Analysis of Environmental Material

- 6.2.1 The analysis of the environmental material should be the subject of a research design related to current concerns in this discipline. The date of the formation of the possible buried channels should be sought, together with information about the environment - including climate, flora and fauna - prevailing at the different periods represented by the material. Any evidence for human activity, either in the form of artefacts or in the modification of the natural environment should be considered.
- 6.2.2 Such research would encompass macroflora analysis, palynological (pollen) studies, C14 determinations on organic deposits, and the study of material for insect and parasite remains, as well as artefactual studies if appropriate. The results should be related to the ongoing environmental research being carried out in London.
- 6.2.3 The procedure will be for archaeologists to excavate trial pits well in advance of construction in order that any significant discoveries can be followed up appropriately. In addition, archaeologists should observe any excavations for piling or cuttings, with samples being taken for laboratory analysis.
- 6.2.4 Any geotechnical or ground survey work involving the excavation of trial pits or boreholes should be monitored by archaeologists.

6.3 Historic Evidence

- 6.3.1 The area of larger excavations at the western end of the proposals should be evaluated to establish the possibility of surviving historic riverside activity. The area is currently a derelict area with dumps, excavations and ancillary works related to the other road building activities. The evaluation should consist of trenches along the line of the proposed road cutting, of sufficient size and depth to establish the presence/absence, survival, date, status, and location of any archaeological remains.



Legend



221572

Listed Building (Grade II)



BH6

Borehole locations



Area of road improvements

project

A 13 CANNING TOWN

title

ARCHAEOLOGICAL CONSTRAINTS

project number

R2073B

drawing number

FIGURE 1

scale

1:5000

date

SEPTEMBER 1992

The whole area of the plan is designated as an Area of Archaeological Significance by the planning authorities.

museum of
LONDON



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David Freke
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30 September 1992

Dear David

A13 Iron Bridge - Canning Town Project

I have had a look at the borehole data sent to me by Frank Meddens of the Passmore Edwards Museum. Those from the western end of the site look to have very little environmental potential. Those adjacent to the river and under the roundabout are more promising and unlike other sequences we have sampled or observed. The date of the deposits is a particular problem and any evaluation must include radio-carbon dates. My attached report suggests two sample locations from which palaeoenvironmental samples would be warranted, although I don't have the information to relate these to the ground reduction or piling works.

The post-excavation requirements of this project must largely rest upon the results of the radio-carbon dates. Similar dates would suggest only one sequence requires study, and for some periods further work may not be felt necessary.

I hope this is of some use to you.

Yours sincerely

James Rackham
Environmental Manager

GREATER LONDON ENVIRONMENTAL ARCHAEOLOGY SERVICE

28 September 1992

A13 East India Dock Road Improvement

An assessment of the Palaeoenvironmental potential of the deposits based upon the commercial borehole records.

The records of 18 boreholes taken by Oakley (Soils & Concrete Eng. Ltd) were studied for the information they afforded on the buried deposits in the area of the road improvement.

The typical sequence was London Clay, overlain by terrace gravels, capped by alluvial sands and clays, with varying depths of made ground and fill above.

There are substantial variations in the reduced heights for the surface of the London clay and that of the gravels indicating a varying sub-surface topography and earlier erosional influences. Alluvial deposits are exposed in all boreholes (of those not aborted) except BH 4 where the gravels lie immediately under the made ground deposits.

Blackwall Tunnel Approach

The four bores in this area produced the smallest depth of alluvial deposits with only BH 3 yielding alluvial clays below Ordinance Datum (OD). The field descriptions are suggestive that the clays are oxidised, and organic preservation is probably poor. Alluvial deposition at these heights is almost certainly of relatively recent origin, perhaps in the last 2000 years.

The palaeoenvironmental potential of these deposits is probably poor although detailed recording of the interface levels between the gravels and alluvium may be a useful tool for mapping the ancient topography near the mouth of the Lea Valley.

Lanrick Road to Wharfside Rd (& Essex Wharf)

These four cores section (east-west) the current course of the Lea. BH 6 was aborted. The surface of the terrace gravels drops to over -2.00 OD in BH 7 and all the bores produced a much longer alluvial sequence, up to 4m at Essex Wharf. These deposits lie so close to the current river channel that it is likely that they have been subjected to a number of erosional and depositional episodes which could have removed or disturbed older sequences while laying down new deposits. The depositional sequence is therefore likely to contain a number of hiatus' and the OD heights of the deposits cannot, with reliability, be used to suggest their age. The presence of an amorphous peat at the base of the alluvial sequence in BH 7, at an OD height consistent with Bronze Age peat deposits exposed elsewhere on the Thames may be unrelated. It would however permit radio-carbon dating, and the general presence of organic material and wood fragments in the organic clays indicates that it might be possible to establish a chronology, using radio-carbon, for the sedimentary sequence in this area.

The general indication of preserved organic material, fibres, wood, and shells indicates that the sediments at least have the potential for yielding palaeoenvironmental data. This

would only be of use with a chronological framework and any work would therefore demand a radio-carbon or sediment dating programme (using Optical and Paleomagnetic dating). The deposits, particularly those above OD are likely to have been laid down within the historic period.

Canning Town Flyover and roundabout

In this area (Boreholes 11-17) the surface of the terrace gravels reaches its lowest levels, upto 3.5m below OD, and any significant alluvial deposition above OD appears to have been truncated or disturbed. The alluvial deposits therefore represent up to 3.8m of silty clays with organic inclusions. These deposits appear from the records to have a larger organic component and in BH 16 an amorphous peat, grading into a silty clay, of 2.6m is recorded. Adjacent bores at 14 and 15a are also rich in organic inclusions. The organic sequences particularly are perhaps less likely to include hiatus' and these deposits may include a comparatively undisturbed palaeoenvironmental sequence during the deposition of the organic sediments. On analogy with other deposits on the Thames system this could represent deposits laid down in the Bronze Age but with the River Lea so close they could easily lie in an earlier channel of unknown date.

The organic survival in these deposits clearly indicates that it has a potential for palaeoenvironmental study.

Unlike peat horizons exposed elsewhere on the Thames system, which are of a fibrous and often woody peat that formed as a result of the Tilbury IV marine regression when previously inundated areas became marshy, the field descriptions of the two peats located here suggest that these are gyttja like organic sediments that might have formed underwater in still water around reed beds. In none of the bores is there any evidence to suggest the Tilbury IV regression phase of the River Thames which is normally reflected by this fibrous and woody peat horizon. As such there is no evidence that the bores have cored deposits that became exposed, and therefore available for human occupation, during this period of lower sea level.

Three points accrue from these considerations.

1. There is little likelihood of any prehistoric occupation horizons within the alluvial deposits.
2. The date of the deposits is largely unpredictable and a programme of radio-carbon and other dating techniques would be required to establish the chronology of the sediments.
3. The alluvial deposits in the area between Lanrick and Wharfside Rd may well have been deposited at a completely different time to those in the Roundabout area.

Recommendations

It is suggested that a sequence of samples for macro- and microscopic analyses are taken from the peat and clay deposits (approx. 3-3.5m of deposit) in the area of Borehole 16. These should be accompanied by a sampling programme for chronological analysis that should include Radio-carbon dating samples and sediment samples for palaeomagnetic or Optical dating where appropriate.

A second sample section should be collected from deposits in the area of Borehole 7 (approx. 3.5m of deposit) with similar chronological dating requirements.

General records of the depth and character of the alluvial deposits should be made wherever possible to help elucidate the prehistoric topography of this important area.

The sampling is likely to be most effective if the archaeological scientists can gain access to an exposed section of the deposits.

An assessment should concentrate primarily upon the quality of survival of pollen in the deposits and the potential for this and other biological remains, particularly molluscs, seeds and arthropod fragments, to allow a reconstruction of local vegetational and environmental conditions during the period of deposition. Single dates should be obtained from both sequences during the assessment, and prior to further post-excavation work.

Arrangements should be made to ensure that a submission for funds to conduct the detailed post-excavation analysis of the sediments may be made if the assessment and radio-carbon dates indicate that such is justified.

James Rackham

28.9.92