Deephams Sewage Treatment Works (Aztec 406),
Edmonton, London Borough of Enfield

A Post-Fieldwork Assessment
for Kennet Properties plc

by Steve Ford
Thames Valley Archaeological Services Ltd

Site Code PLK01

July 2002
Summary

Site name: Deephams Sewage Treatment Works, Ardra Road, Edmonton, London Borough of Enfield (Phase 2)

Grid reference: TQ 3580 9300

Site activity: Evaluation

Date and duration of project: 29th May–19th July 2001

Project manager: Steve Ford

Site supervisors: Graham Hull, Joanna Pine

Site code: PLK01

Area of site: 16.5ha

Summary of results: No archaeological remains were recorded. Two phases of evaluation encountered palaeoenvironmental deposits in the form of peaty material and waterlogged organic remains, and located the courses of ancient water channels. These deposits were found to be deeply buried beneath modern made ground and alluvium.

Monuments identified: None

Location and reference of archive: The site archive is presently held by Thames Valley Archaeological Services Ltd, 47–49 De Beauvoir Road, Reading, Berkshire, RG1 5NR. It is anticipated that the archive will be deposited with the Museum of London in due course.

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Report edited/checked by: Steve Preston 15.7.02
Joanna Pine 22.7.02
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GLSMR Summary
Deephams Sewage Treatment Works (Aztec 406),
Edmonton, London Borough of Enfield

by Steve Ford

Report 00/43d

Introduction
This document outlines the potential for further analysis and fieldwork arising from two phases of archaeological
evaluation, watching brief and a desktop assessment (including an examination of borehole logs) at the former
Deephams Sewage Treatment Works off Ardra Road, Edmonton, London Borough of Enfield. Research aims
that might be addressed by further analysis are identified. The aim of this report is to consider the scope for
further fieldwork on the site and further analysis of findings to date. The data on which these conclusions are
based has been presented in the desktop study (Lewis 1995) Phase 1 evaluation report (Pine 2001), Phase 2
evaluation report (Hull and Ford 2001) and a summary (Ford 2002), all of which have been deposited with the
Greater London Sites and Monuments Record.

The site comprises a 16.5 ha parcel of land within the former Deephams Sewage Treatment Works accessed off
Ardra Road, Edmonton (TQ 3600 9300). The site lies on the floodplain of the river Lea. The southern parts of
the site comprised former slurry lagoons surrounded by earthwork bunds. The sludge lagoons were backfilled
using the earthwork bunds as fill material so as to bring the finished level up to the same as the rest of the site.
The remainder of the site comprised various facilities mostly covered by hard standing. For marketing and
development purposes the site has been subdivided into three areas 1A, 1B and 2 (Fig. 1).

Outline planning permission had been granted to Kennet Properties plc by the London Borough of Enfield
(TP/93/0244) has been obtained for the construction of commercial units. The consent is subject to two
conditions (18 and 19):

Condition 18:
A detailed archaeological study shall be prepared for the site, broken down by component areas
and particularly taking into account previous ground disturbance, bore hole evidence and an
assessment of the ground pollution in relation to the levels of archaeological potential. The study
shall identify areas where field evaluation might be achieved and any further evaluation required.
No development shall take place until the study and a written scheme of investigation has been
submitted and approved by the Local Planning Authority and implemented in accordance with the
approved details by an investigating body of recognized standing.

Condition 19
That details of the design of the foundations of any proposed buildings shall be submitted to and approved by the Local Planning Authority prior to the commencement of the development.

Greater London Archaeological Advisory Service (English Heritage) provide the planning advice to the Borough relating to archaeology and heritage.

The archaeological potential of the site was highlighted by a desktop assessment (Lewis 1995). Two phases of field evaluation have been carried out to assess this potential by providing field data. The evaluation were carried out by Thames Valley Archaeological Services Ltd (Pine 2001; Hull and Ford 2001);

As a result of likely damage to or destruction of archaeological deposits during construction, a formal program of archaeological evaluation was requested for the site. This followed a specification approved by Mr Rob Whytehead, of the Greater London Archaeological Advisory Service, the archaeological adviser to the Borough. The English Heritage Regional Scientific Advisor (Ms Jane Siddell) was consulted during the preparation of the specification(s) for the project and visited the site during the first phase of evaluation. This is in accordance with the Department of the Environment’s Planning Policy Guidance note Archaeology and Planning (PPG 16, 1990) and the Borough’s policies on archaeology, in order to begin the process to satisfy the archaeological condition placed on the planning permission.

The fieldwork was carried out under the supervision of Graham Hull, Joanna Pine and Steve Hammond with the assistance of Clare Challis, Lisa Hardy, Paul Lambert and Andy Taylor. The two phases of evaluations took place during May and July 2001 and two phases of watching brief took place in January 2001 and January 2002.

The archive is currently held by Thames Valley Archaeological Services Ltd but it will be deposited with the Museum of London in due course. The site code assigned by the Museum is PLK01 and the accession code will be assigned on deposition.

Archaeological background

Our knowledge of prehistoric sites for the early post-glacial period, limited though it is, shows that they are most often represented by dense clusters of struck flints, which are of restricted spatial extent. This type of site is difficult to locate with a low sample fraction, especially when the sample also consists of a small number of sampling units (i.e., in this case, trenches). Upper Palaeolithic/Mesolithic deposits most frequently take the form of dense but spatially limited clusters of struck flint, possibly with faunal remains and hearths present. The
likelihood is that the densest component of individual clusters will be at least 10m in diameter with possibly several overlapping foci occupying areas of up to 20m across. This type of evidence has been revealed at open air sites (as opposed to cave sites) such as Hengistbury Head, Dorset (Barton 1992, 101) and, in a similar geological setting to Deephams, at Three Ways Wharf, Uxbridge (Lewis et al. 1992, 249).

The deposits of peat and alluvium identified from borehole logs and discussed in the desktop study for the site (Lewis 1995) clearly demonstrated the survival of a buried early riparian landscape, one which could well have been exploited in early post-glacial times. A recent review of archaeology in Greater London (MoLAS 2000, 56) has again highlighted our lack of knowledge of the period spanning the Upper Palaeolithic to Early Mesolithic transition, but has pointed out the high potential for the buried landscapes of this general period within the valley of the Thames and its tributaries such as the Lea. The location and excavation of deposits representing occupation or task-specific sites of these early periods, combined with potential organic preservation and sources for palaeoenvironmental reconstruction, are important national research objectives (EH 1991; 1997, 46).

**Desktop study and borehole assessment**

Preliminary archaeological work carried out in 1995 to address these conditions was non-invasive and comprised a desktop assessment and a detailed examination of geotechnical information from boreholes and trial pits (Lewis 1995). The desktop study assessed the site in terms of previously recorded information for the environs of the site and highlighted the significance of this location for the presence of archaeological deposits especially for earlier prehistoric periods. The borehole data assessment noted the presence of peat buried beneath alluvium. The underlying gravel (which is the surface on or above which archaeological deposits are expected to occur) was noted to undulate such that in times of flood, gravel ‘islands’ were formed. Such islands were often preferred for occupation by early prehistoric peoples.

The borehole data comprised numerous readings from surveys which were located both within and beyond the site and which overlapped in extent. At least one set of surveys did not contain information relating to heights above Ordnance Datum and use of this data was extrapolated from other leveled logs located nearby. The data was analyzed using wire mesh and contour plots with an east west cross section across the site. The data was used to indicate the surface of various strata on the site including the London Clay, gravel, peat and alluvium.
For the site itself there are a large number (c. 35) of readings for the northern half (Sites 1A and 2), none for the southern half (Site 1B) but a large number (c. 20) on land beyond the southern boundary. The contour plot of the surface of the gravel (Lewis 1995, fig 10) shows relatively small variations in height across the site of between 9m AOD in the north west (Site 2) to 8m AOD in the south (Site 1B). The plots do suggest the presence of raised areas- islands or ridges in the north part of the site to the north west and north east with some close-spaced contours. The southern part of the site is depicted as being relatively featureless but this is almost certainly a result of contour smoothing due to a lack of boreholes date from this area.

A second figure (Lewis 1995, fig 11) shows a distribution of organic (peat deposits). These are mostly derived from the boreholes located beyond the southern margins of the site but the extrapolated line includes a part of the southern (Site 1B) area. Contour surveys of the surface of the London Clay beneath the gravel, and alluvium are presented but have little bearing on the archaeological potential of the site.

**Original project objectives**

The purpose of the phase 1 evaluation was to provide preliminary information about the broad distribution of relevant archaeological and palaeoenvironmental deposits across the site and to determine the date, nature, extent and state of preservation of these deposits. This information was to inform a mitigation strategy when details of the location and foundation of proposed new structures were available. It was intended that areas of potential highlighted by this first phase of work will then be targeted by a further evaluation.

The specific research aims of the phase 1 evaluation were;

a) To determine if archaeologically relevant layers have survived on site given that parts of the site have been heavily developed.
b) To determine if archaeological deposits of any period are present.
c) To determine if deposits have survived on the site which may be a valuable source for palaeoenvironmental reconstruction.
d) To determine the depth at which archaeological deposits are present and whether these can be preserved *in situ* by a foundation design solution.

The agreed scheme was to comprise the excavation of seven trenches, 40m long and 3m wide at their base. The provisional trench locations were influenced by a combination of the following factors:

a) To target those areas of the site where the model of the predicted subsurface contours (Lewis 1995) indicated the presence of infilled channels and adjacent areas of higher ground which may have been preferentially settled;
b) To provide spatial coverage of the site as a whole as deposits of archaeological interest may be present throughout the landscape.
c) To avoid known areas where deep truncation of the relevant underlying strata has occurred in recent times and to avoid areas of contamination.
The two main objectives of the Phase 2 evaluation in addition to the general objectives outlined in the Phase 1 evaluation were:

1) To achieve a spatial coverage of the whole of the site of the slurry lagoon areas

2) To implement a sample size, trench size and configuration (sampling frame) that would maximize the chances of discovery and identification of small sites comprising lithic artefact scatters.

**Fieldwork results**

*First watching brief*

In January 2001 a watching brief was maintained on the final stages of the removal of the sludge from the two lagoons that form the southern part of the site (Site 1B). No formal report was presented and the negative results were outlined in letter form (2nd May 2001). Removal of the sludge exposed the surface of the alluvium without much, if any truncation. No evidence was recovered to suggest previous truncation of any this alluvium in these areas and it is considered that this alluvium may well be more or less at the same level as that in existence prior to the construction of the slurry lagoons. The alluvium was largely intact with little evidence for punctures through to the underlying gravel.

*Phase 1 evaluation*

In Spring 2001 a first phase of evaluation trenching was carried out (Pine 2001) which placed trenches across the whole proposal site but at a low density. The 11 trenches dug were between 5.3 and 54.2m long and between 2m and 3.6m wide. The trenches were partly located relative to the information provided in the assessment of the borehole data with regards to the presence of gravel islands which might have been preferentially occupied in prehistoric times. These trenches did not reveal any archaeological deposits or finds of interest but did record the presence of early post-glacial peat deposits buried beneath alluvium. The formation of the peat deposits was determined by radiocarbon dating, the results of which were presented in the second report (Hull 2001). Archaeologically relevant levels were found to be deeply buried beneath made ground (0.6-0.9m) and alluvium for the northern part of the site. The underlying gravel was found to be present at a height of 10.06m AOD and 9.65m AOD at the north end of the site with nearby areas at a height of 7.3m. For other parts of the site a height range was present between 7.4m and 8.8m (Fig. 2). As anticipated from the borehole data and from a knowledge of the nature of gravel deposition, the gravel undulated, with some areas perhaps of sufficient height differentiation to be regarded as islands.
**Phase 2 evaluation**

In Summer 2001 a second phase of evaluation was carried out on the site which exhaustively examined Site 1B (Hull 2001). 121 trenches were dug which were nominally 6m long and 1.8m wide. The levels on each trench were, as expected within the range already produced by the first phase evaluation (9.06-6.69m AOD) (Hull 2001, Appendix 1). Some areas of the site were consistent lower than elsewhere suggesting the presence of wide but shallow channels present. This evaluation trenching failed to locate any archaeological deposits or finds of interest and this part of the site can now be regarded as `written off'.

Three radiocarbon determinations were made on samples submitted to Kiel University radiocarbon laboratory as detailed below. The samples were collected during the first phase of evaluation.

**Table 2: Radiocarbon dating summary**

<table>
<thead>
<tr>
<th>Sample</th>
<th>Date (BP)</th>
<th>Calibrated date BC, 1 sigma</th>
<th>Calibrated date BC, 2 sigma</th>
</tr>
</thead>
<tbody>
<tr>
<td>KIA 14505 Birch wood from in situ root bole on gravel surface in Trench 11.</td>
<td>6870 ± 46</td>
<td>5790–5716</td>
<td>5839–5817</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>5813–5661</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>5646–5644</td>
</tr>
<tr>
<td>KIA 14506 Peat 8.52m AOD in Trench 5.</td>
<td>3802 ± 48</td>
<td>2296–2195</td>
<td>2456–2446</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2174–2143</td>
<td>2431–2422</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2404–2360</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2354–2130</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2082–2044</td>
</tr>
<tr>
<td>KIA 14507 Peat from 8.32m AOD in Trench 5.</td>
<td>7485 ± 40</td>
<td>6404–6333</td>
<td>6435–6231</td>
</tr>
<tr>
<td></td>
<td></td>
<td>6315–6251</td>
<td></td>
</tr>
</tbody>
</table>

The sample from the birchwood (KIA 14505) rooted on the top of the gravel in Trench 11 provides a date at which this area of the gravel was dry land. Presumably the survival of this root by waterlogging indicates an increasingly wet environment shortly after this time. The sample from the basal level of peat (KIA 14507) in Trench 5 indicates that lower lying areas of the site were prone to waterlogging at an earlier date than the gravel on which the birch tree stood. This reading is somewhat younger than the provisional estimated date provided by a rapid assessment of the pollen presented in the first stage evaluation (Pine 2001, 7–8) but is nevertheless within the range of expectation.

The reading from the upper level of the peat (KIA 14506) is much younger than expected and this date is inconsistent with the composition of the pollen spectra at this point. Following discussion with Dr Michael Keith-Lucas, Reading University Department of Plant Science, it seems most improbable that 4000 years of peat growth could be condensed to within only a 0.2m thickness of build-up. The most plausible suggestion is that this date reflects the presence of plant species growing on top of the peat/alluvium which has contaminated the sample with invasive rootlets.
A request was made on 29th August 2001 to Mr. R. Whytehead of English Heritage to advise the local planning authority that a partial discharge of the planning conditions could now take place.

Second watching brief
In December 2001 a watching brief was maintained on remediation works on the north west portion of the site (site 2). This observed extensive truncation of the alluvium, and in places, the underlying gravel. No formal report was presented and the results were outlined in letter form (25th February 2002). This letter also requested of Mr. Whytehead, on the basis of the watching brief observations, earlier phase 1 evaluation results and records in the Thames Water Archives, that he advise the planners local planning authority that a partial discharge of the planning conditions could now also take place for the Site 2 area.

Four test pits were dug, none of which revealed alluvium in contrast to adjacent evaluation trench 1. The gravel was found to be present at 9.5-7.3m. If the alluvium has been removed from above the gravel, the ephemeral nature of any deposits of this early date are likely to have been severely damaged or destroyed.

Adjacent areas to the test pits had been heavily disturbed and land filled.

Summary of the significance of the data
The specific research aims of the two phases of evaluation were;

a) To determine if archaeologically relevant layers have survived on site given that parts of the site have been heavily developed. Archaeologically relevant layers have survived on much of the southern part of the site (Site 1B) and partially so to the north (Sites 1A and 2).

b) To determine if archaeological deposits of any period are present. No archaeological deposits or finds of significance have been found.

c) To determine if deposits have survived on the site which may be a valuable source for palaeoenvironmental reconstruction. Rich deposits of value for palaeoenvironmental reconstruction have been found on parts of the site, with less rich deposits elsewhere.

d) To determine the depth at which archaeological deposits are present and whether these can be preserved in situ by a foundation design solution. The archaeologically relevant levels are deeply buried by both made ground and (relatively) recent alluvium.

The agreed scheme was to located phase 1 trenches in specific positions influenced by a combination of the following factors:

a) To target those areas of the site where the model of the predicted subsurface contours (Lewis 1995) indicated the presence of infilled channels and adjacent areas of higher ground which may have been preferentially settled; The evaluation has confirmed the presence of higher and lower areas of gravel which might be considered as reflecting the presence of gravel islands surrounded by shallow channels. No archaeological finds or deposits were recovered from any of these locations.

b) To provide spatial coverage of the site as a whole as deposits of archaeological interest may be present throughout the landscape. This was successfully carried out but no archaeological finds or deposits were recovered from any of these locations.
c) To avoid known areas where deep truncation of the relevant underlying strata has occurred in recent times and to avoid areas of contamination. Some areas of deep disturbance were nevertheless identified.

The two main objectives of the Phase 2 evaluation in addition to the general objectives outlined in the Phase 1 evaluation were:

1) To achieve a spatial coverage of the whole of the site of the slurry lagoon areas. This was more or less carried out according to design.
2) To implement a sample size, trench size and configuration (sampling frame) that would maximize the chances of discovery and identification of small sites comprising lithic artefact scatters. This was carried out as intended but failed to locate any archaeological finds or deposits from any of these locations.

Quantification of Archive.

The fully indexed and cross-referenced written, drawn and photographic record of the site amounts to a single lever-arch file (containing 167 context records, 6 evaluation trench records, one watching brief record, Harris matrix diagrams, indexes, sample records, etc.), one roll of plans and sections (17 draughting film sheets) and one box file of photographs (300 colour transparencies, colour prints, monochrome contact prints and accompanying negatives). Supplementary documentation (finds catalogues, assessment reports) is contained in the same lever arch file.

Project correspondence and research notes amount to a single box file.

The complete collection of finds amounts to an estimated 1 standard Museum of London box.

Digital data including the full texts of all reports, spreadsheets cataloguing all the finds and feature/ context correlations, and a matrix diagram, and digital versions of the illustrations, with supporting metadata, are contained on a single CD, one copy of which can be deposited with the archive if requested by the receiving museum, one copy of which will be held by TVAS.

Curation and long-term storage

The complete site archive including finds and records will be deposited with the Museum of London in due course. None of the finds requires any special long-term provision for conservation.

Conclusions

In summary, it is proposed that the archaeological potential of two of the three areas (Sites 1B and 2) has already been adequately addressed and these parts of the site have no archaeological potential. It is also suggested that the negative results of these previous investigations can be extrapolated to the third area (Site 1A). Three further issues have also been considered. Development of a significant proportion of the Site 1A area, estimated at 60%,
may never have any impact on the archaeologically relevant levels whatever building layout is chosen. For any proposed buildings, the impact below ground is limited to piles that will be minimal in comparison to traditional foundations. Finally, it might be considered that the cost implications of difficult working conditions and prevention of contamination of groundwater is significantly out of proportion to the value of the likely results of further exhaustive field evaluation.

On this basis of this report it is requested that the two planning conditions relating to archaeology for this site are now discharged.

**Updated project design**

The two phase of evaluation and watching brief have not produced any finds or deposits of archaeological interest and therefore no further work can take place on any material.

Analysis of the pollen from the peat deposits which have been radiocarbon dated will be completed.

**Proposals for publication**

It is not proposed to publish the negative results of the evaluation and watching brief fieldwork discussed above other than via summary notes in *London Archaeologist* and in the *GLSMR Quarterly Review*.

It is understood that several other projects carried out within the Lea Valley have obtained palaeoenvironmental information sometimes in association with archaeological deposits. It is also understood that this work has yet to be synthesised but that there are provisional proposals for this to take place with grant funding from public bodies. It would therefore be inappropriate to publish the results of this palynological study in isolation without detailed consultation of other records. This is clearly beyond the scope of this site specific project.

It is proposed therefore that the results are presented in draft publication form and deposited within the public domain (GLSMR) for future use within any synthetic study.

**References**


Pine, J, 2001, Deephams Sewage Treatment Works, Ardra Road, Edmonton, London Borough of Enfield, an archaeological evaluation (Phase 1), Thames Valley Archaeological Services report 00/43a, Reading

Hull, G, and Ford, S, 2001, Deephams Sewage Treatment Works, Ardra Road, Edmonton, London Borough of Enfield, an archaeological evaluation (Phase 2), Thames Valley Archaeological Services report 00/43b, Reading
APPENDIX 3: GLSMR/RCHME NAR Archaeological report form

TYPE OF RECORDING

Post-fieldwork assessment

LOCATION

Borough: Enfield

Address: Deephams Sewage Treatment Works, Ardra Road, Edmonton

Name: Deephams Sewage Treatment Works, Ardra Road, Edmonton

Site Code: PLK01

National Grid Refs: TQ 3580 9300 Centre of site: TQ 3580 9300

ORGANISATION

Name of archaeological unit: Thames Valley Archaeological Services Ltd

Address: 47–49 De Beauvoir Road, Reading, Berkshire, RG1 5NR

Site director/supervisor: Graham Hull and Joanna Pine

Project manager: Steve Ford

Funded by: Kennet Properties

DURATION

Date fieldwork started: 01/2001

Date finished: 02/2002

Fieldwork previously notified? y/n: Yes

Fieldwork will continue? y/n/ not known: No

PERIODS REPRESENTED

Palaeolithic: - Roman: -
Mesolithic: - Saxon (pre- AD 1066): -
Neolithic: - Medieval (1066–1485): -
Bronze Age: - Post-medieval: -
Iron Age: - Unknown: -
PERIOD SUMMARIES (use headings for each period (ROMAN; MEDIEVAL; ETC.) and additional sheets if necessary).

NATURAL -

Type: Kempton Park Gravel

Height above Ordnance Datum: 6.6m–9.4m

LOCATION OF ARCHIVES

Please tick those categories still in your possession:

- Notes Yes
- Plans Yes
- Photos Yes
- Negatives Yes
- Slides Yes
- Correspondence Yes
- MScripts (unpublished reports, etc.)

All records will be deposited in the following museum, record office, etc. Museum of London

Approximate year of transfer: unknown

Location of any copies: Microfiche copy to be deposited with RCHME, and one to be kept by TVAS

Has a security copy of the archive been made? y/n: No, but will be microfiched in due course

If not, do you wish RCHME to consider microfilming? y/n: No

LOCATION OF FINDS:

In your possession (All/Some/None): All

All finds will be deposited with the following museum: Museum of London

Approximate year of transfer: 2002

BIBLIOGRAPHY:

Pine, J, 2001, Deephams Sewage Treatment Works, Ardra Road, Edmonton, London Borough of Enfield, an archaeological evaluation (Phase 1), Thames Valley Archaeological Services report 00/43a, Reading
Hull, G, and Ford, S, 2001, Deephams Sewage Treatment Works, Ardra Road, Edmonton, London Borough of Enfield, an archaeological evaluation (Phase 2), Thames Valley Archaeological Services report 00/43b, Reading
Ford, S, 2002, Deephams Sewage Treatment Works, Ardra Road, Edmonton, London Borough of Enfield, a summary of the archaeological investigations, Thames Valley Archaeological Services report 00/43c, Reading
Ford, S, 2002, Deephams Sewage Treatment Works, Ardra Road, Edmonton, London Borough of Enfield, a post-fieldwork assessment, Thames Valley Archaeological Services report 00/43d, Reading

SIGNED: Steve Ford

DATE: 16th July 2002
Deephams Sewage Treatment Works, Ardra Road, Edmonton, London Borough of Enfield, 2002

Figure 1. Location of development site areas.
Deephams Sewage Treatment Works, Ardra Road, Edmonton, London Borough of Enfield, 2001

Figure 2. Trench location plan, levels are for height of gravel above Ordinance Datum.
Figure 3. Selected sections.