

**AN ARCHAEOLOGICAL
EVALUATION AT
ST MARGARET'S CONVENT,
CANNING TOWN,
LONDON BOROUGH OF NEWHAM**

JULY 2006

DOCUMENT VERIFICATION

ST MARGARET'S CONVENT
CANNING TOWN
LONDON BOROUGH OF NEWHAM

EVALUATION

Quality Control

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**An Archaeological Evaluation at St. Margaret's Convent, Canning Town,
London Borough of Newham, E13**

Site Code: MCB 06

Central National Grid Reference: TQ 3990 8260

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1 ABSTRACT

- 1.1 An archaeological evaluation was undertaken by Pre-Construct Archaeology Ltd. at St. Margaret's Convent, Canning Town, London Borough of Newham, E13. The evaluation was conducted between 2nd and 5th May 2006, in advance of the redevelopment of the site. The work was commissioned by John Gould of Gould and Company.

- 1.2 The evaluation consisted of one trial trench positioned to allow deep investigation of underlying peat and alluvial deposits known to be present from previous geotechnical investigations. The trench revealed natural terrace gravel, overlain by Holocene alluvial deposits, sealed by modern made ground and topsoil.

2 INTRODUCTION

- 2.1 This report details the results and working methods of an archaeological evaluation undertaken by Pre-Construct Archaeology Ltd at St. Margaret's Convent, Canning Town, London Borough of Newham, E13 (location map, Fig. 1). The evaluation was commissioned by John Gould of Gould and Company in advance of the redevelopment of the site.
- 2.2 The site covers an area of land centred on National Grid Reference TQ 3990 8260, previously used as a formal garden for the Convent. The site is bounded by St. Margaret's House and St. Helen's RC Primary School to the north, buildings fronting Chargeable Lane to the east, Chargeable Lane itself to the south and St. Margaret's Chapel to the west. The archaeological evaluation involved the excavation and recording of one trial trench, to investigate the underlying peat and alluvial sequence and any other archaeological remains that may survive (see trench location map, Fig. 2).
- 2.3 The evaluation was conducted between 2nd and 5th May 2006 and followed a written specification prepared by Chris Mayo of Pre-Construct Archaeology Ltd. The fieldwork was supervised by the author, under the Project Management of Chris Mayo. The site was monitored by David Divers of English Heritage.
- 2.4 The completed archive comprising written, drawn and photographic records and artefacts will be deposited at LAARC.
- 2.5 The site was allocated the site code MCB 06.

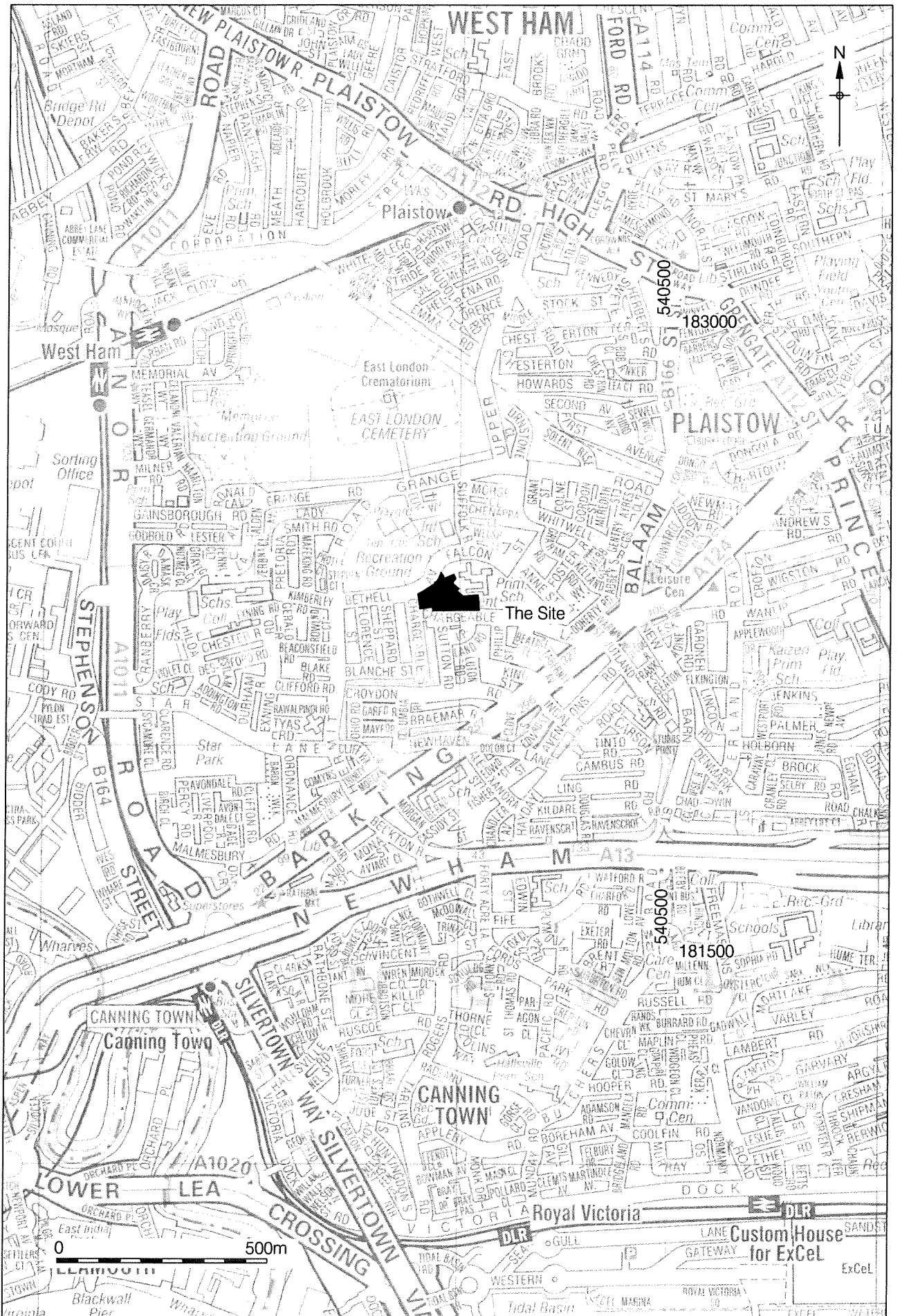
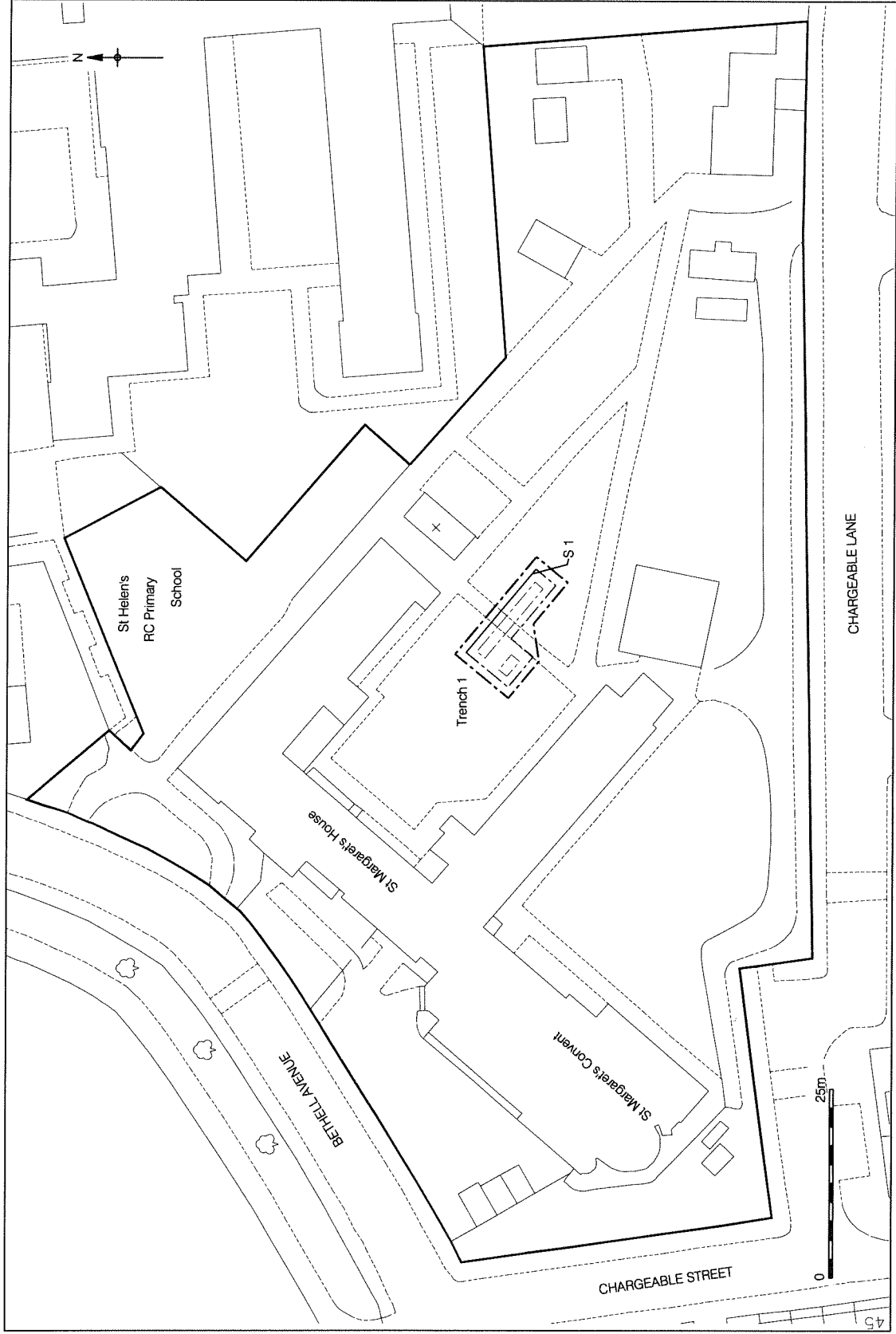


Figure 1
 Site Location
 1:12,500



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Figure 2
Trench Location
1:800

3 PLANNING BACKGROUND

3.1 The study aims to satisfy the objectives of the London Borough of Newham, which fully recognises the importance of the buried heritage for which they are the custodians. The Borough's deposited draft 'Unitary Development Plan' 2001 contains policy statements in respect of protecting the buried archaeological resource.

3.1.2 The proposed development is subject to the Council's Archaeology Policy:

ARCHAEOLOGY: INVESTIGATION, EXCAVATION AND PROTECTION

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

Para. 3.124 *"The Greater London Archaeological Advisory Service (GLAAS-part of English Heritage) provide impartial advice to Newham Council. Sites of potential archaeological importance, to which this policy relates, can be defined as any site within and Archaeological Priority Area (APA). APAs are defined by GLAAS as areas having particular interest or value (please refer to Map EQ6), or as sites where it can be reasonably shown from existing sources of information (most notably the Greater London Sites and Monuments Record) that some remains of archaeological importance may survive. For further information please refer to the SPG Note No. 19 'Archaeological Code of Practice'. An archaeological assessment (either a desktop or a primary field investigation) will normally be required for any development involving a site more than 0.4 acres within an APA. The Council will also require such an assessment for smaller sites within the APAs, and sites outside the APAs, where this is clearly justified by the archaeological sensitivity of the site. Developers should undertake early consultation with the Council, and recognised archaeological organisations, to avoid uncertainty and later delays."*

POLICY EQ43: THE COUNCIL WILL PROMOTE THE CONSERVATION, PROTECTION AND ENHANCEMENT OF THE ARCHAEOLOGICAL HERITAGE OF THE BOROUGH. DEVELOPERS OF SITES OF POTENTIAL ARCHAEOLOGICAL IMPORTANCE WILL BE REQUIRED TO PRODUCE A WRITTEN REPORT, AS PART OF THE APPLICATION FOR PLANNING PERMISSION, ON THE RESULTS OF AN ARCHAEOLOGICAL ASSESSMENT OR FIELD EVALUATION CARRIED OUT BY A SUITABLY QUALIFIED ARCHAEOLOGICAL CONTRACTOR; AND WHEN REMAINS OF IMPORTANCE ARE IDENTIFIED, THE COUNCIL WILL SEEK PRESERVATION OF THE REMAINS IN SITU. ON OTHER IMPORTANT SITES, WHERE THE BALANCE OF OTHER FACTORS IS IN FAVOUR OF GRANTING PLANNING PERMISSION BY MEANS OF THE IMPOSITION OF CONDITIONS ON THE GRANT OF PLANNING PERMISSION, AND POSSIBLY BY LEGAL AGREEMENTS, THE COUNCIL WILL ENSURE THAT ADEQUATE PROVISION IS MADE FOR THE PROTECTION, EXCAVATION AND RECORDING OF REMAINS, AND THE SUBSEQUENT PUBLICATION OF THE RECORDS OF EXCAVATION, PROVIDING A WRITTEN ACCOUNT OF THE ARCHAEOLOGICAL EXPLORATION, INCLUDING RECORDS OF FINDS.

Para. 1.125 The council will promote co-operation between land owners, developers and archaeological organisations in accordance with the British Archaeologists' and Developers' Liaison Group Code'.

3.1.3 The Newham UDP mirrors advice contained in the Department of Environment document 'Planning Policy Guidance: Archaeology and Planning (PPG 16)'. This document identifies the need for early consultation in the planning process to determine the impact of the construction schemes upon buried archaeological strata. Once the results of the Desktop Assessment and, where necessary or otherwise for follow-up trial work is known, an informed decision on the necessity or otherwise for further archaeological strategies may be taken. These strategies may be preservation *in situ*, excavation, or watching brief. The proposed development site lies within one of the Council's Archaeological Priority Areas as defined by the Borough's UDP

3.1.4 There are no Scheduled Ancient Monuments within the development site. The site lies within an Archaeological Priority Zone (APZ) as defined in the Borough's UDP.

4 GEOLOGY AND TOPOGRAPHY

4.1 GEOLOGY

4.1.1 The British Geological Survey sheet 257¹ indicates that the site lies within an area of alluvium associated with the River Thames floodplain. Just to the north of the site lies an area of Kempton Park Gravels, with Taplow Gravels existing to the north and east. The underlying solid geology consists of London Clay.

4.1.2 The site was the subject of geotechnical investigations which revealed peat and alluvial deposits to the rear of the existing convent building.

4.2 TOPOGRAPHY

4.2.1 The area of the site exists as relatively level ground with an average height of c. 1.30m OD.

4.2.2 The River Lea lies approximately 1.5km west of the site, which is itself approximately 1.75km upstream of the River Thames.

¹ British Geological Survey Sheet 257 *Romford*, 1988

5 ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

5.1 Prehistoric

5.1.1 The subject site lies on the edge of the River Lea alluvial floodplain deposits. As with the River Thames, extensive Bronze Age exploitation of floodplain marshes has been well established². Occupation sites associated with these activities are less well known but would presumably have been located on the gravel terraces, especially where the marshes would have met the terraces, as well as on islands of higher ground (eyots).

5.2 Roman

5.2.1 The route of the Roman road between London (Londinium) and Colchester (Camulodunum) is thought to roughly be represented in the modern street layout by Romford Road, which lies north of the site. This road has been excavated at several locations along its route. To the east, the road crosses the River Lea at Old Ford³ and has been excavated at Romford Road in Stratford⁴. Its course west through Ilford and then Seven Kings is well preserved⁵.

5.3 Saxon / Medieval

5.3.1 In Saxon times the site lay within the manor of 'Hamme' and is first mentioned in AD 958 when King Edgar granted land to Ealdorman Athelstan of East Anglia. The same source indicates Athelstan held 8 hides of arable land and 60 acres of meadow stretching from the Thames westwards to the Lea and eastwards to modern East Ham Street. To the east was the manor of Leured consisting of 7 hides of arable land and 50 acres of meadow. At this time references to Ham do not distinguish between West and East Ham. The Domesday evidence suggests that the main settlement was in the south, and that the northern part of the parish was thickly wooded. Unfortunately little is known of the pattern of settlement before the 16th century.

5.3.2 In the 12th century Robert Gernon had joint ownership of the Ham with Ranulph Peveral. Gernon's section of West Ham was centred on West Ham village, about half

² Meddens, 1996

³ Sheldon, 1971

⁴ Marshall, 1964

⁵ Margary, p246

a mile east of the Channelsea river, where a parish church was in existence by the 12th century. Ranulph Peverel's section became known in the 12th century as Sudbury ('southern manor'). Sudbury was in the Plaistow area. In the 13th century it became part of (with other lands) the manor of Bretts, the manor-house of which was in Plaistow village. To the northwest of West Ham village was Stratford or Stratford Langthorne where in 1135 William de Montfitchet founded a Cistercian Abbey. The Abbey at Stratford steadily enlarged its estates in West Ham and by the 15th century controlled most of the parish. A major Saxon religious house had also been founded at nearby Barking in AD666 to the east of the study site.

5.3.3 Early 16th century rentals of the abbey at Stratford indicate that the main settlements in the area were in Church Street (West Ham village), Stratford and Plaistow, although Upton is mentioned there is no substantial settlement there until the 17th century. One hamlet is mentioned that does not survive on any maps, namely Hook End which lay to the south of Plaistow.

5.4 Post-Medieval

5.4.1 By the early 17th century the parish had been divided into wards – Church Street (including West Ham village), Stratford, Plaistow, and Upton, all of which lie to the south of the study site. In 1670 179 houses were recorded in Stratford: 103 in Church Street, 108 in Plaistow and 25 in Upton⁶.

5.4.2 From about 1690 until the early 19th century the neighbourhood shared in suburban prosperity as wealthy Londoners began to use the area as a residential retreat, building grandiose houses for themselves whilst having the advantage of the areas' proximity to their places of business in central London⁷.

5.4.3 The industrial revolution dramatically changed the semi rural nature of Newham in the 19th century. The construction of the Barking Road in 1810-12 to connect the East and West India Docks to the river port of Barking had a drastic effect. This was followed by the construction of the Royal Group of Docks, Victoria (1855), Albert (1880), and King George V (1921). Along with the coming of the railway these factors influenced the area immensely resulting in a population explosion and the resultant property boom to cope with the larger population⁸.

⁶ Powell, 1986, p. 11

⁷ Weinreb & Hibbert, 1993

⁸ Ibid

6 METHODOLOGY

- 6.1 The excavation of one trench was outlined in the Specification for an Archaeological Field Evaluation prepared by Pre-Construct Archaeology Ltd⁹. The fieldwork was designed to assess the presence or absence of significant archaeological remains, which may require further investigation, and to investigate the underlying sequence of peat and alluvial deposits.
- 6.2 The trench was machine excavated by a 360° mechanical excavator fitted with a flat-bladed ditching bucket, under the supervision of an archaeologist. Due to the anticipated depth of alluvial and peat deposits the trench was stepped to allow safe access. The maximum dimensions of the trench is shown in Table 1. Once archaeologically sensitive deposits or features were encountered, machining was stopped to allow archaeologists to clean with hand tools as necessary and record the remains.

Trench Number	Max Dimensions (m)	Max height (m OD)
1	16.80m x 9.20m	1.30

Table 1: Trench Dimensions

- 6.3 Recording was undertaken using the single context planning method. All features and deposits observed were planned and recorded onto *pro forma* context record sheets. Contexts were numbered sequentially and are shown in this report within square brackets. Plans and sections were drawn at a scale of 1:10 or 1:20 as appropriate. A general photographic survey of the site and working conditions was taken.
- 6.4 The deposits encountered within the evaluation trench were systematically sampled and assessed by Archaeoscape¹⁰.
- 6.4 A temporary benchmark, 1.32m OD, was taken from a spot height on a paving stone located on an architects drawing. The spot heights on the architects drawing are taken from OSBM, 1.84m OD, situated on the west face of the wall on Hermit Road.

⁹ Mayo, 2006

¹⁰ Appendix 3

7 ARCHAEOLOGICAL SEQUENCE

7.1 Phase 1 – Natural Terrace Gravel

7.1.1 The earliest deposit encountered within the evaluation trench was the natural terrace gravel [9]. It was encountered at –1.40m OD at the southern end of the trench and sloped down to –1.59m OD at the northern end. The gravel represents the sub-alluvial Lea Valley Gravel, equivalent in the Lea Valley to the Late Devensian Shepperton Gravel of the Thames sequence.

7.2 Phase 2 – Holocene Alluvial Deposits

7.2.1 Sealing the natural gravel [9] was a sequence of inorganic silty sand deposits, [6], [7] & [8]. These deposits had frequent woody roots, possibly representing *in situ* tree roots. This sequence was encountered at –0.74m OD and had a maximum thickness of 0.66m. Overlying these deposits was a sequence of organic silts, [12] & [13], including within it a thin peat horizon, [5]. The peat was encountered at –0.48m OD and was 0.14m thick. The highest level of the sequence, context [12], was encountered at –0.28m OD and the combined thickness of these horizons was 0.46m.

7.3 Phase 3 – Modern

7.3.1 Sealing the Holocene alluvial sequence was a layer of modern made ground [4], truncated by two modern pits, [3] & [11], associated with the formal gardens of the convent. These were overlain by topsoil. The highest level of these was 1.30m OD and they had a maximum thickness of 1.48m.

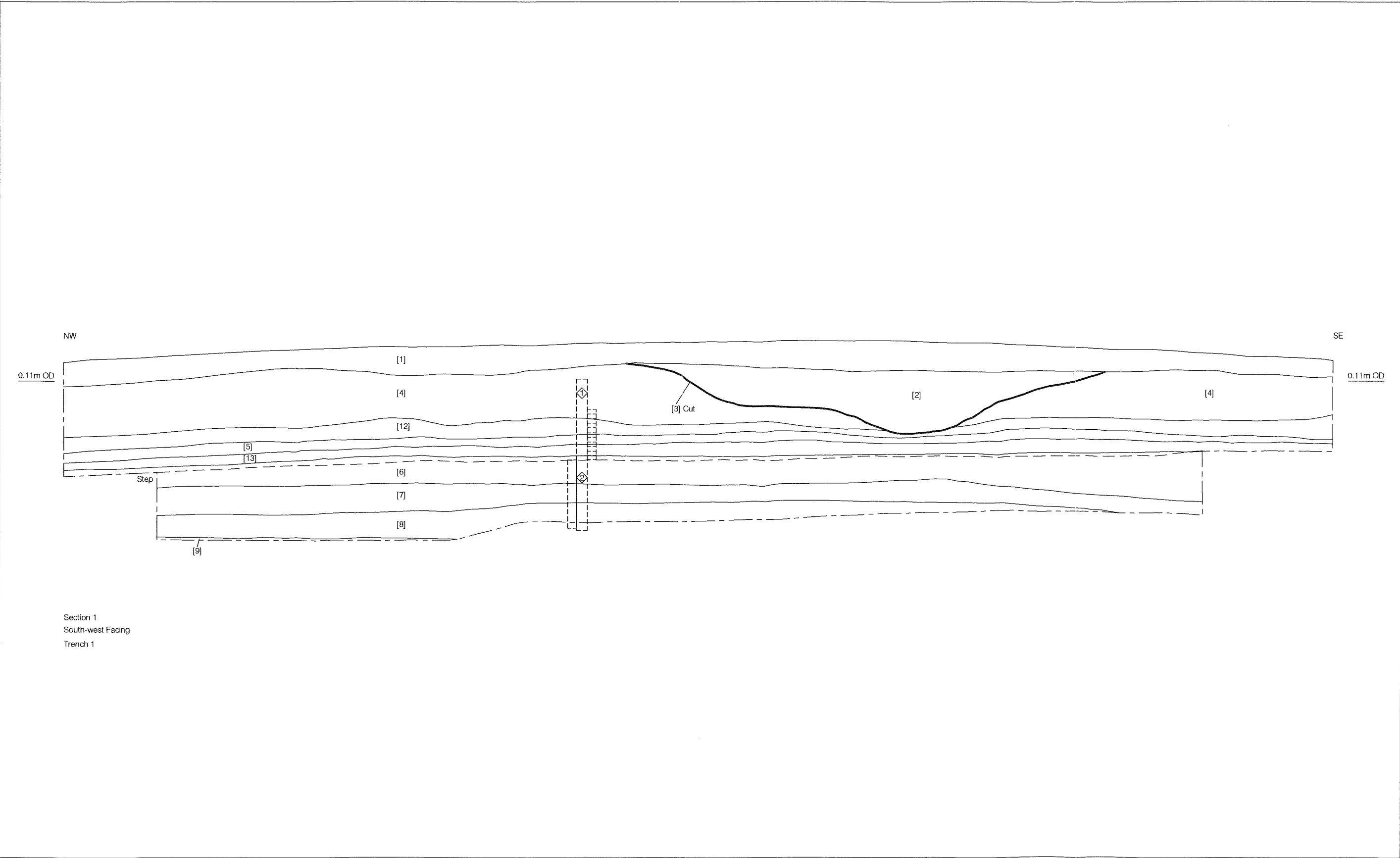


Figure 3
 Section 1
 1:40

8 TRENCH SUMMARY

8.1 TRENCH 1

- 8.1.1 Trench 1 revealed natural gravel sealed by a sequence of Holocene alluvial deposits, including a thin peat horizon, sealed by modern made ground and features associated with the Convent.

9 CONCLUSIONS

- 9.1.1 The evaluation revealed natural deposits consistent with the underlying terrace gravels, sub-alluvial Lea Valley Gravel equivalent in the Lea Valley to the Late Devensian Shepperton Gravel of the Thames sequence. The overlying Holocene alluvial deposits are consistent with other sequences recorded nearby¹¹. No evidence for human activity before the 20th century was encountered within the evaluation trench.
- 9.1.2 Although no evidence of human activity was encountered an important palaeo-environmental sequence with regard to the environmental context of human activities in the Lea Valley was revealed, which has the potential to yield vital information about past environmental conditions and reconstructing the environmental history of the site. These deposits were systematically sampled and assessed by Archaeoscape¹².
- 9.1.3 Results of the pollen recovered can reconstruct the environment from the early postglacial (Holocene), the Mesolithic cultural period, on the site. These results suggest that Alder Carr woodland, with some oak, dominated the area. Adjacent dryland areas consisted of oak and lime woodland with some birch and an understorey comprising hazel and herbaceous taxa. This later changed to an area dominated by herbaceous taxa, including grasses, sedges, species of the goosefoot and daisy families and isolated woodland. The Holocene alluvial deposits indicate pronounced variations in the energy of this fluvial system, the deposition of gravel represents a 'higher-energy' (fast flowing) water body, such as a river channel, and the fine-grained mineral sediments, such as the peat, are deposited in a virtually stationary 'low energy' water body, e.g. floodplain. Radiocarbon dating results show that the formation of the peat horizon occurred at approximately 3550 BP (1970-1760 cal BC). This represents a change in the local environment, most likely as a result of the lateral migration of the main river channel, and the formation and infilling of a back-swamp area. Mineral matter recovered from the peat deposit indicates that this peat surface was subject to intermittent flooding. No direct pollen evidence for human activity, e.g. cereal pollen, was recovered from the site. This is surprising given the large body of evidence for human activity during the Bronze Age in the lower Thames valley¹³.

¹¹ Appendix 3

¹² *ibid*

¹³ *ibid*

9.1.4 The environmental archaeological assessment (Appendix 3) has identified two events which warrant further research. The absence of lime pollen above –0.51m OD may be equated with the pan-European lime decline, which occurred from the Bronze Age onwards and has been attributed to human activity. The appearances of goosefoot family pollen above –0.39m OD may be associated with a decline in woodland cover and the formation of disturbed plant habitats, or the onset of marine/brackish water conditions due to a rise in relative sea level. The goosefoot family contain taxa that are normally present in either disturbed, waste ground habitats or salt marshes. It is recommended in the environmental archaeological assessment that further pollen analysis and diatom analysis should be carried out to further investigate the points raised above¹⁴.

¹⁴ Appendix 3

10 ACKNOWLEDGEMENTS

- 10.1 Pre-Construct Archaeology Limited would like to thank John Gould of Gould and Company for commissioning the work.
- 10.2 Pre-Construct Archaeology Limited would also like to thank David Divers of English Heritage for monitoring the work, and Archaeoscape for their on-site work and assessment.
- 10.3 The author would also like to thank the field staff Amelia Fairman, Dave Harris for the illustrations, Lisa Lonsdale for the logistics and Chris Mayo for his project management and editing.

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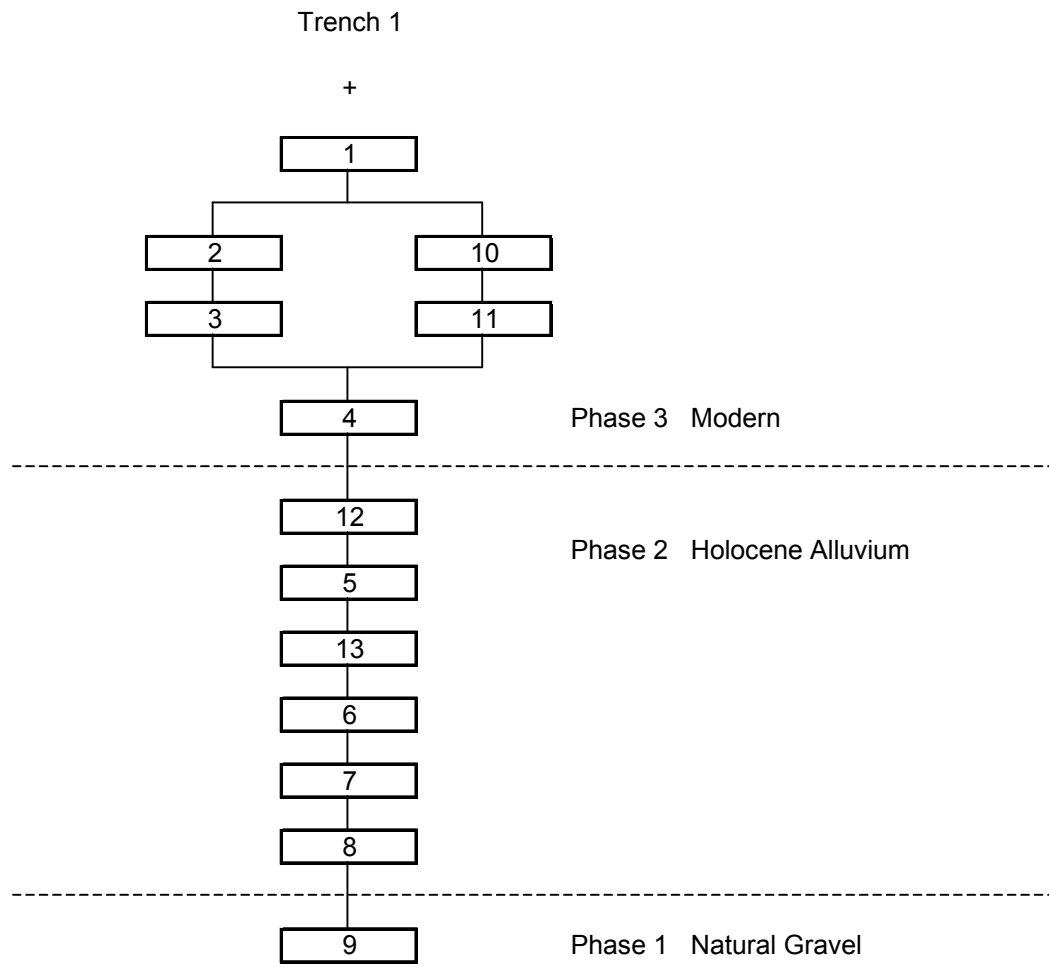
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APPENDIX 1: Context Descriptions

Context No.	Type	Trench	Phase	Description
1	Layer	1	3	Modern Made Ground
2	Fill	1	3	Fill of [3]
3	Cut	1	3	20th Century Pit
4	Layer	1	3	Alluvium
5	Layer	1	2	Peat
6	Layer	1	2	Alluvium
7	Layer	1	2	Alluvium
8	Layer	1	2	Alluvium
9	Layer	1	1	Natural Terrace Gravel
10	Fill	1	3	Fill of [11]
11	Cut	1	3	20th Century Pit
12	Layer	1	2	Organic Silt
13	Layer	1	2	Organic Silt

APPENDIX 2: SITE MATRIX



APPENDIX 3: ENVIRONMENTAL ARCHAEOLOGICAL ASSESSMENT

ST MARGARET'S CONVENT, BETHELL AVENUE, CANNING TOWN, LONDON BOROUGH OF NEWHAM (SITE CODE: MCB05): ENVIRONMENTAL ARCHAEOLOGICAL ASSESSMENT

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INTRODUCTION

This report summarises the findings arising out of the environmental archaeological assessment undertaken by *ArchaeoScape* at St Margaret's Convent, Bethell Avenue, Canning Town, London Borough of Newham (Site Code: MCB05; National Grid Reference: TQ 399 826). During the archaeological evaluation by Pre-Construct Archaeology Ltd, excavation of one deep trench (Trench 1) permitted observation and recording of a natural sedimentary sequence. *ArchaeoScape* implemented a targeted sampling strategy, which enabled the collection of column and bulk samples suitable for an environmental archaeological assessment of the sequence, and possible future analysis. The overarching aim of the environmental archaeological assessment was to establish the potential of the sedimentary succession for reconstructing the environmental history of the site and its environs, and in particular to record the timing, duration and nature of human activities. The environmental archaeological assessment consisted of:

1. Recovering column samples (<1> and <2>) and bulk samples from Trench 1
2. Recording the lithostratigraphy (all column samples) and quantifying the organic matter content (all column samples) to provide a preliminary reconstruction of the site formation processes
3. Assessment of the preservation and concentration of pollen grains and spores (all column samples) to provide a preliminary reconstruction of the vegetation history, and to detect evidence for human activities e.g. woodland clearance and cultivation
4. Assessment of the preservation and concentration of insects (selected bulk samples) to provide a preliminary reconstruction of the vegetation history and palaeohydrology of the site

5. Radiocarbon dating of peat extracted from the column samples to provide a provisional geochronological framework for the sequence.

GEOLOGICAL CONTEXT

The site is on the broad expanse of floodplain alluvium lying to the east of the lowest reach of the River Lea. The site is *ca.* 1.5km to the east of the present course of the Lea and *ca.* 1.75km upstream from the confluence of the Lea with the River Thames. The ground rises to the east of St Margaret's Convent to the level of terrace remnants underlain by Kempton Park and Taplow Gravels; it seems more likely therefore that the alluvium at the site is a deposit of the Lea rather than the Thames. For the lower Lea valley there are few published accounts of the floodplain alluvium that record its thickness and lithostratigraphy, or report details of palaeoenvironmental evidence. The following records are relevant:

1. Mill Meads (TQ 387 828) at a level of 5.5m OD and just over 1km WNW from the present site Gibbard (1994) records: 0.30 m of mottled grey-brown silty clay; 0.40m of peat; 0.30m of grey silty clay; gravel (up to 6.0m thick).
2. South Bromley (TQ 388 810), Gibbard (1994) also records in 1.59m of brown clay; 0.47m of peat; 0.92m of brown clay.
3. Canning Town (TQ 391 814) at a ground level of 4.4m OD: 6.88m of alluvium; 2.44m of gravels and sands.
4. Canning Town (TQ 393 815), about 1km to the SW of the present site, Sidell *et al.* (2000) record in their borehole BH1: 1.30m of made ground; 0.80m of organic mud; 0.40m of silt/clay; 2.40m of organic mud; gravel.
5. Almost due south from the site at a distance of *ca.* 2.25km in Silvertown (NGR: TQ 401 804) Wilkinson *et al.* (2000) record in their borehole BH8: 1.21m of silt/clay; 0.86m of organic silt/clay; 0.53m of interbedded sand, silt/clay and peat; 2.43m of silt/clay; 0.36m of organic silt clay; 2.34m of peat; 0.82m of organic silt clay; gravel.

The deposits recorded beneath the floodplain in the Lea valley (including those noted above) are not necessarily all of Holocene age. S.H. Warren in a series of papers between 1912 and 1952 described beds beneath the floodplain and a low terrace in the lower Lea valley, containing 'full glacial' plant assemblages. These beds are informally termed the Lea Valley Arctic Bed and form part of Warren's Ponders End Stage, now subsumed by Gibbard (1994, 1999) in the Lea Valley Member. This bed has been recognised in the Lea valley at various sites from Broxbourne in the north to Hackney Wick in the south where Warren (1916) reports the presence of peat and vertebrate

remains. Radiocarbon assay of material from the Lea Valley Arctic Bed has yielded dates of 28,000 \pm 1,500 BP (Godwin and Willis 1962) and 24,630 +1,360 -1,640 BP (Gibbard 1994, p.110).

The records outlined above suggest that the bedrock (London Clay) in areas adjacent to St Margaret's Convent lie at a depth of between 6.0m and 9.0m below the floodplain surface, overlain by sand and gravel. In the Lea valley this sand and gravel is termed the Lea Valley Member (Gibbard 1999), but close to the confluence with the Thames it can be expected to merge with the Shepperton Gravel of the Thames valley. These units are interpreted as being of Late Devensian Late Glacial age, representing braided river activity under cold climatic conditions. It is possible that the Lea Valley Member may comprise two sub-units - an older one representing the Ponders End Stage of Warren (1916) and including fossiliferous sediments representing the Lea Valley Arctic Bed, and a younger one more directly equivalent to the Holocene Shepperton Member of the Thames valley.

The sands and gravels of the Lea Valley and Shepperton Members have an uneven surface which probably represents the pattern of bars and channels abandoned in the Late Devensian or Early Holocene when the deposition of sand and gravel in multiple channels was largely superseded by predominantly fine-grained sedimentation in a single dominant channel. The gravel is overlain by mainly fine-grained deposits of quite variable thickness. Within the Lea valley these deposits seem usually to be between 1m and 4m in thickness, but are somewhat thicker, approaching 7m, near the confluence with the Thames.

Although there are records of peat and other organic deposits interbedded in the floodplain alluvium of the lower Lea, only one detailed account of these deposits has been published. This is the account of the site at Silvertown (Wilkinson *et al.* 2000). Here the basal sediment at a level of -2.5m OD yielded two radiocarbon dates of 10,010 \pm 70 BP and 10,310 \pm 90 BP. Pollen preserved in the overlying peat produced a vegetation record for the period up to *ca.* 2430 BP. Overlying the silty clays was a separate thin peat layer from which a radiocarbon date of 750 \pm 60 BP was obtained.

METHODS

Field investigations

Two column samples (<1> and <2>) and eleven continuous bulk samples (between -0.19m to -0.74m OD), each 5cm in thickness, were recovered from the organic sediments within Trench 1 (10m x 2m x 3m). A further four bulk samples were recovered from Trench 1 (between -1.49 to -0.74m OD) from the inorganic sediment (Table 1 and Figure 1).

Lithostratigraphic descriptions

The lithostratigraphy of the column samples was described in the laboratory using standard procedures for recording unconsolidated sediment and peat, noting the physical properties (colour), composition (gravel, sand, clay, silt and organic matter), unit boundaries and inclusions (e.g. artefacts). The results of the lithostratigraphic descriptions are provided in Tables 2 and 3, and Figure 1.

Organic matter determinations

Forty-two sub-samples were taken from column samples <1> and <2> (between -1.49m and 0.13m OD) for determination of the organic matter content (Table 4, and Figure 2). These records are important for two reasons: (1) they identify lithostratigraphic units with a high organic matter content that will be suitable for radiocarbon dating, and (2) they identify increases in organic matter possibly associated with more terrestrial conditions. The organic matter content was determined by standard procedures involving:

1. Drying the sub-sample at 110⁰C for 12 hours to remove excess moisture
2. Placing the sub-sample in a muffle furnace at 550⁰C for 2 hours to remove organic matter (thermal oxidation)
3. Re-weighing the sub-sample obtain the 'loss-on-ignition' value (see Bengtsson and Enell 1986).

Radiocarbon dating

Sub-samples were taken from the organic silt underlying the peat (-0.62 to -0.61m OD) and the top (-0.52 to -0.51m OD) of the peat (column sample <1>). The sub-samples were submitted for radiocarbon dating to Beta Analytic Inc, Florida, USA (Table 5). The results have been calibrated with Oxcal v.3.5 (Bronk-Ramsey 1995 and 2001), using data from Stuiver *et al.* (1998).

POLLEN ASSESSMENT

Seventeen sub-samples were extracted from Trench 1 from column samples <1> and <2> (between -1.49m and 0.13m OD) for assessment of the pollen content. The pollen was extracted as follows:

1. Sampling a standard volume of sediment (1ml)
2. Deflocculation of the sample in 1% Sodium pyrophosphate
3. Sieving of the sample to remove fine and coarse mineral and organic fractions (<10 μ and >125 μ)
4. Removal of finer mineral fraction using Sodium polytungstate (specific gravity of 2.0g/cm³)
5. Acetolysis using a mixture of Sulphuric acid and Acetic anhydride (1:9) to remove organic matter
6. Mounting of the sample in glycerol jelly.

Each stage of the procedure was preceded and followed by thorough sample cleaning in filtered distilled water. Quality control was maintained by periodic checking of residues, and assembling sample batches from various depths to test for systematic laboratory effects. Pollen grains and spores were identified using the Royal Holloway (University of London) pollen type collection and the following sources of keys and photographs: Moore *et al.* (1991); Reille (1992). Plant nomenclature follows the Flora Europaea as summarised in Stace (1997). The assessment procedure consisted of scanning the prepared slides at 2mm intervals along the whole length of the coverslip and recording the concentration and state of preservation of pollen grains and spores, and the principal pollen taxa (Table 6).

INSECT ASSESSMENT

Seven bulk samples (-0.74 to -0.69, -0.69 to -0.64, -0.64 to -0.59, -0.59 to -0.54, -0.54 to -0.49, -0.49 to -0.44, and -0.44 to -0.39m OD) from Trench 1 were processed for the insect assessment. Samples were processed by paraffin flotation following the methodology of Atkinson *et al.* (1987).

1. Wash bulk peat samples through a 5mm mesh using hot water to remove larger wood fragments
2. Wash remaining fraction onto a 300 micron mesh
3. Wash twice with hot water to remove the fine fraction, and two cold water washes to remove the possibility of a thermal gradient forming during the subsequent flotation
4. Drain well and mix with paraffin in a large bowl for 5 minutes

5. Decant excess paraffin back into the stock bottle through an 80 micron mesh
6. Add cold water to the organic fraction, mixing thoroughly
7. Leave to stand for 15 minutes
8. Decant the oil overlying the bulk material onto a 300 micron mesh and wash gently with detergent and hot water
9. Rinse with distilled water, dehydrate in 95% ethanol, and transfer to a sealed container for storage in 95% ethanol
10. Save remaining bulk material for further extraction of other fossil material

Flots were scanned using a low power binocular microscope (x10) to record the concentration and state of preservation of insect remains, and to record the main beetle (Coleoptera) and bug (Hemiptera) taxa (see Table 7).

RESULTS AND INTERPRETATION OF THE SEDIMENTARY SEQUENCE

At the base of the sequence recorded in column sample <2>, the olive grey sandy gravel (-1.49 to -1.40m OD) represents the sub-alluvial Lea Valley Gravel, equivalent in the Lea Valley to the Late Devensian Shepperton Gravel of the Thames sequence. Bridgland (1994 Fig. 1.3) shows the upper surface of the Shepperton Gravel passing below OD in central London and local relief on this surface of at least 2.0m is widely recognised in the London area (Gibbard 1994 Fig. 43). The upper surface of the gravel (at -1.40m OD) is therefore clearly within the expected height range for the Lea Valley and Shepperton Gravels. The deposits overlying the gravels represent Holocene alluvium and resemble sequences recorded nearby. Immediately overlying the Lea Valley Gravel at St Margaret's Convent are inorganic silty sands, recorded in column sample <2> (between -1.40m to -0.74m OD; organic matter content ranges from 2 to 3%). The sediments here are penetrated by woody roots, which are probably the *in situ* remains of tree roots. Bromehead (1925) recorded substantial woody remains in the Thames alluvium at Rotherhithe, a few kilometres upstream from the present site where he described 'an ancient forest bed with several trees *in situ*'. Overlying the silty sands are dark grey organic silts recorded in column sample <1> (between -0.74m and -0.28m OD; organic matter content ranges from 5% to 30%), including a thin peat horizon (-0.62m to -0.48m OD; organic matter content ranges from 37% to 63%). This resembles the sequence of 0.47m of 'peat' recorded by Gibbard (1994) at South Bromley (NGR: TQ 388 810). In both sequences, the organic horizon is separated from the sub-alluvial gravel by a similar thickness

(0.85m/0.90m) of less organic sediment as described here. Overlying the alluvium at the site was approximately 1.20m of Made Ground.

RESULTS AND INTERPRETATION OF THE RADIOCARBON DATING

The results of the radiocarbon dating indicate that the base of the peat in Trench 1 is 3550 ±40 BP (1970-1760 cal BC; -0.62 to -0.61m OD). The top of the peat in Trench 1 is 3490 ±50 BP (1940-1690 cal BC; -0.52 to -0.51m OD). The δ¹³C (‰) values are consistent with that expected for peat, and there is no evidence for mineral or biogenic carbon contamination.

RESULTS AND INTERPRETATION OF THE POLLEN ASSESSMENT

The results of the assessment indicate that pollen grains and spores are well preserved, with the exception of samples between -1.49m to -0.78m OD. Variations in concentration are undoubtedly due to changes in the rate of sedimentation, with the highest concentrations (e.g. grains / cm³) occurring during periods of slower sedimentation. At St Margaret's Convent, this occurs during the period of peat formation between -0.58m to -0.42m OD. The results indicate that between -0.75m and -0.38m OD, alder (*Alnus*) dominated the local vegetation cover, forming carr woodland with oak (*Quercus*). On adjacent dryland, oak and lime (*Tilia*) woodland dominated, with some birch (*Betula*) an understory probably comprising hazel (*Corylus avellana*) and herbaceous taxa. Above -0.38m OD, the pollen assessment indicates that the vegetation cover changed, and became dominated by herbaceous taxa, including grasses (Poaceae), sedges (Cyperaceae), species of the goosefoot and daisy families, and isolated woodland. The goosefoot family is especially interesting because it contains taxa that are present in either disturbed, waste ground habitats e.g. *Atriplex*, or salt marshes e.g. *Salsola*. There is no direct pollen-stratigraphic evidence for human activity in the samples examined e.g. cereal pollen.

RESULTS AND INTERPRETATION OF THE INSECT ASSESSMENT

The bulk samples assessed for insect remains from St Margaret's Convent (between -0.74m and -0.39m OD) produced a very small assemblage of poorly preserved fragments of beetle parts. The few fragments that were identified generally represent a damp environment.

CONCLUSIONS AND RECOMMENDATIONS

The environmental archaeological assessment of the stratigraphic sequences at St Margaret's Convent, Canning Town, indicate that the olive grey sandy gravel at the base of the sequence in Trench 1 represents the sub-alluvial Lea Valley Gravel, equivalent in the Lea Valley to the Late Devensian Shepperton Gravel of the Thames sequence. The deposits overlying the gravels represent Holocene alluvium and resemble sequences recorded nearby. These lithological changes indicate pronounced variations in the energy of this fluvial system, with the deposition of gravel representing a 'higher-energy' (fast flowing) water body e.g. river channel, and the fine-grained mineral sediments deposited in a virtually stationary ('low-energy') water body e.g. floodplain. The formation of peat at approximately 3550 BP (1970-1760 cal BC) (-0.62 to -0.48m OD) is of particular importance since this represents a significant, albeit temporary, change in the local environment, probably as a consequence of the lateral migration of the main river channel, and the formation and infilling of a back-swamp area. The presence of mineral matter in the peat indicates however, that during this period the peat surface was subject to intermittent flooding.

The absence of direct evidence for anthropogenic activity in the pollen record during the periods of peat formation and overlying alluvial sedimentation is surprising, given the growing body of archaeological evidence for Bronze Age human activity in the lower Thames valley. Nevertheless, the pollen assessment does provide a provisional insight into the composition and structure of the wetland and dryland vegetation cover during this period. Two events have been recorded that are worthy of further research. First, the absence of lime pollen above -0.51m OD, and secondly, the appearances of goosefoot family pollen above -0.39m OD. The former may be equated with the pan-European lime decline, which has been dated from the Bronze Age onwards, and attributed in many instances to the activities of human groups, including the selective gathering of leaf and branch fodder for animals. The latter may be either associated with a decline in woodland cover and the formation of disturbed plant habitats, or the onset of marine/brackish water conditions due to a rise in relative sea level. The transition from a semi-terrestrial to marine/brackish environment on the valley floor of the lower Thames valley during the middle to late Holocene has been well-recorded (see Sidell *et al.* 2000; Wilkinson *et al.* 2000). Although the timing of the event varies spatially, both fossilised biological evidence and lithological records indicate that the transition occurred sometime between 3500 to 3000 BP.

It is recommended, therefore, that pollen analysis be conducted on the sequence above - 0.62m OD to reconstruct the vegetation history of the site and its environs. Diatom analysis, which did not form part of this assessment, will also be carried out as part of an MSc Quaternary Science research dissertation at Royal Holloway Department of Geography. These data will permit a more detailed comparison with environmental archaeological records from neighbouring areas (e.g. Wilkinson *et al.* 2000), and the compilation of a short publication for *London Archaeologist*.

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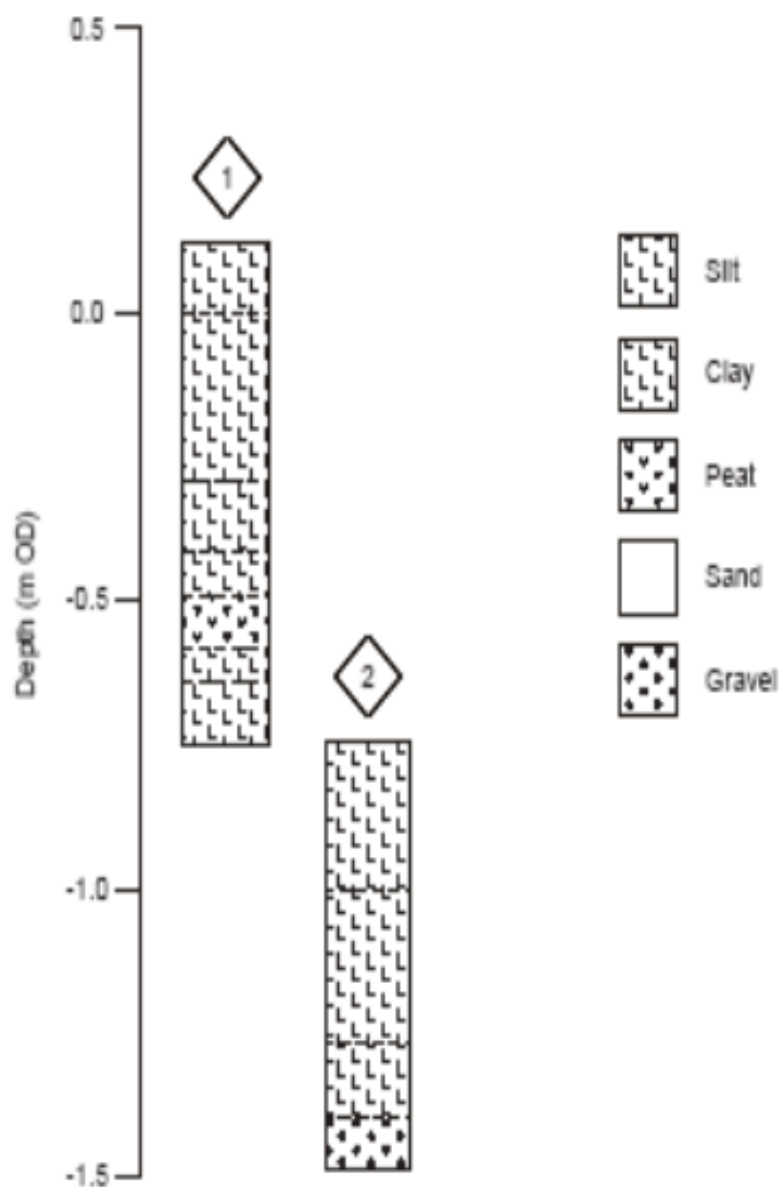


Figure 1: Lithostratigraphy of column samples <1> and <2>, St Margarets Convent, Canning Town (MCB05)

TABLE 1: DETAILS OF SAMPLES RECOVERED FROM TRENCH 1, ST MARGARET'S CONVENT, CANNING TOWN (MCB05)

Sample Type	Sample Number	Height (m OD)	
		From	To
Column	2	-1.49	-0.74
Column	1	-0.75	0.13
Bulk		-1.49	-1.40
Bulk		-1.40	-1.27
Bulk		-1.27	-1.00
Bulk		-1.00	-0.74
Bulk		-0.74	-0.69
Bulk		-0.69	-0.64
Bulk		-0.64	-0.59
Bulk		-0.59	-0.54
Bulk		-0.54	-0.49
Bulk		-0.49	-0.44
Bulk		-0.44	-0.39
Bulk		-0.39	-0.34
Bulk		-0.34	-0.29
Bulk		-0.29	-0.24
Bulk		-0.24	-0.19

TABLE 2: LITHOSTRATIGRAPHIC SEQUENCE FROM COLUMN SAMPLE <2>, ST MARGARET'S CONVENT, CANNING TOWN (MCB05)

Depth (m OD)	Description
-1.49 to -1.40	5Y 5/2 olive grey sandy gravel; waterlogged wood from -1.25 to -1.75; diffuse contact with
-1.40 to -1.27	5Y 5/2 olive grey silty clayey sand; waterlogged wood from -1.25 to -1.75; diffuse contact with
-1.27 to -1.00	5Y 6/2 light olive grey silty sand mixed with white calcareous material; waterlogged wood from -1.25 to -1.75; diffuse contact with
-1.00 to -0.74	5Y 6/2 Light olive grey silty sand

Table 3: Lithostratigraphic sequence from column sample <1>, St Margaret's Convent, Canning Town (MCB05)

Depth (m OD)	Description
-0.75 to -0.64	5Y 4/1 dark grey sandy silt; sharp contact with
-0.64 to -0.58	10YR 3/1 very dark grey organic silty clay; diffuse contact with
-0.58 to -0.48	10YR 2/1 black peat (Tb2 Ag2 Humo 2); diffuse contact with
-0.48 to -0.42	2.5Y 4/1 dark grey organic silty clay; gradual contact with
-0.42 to -0.28	2.5Y 4/2 dark greyish brown clayey silt; infrequent organic flecs; gradual contact with
-0.28 to 0.00	2.5YR 5/3 light olive clayey silt with very infrequent small gravels; gradual contact with
0.00 to 0.13	7.5 YR 4/1 dark grey silty clay; infrequent fragments of small Mollusca; very infrequent small gravels;

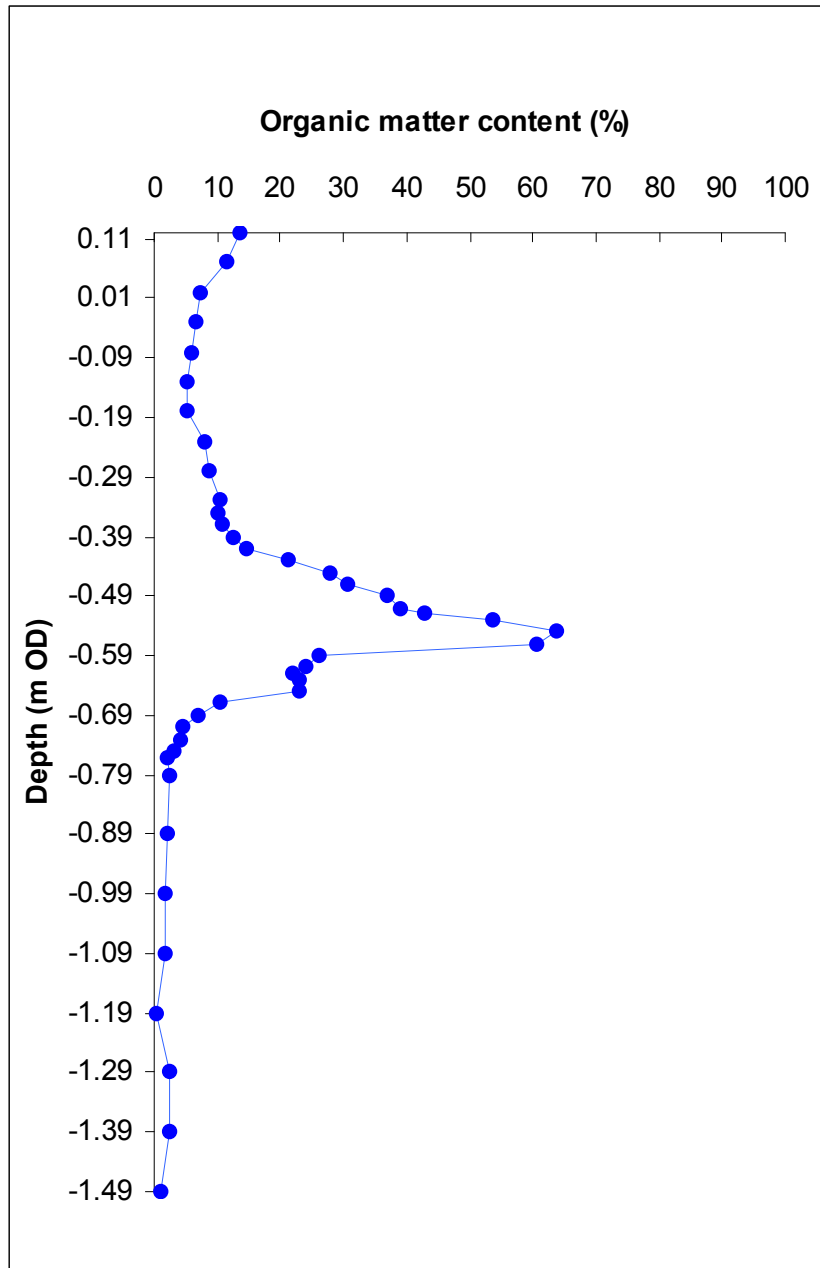


Figure 2: Organic matter content of column samples <2> and <1>, St Margaret's Convent, Canning Town (MCB05)

Table 4: Organic matter content of column samples <1> and < 2> St Margaret's Convent, Canning Town (MCB05)

Column Sample Number	Depth (m OD)		% Organic matter
	From	To	
2	-1.49	-1.48	0.96
2	-1.39	-1.38	2.36
2	-1.29	-1.28	2.52
2	-1.19	-1.18	0.29
2	-1.09	-1.08	1.61
2	-0.99	-0.98	1.88
2	-0.89	-0.88	2.12
2	-0.79	-0.78	2.43
2	-0.76	-0.75	2.10
1	-0.75	-0.74	2.97
1	-0.73	-0.72	4.30
1	-0.71	-0.70	4.66
1	-0.69	-0.68	6.97
1	-0.67	-0.66	10.36
1	-0.65	-0.64	22.85
1	-0.63	-0.62	22.89
1	-0.62	-0.61	22.00
1	-0.61	-0.60	24.00
1	-0.59	-0.58	26.30
1	-0.57	-0.56	60.46
1	-0.55	-0.54	63.79
1	-0.53	-0.52	53.65
1	-0.52	-0.51	43.03
1	-0.51	-0.50	39.00
1	-0.49	-0.48	37.10
1	-0.47	-0.46	30.67

1	-0.45	-0.44	27.99
1	-0.43	-0.42	21.31
1	-0.41	-0.40	14.48
1	-0.39	-0.38	12.69
1	-0.37	-0.36	10.76
1	-0.35	-0.34	10.10
1	-0.33	-0.32	10.33
1	-0.28	-0.27	8.61
1	-0.23	-0.22	8.06
1	-0.18	-0.17	5.32
1	-0.13	-0.12	5.33
1	-0.08	-0.07	5.75
1	-0.03	-0.02	6.46
1	0.02	0.03	7.36
1	0.07	0.08	11.48
1	0.12	0.13	13.70

Table 5: Results of the radiocarbon dating of column sample <1>, St Margaret’s Convent, Canning Town (MCB05)

Laboratory Code	Material and Location	Depth (m OD)	Un-calibrated Radiocarbon Years Before Present (yrs BP)	Calibrated age BC (BP) (2-sigma, 95.4% probability)	δ13C (‰)
Beta 217264 AMS	Organic silty clay directly underlying peat	-0.62 to -0.61	3550 ± 40 BP	1970 to 1760 Cal BC (3920 to 3710 Cal BP)	-28.8
Beta 217263 AMS	Top of peat	-0.52 to -0.51	3490 ± 50 BP	1940 to 1690 Cal BC (3880 to 3640 Cal BP)	-26.8

Table 6: Pollen-stratigraphic assessment from column samples <1> and <2>, St Margaret's Convent, Canning Town (MCB05)

Depth (m OD)		Main Pollen Taxa Present	Common Name	Concentration	Preservation
From	To				
-1.49	-1.48			none	Very poor
-1.19	-1.18			none	Very poor
-0.89	-0.88			Very low	Very poor
-0.79	-0.78			Very low	Very poor
-0.75	-0.74	<i>Alnus</i> , <i>Quercus</i> , Poaceae, Plantaginaceae	Alder, Oak, Grass, Plantain family.	low	poor
-0.71	-0.70	Poaceae, <i>Tilia</i>	Grass family, Lime	low	moderate
-0.67	-0.66	<i>Quercus</i> , <i>Alnus</i>	Oak, Alder	low	good
-0.63	-0.62	<i>Alnus</i> , <i>Tilia</i> , <i>Quercus</i>	Alder, Lime, Oak	low	good
-0.62	-0.61	<i>Alnus</i> , <i>Quercus</i> , Caryophyllaceae, Poaceae	Alder, Oak, Campion family, Grass family	low	good
-0.59	-0.58	<i>Alnus</i> , <i>Tilia</i> , <i>Quercus</i> , Poaceae, <i>Pinus</i>	Alder, Lime, Oak, Grass family, Pine	moderate	moderate
-0.55	-0.54	<i>Alnus</i> , <i>Pinus</i> , <i>Quercus</i> , <i>Tilia</i> , Poaceae	Alder, Pine, Oak, Lime, Grass family	moderate	Moderate

-0.52	-0.51	<i>Alnus, Tilia, Quercus,</i> Lactuaceae, Apiaceae	Alder, Lime, Oak, Daisy family eg: Thistle, Carrot family	moderate	good
-0.51	-0.50	<i>Alnus, Quercus, Corylus,</i> Lactuaceae, Caryophyllaceae	Alder, Oak, Hazel, Daisy family eg: Thistle, Campion family	moderate	good
-0.47	-0.46	<i>Alnus, Quercus, Pinus,</i> <i>Corylus, Asteraceae,</i> Lactuaceae	Alder, Oak, Pine, Hazel, Daisy family eg: dandelion, Daisy family eg: Thistle	High	good
-0.39	-0.38	<i>Alnus, Betula, Quercus,</i> Apiaceae, Chenopodium, <i>Pinus, Poaceae, Corylus,</i> Caryophyllaceae, Lactuaceae	Alder, Birch, Oak, Carrot Family, Goosefoot family, Pine, Grass family, Hazel, Campion family	low	moderate
-0.28	-0.27	Lactuaceae, Asteraceae, Poaceae, Cyperaceae, <i>Pinus, Chenopodium,</i> Caryophyllaceae	Daisy family eg: Thistle, Daisy family eg: Dandelion, Grass family, Sedge family, Pine, Goosefoot	moderate	Good

			Family, Campion family		
-0.08	-0.07	Poaceae, <i>Quercus</i> , Chenopodium, <i>Pinus</i>	Grass family, Oak, Goosefoot family, Pine	low	poor

Table 7: Insect assessment for bulk samples, St Margaret's Convent, Canning Town (MCB05)

Depth (m OD)		Sample vol. (l)	Preservation	Concentration	Taxa Identified
-0.74	-0.69	5	Poor	+	Enochrus sp.
-0.69	-0.64	7	Poor	+	Rove beetle larva
-0.64	-0.59	5	Poor	+	Helophorus sp.
-0.59	-0.54	5	Poor	+	Hydrobius sp.
-0.54	-0.49	3.5	Poor	-	
-0.49	-0.44	5	Poor	+	Enochrus sp.
-0.44	-0.39	4	Poor	-	

Key:

-	absent
+	present
++	common
+++	abundant

APPENDIX 4: OASIS FORM

OASIS ID: preconst1-16421

Project details

Project name	An Archaeological Evaluation at St. Margaret's Convent, Canning Town, London Borough of Newham, E13
Short description of the project	An Archaeological Evaluation at St. Margaret's Convent, Canning Town, London Borough of Newham, E13. One evaluation trench encountered natural terrace gravel sealed by Holocene alluvial deposits overlain by modern made ground. The site was comprehensively environmentally sampled by Archaeoscape.
Project dates	Start: 02-05-2006 End: 05-05-2006
Previous/future work	No / No
Any associated project reference codes	MCB 06 - Sitecode
Type of project	Field evaluation
Site status	Local Authority Designated Archaeological Area
Current Land use	Residential 2 - Institutional and communal accommodation
Methods & techniques	'Environmental Sampling', 'Sample Trenches'
Development type	Large/ medium scale extensions to existing structures (e.g. church, school, hospitals, law courts, etc.)
Prompt	Direction from Local Planning Authority - PPG16
Position in the planning process	Not known / Not recorded

Project location

Country	England
Site location	GREATER LONDON NEWHAM CANNING TOWN St. Margaret's Convent, Canning Town, London Borough of Newham, E13
Postcode	E13
Study area	15000.00 Square metres
National grid reference	TQ 3990 8260 Point
Height OD	Min: -1.59m Max: -1.40m

Project creators

Name of Organisation	Pre-Construct Archaeology Ltd
Project brief originator	Greater London Archaeological Advisory Service
Project design originator	Pre-Construct Archaeology Ltd

ArchaeoScape Unpublished Report 2006

Project director/manager	Chris Mayo
Project supervisor	Neil Hawkins
Sponsor or funding body	Gould And Company

Project archives

Physical Archive Exists?	No
Digital Media available	'Survey','Text'
Paper Media available	'Context sheet','Drawing','Matrices','Miscellaneous Material','Photograph','Plan','Report','Section','Survey','Unpublished Text'

Project bibliography 1

Publication type	Grey literature (unpublished document/manuscript)
Title	An Archaeological Evaluation at St. Margaret's Convent, Canning Town, London Borough of Newham, E13
Author(s)/Editor(s)	Hawkins, N.
Date	2006
Issuer or publisher	Pre-Construct Archaeology Ltd
Place of issue or publication	London

Entered by	Neil Hawkins (nhawkins@pre-construct.com)
Entered on	6 July 2006

OASIS:

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