DOCUMENT VERIFICATION

LAND AT ADVENT WAY
EDMONTON
LONDON BOROUGH OF ENFIELD

EVALUATION

Quality Control

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An Archaeological Evaluation at Land at Advent Way, Edmonton, London Borough of Enfield, N18

Site Code: AWE 06
Central National Grid Reference: TQ 3544 9219

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1 ABSTRACT

1.1 An archaeological evaluation was undertaken by Pre-Construct Archaeology Ltd. at Land at Advent Way, Edmonton, London Borough of Enfield N18. The evaluation was conducted between 6th and 10th February 2006, in advance of the redevelopment of the site. The work was commissioned by Mark Sheehan of The Big Yellow Company.

1.2 The evaluation consisted of three trial trenches, aimed at coverage of the site, all of which encountered a palaeo-environmental sequence of natural terrace gravels overlain by various organic peat deposits and alluvial clays and silts.

2 INTRODUCTION

2.1 This report details the results and working methods of an archaeological evaluation undertaken by Pre-Construct Archaeology Ltd at Land at Advent Way, Edmonton, London Borough of Enfield, N18. (location map, Fig. 1). The evaluation was commissioned by Mark Sheehan of The Big Yellow Company in advance of the redevelopment of the site.

2.2 The evaluation covers an area of land centred on National Grid Reference TQ 3544 9219. The land was previously occupied by industrial buildings before being demolished and awaiting development. The site is bounded to the north and east by existing warehouse buildings and the south and west by Advent Way. The archaeological evaluation involved the excavation and recording of three trial trenches, aimed at comprehensive coverage of the site (see trench location map, Fig. 2).

2.3 The evaluation was conducted between 6th and 10th February 2006 and followed a written specification prepared by Jon Butler of Pre-Construct Archaeology Ltd. The fieldwork was Project Managed by Jon Butler and supervised by the author. The site was monitored by Kim Stabler of English Heritage on behalf of the London Borough of Enfield.

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 AWE 06.

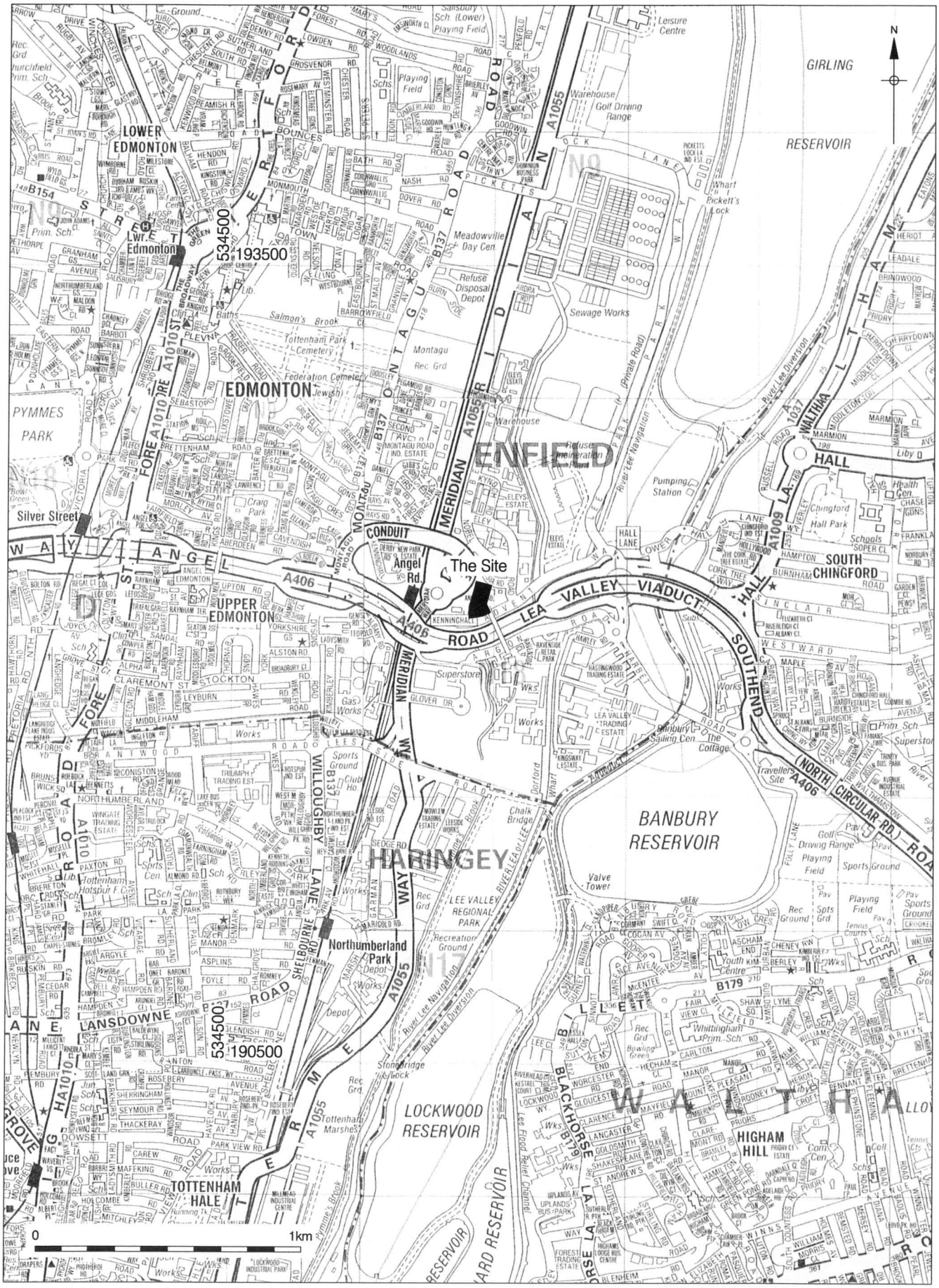

Figure 1
Site Location
1:20,000

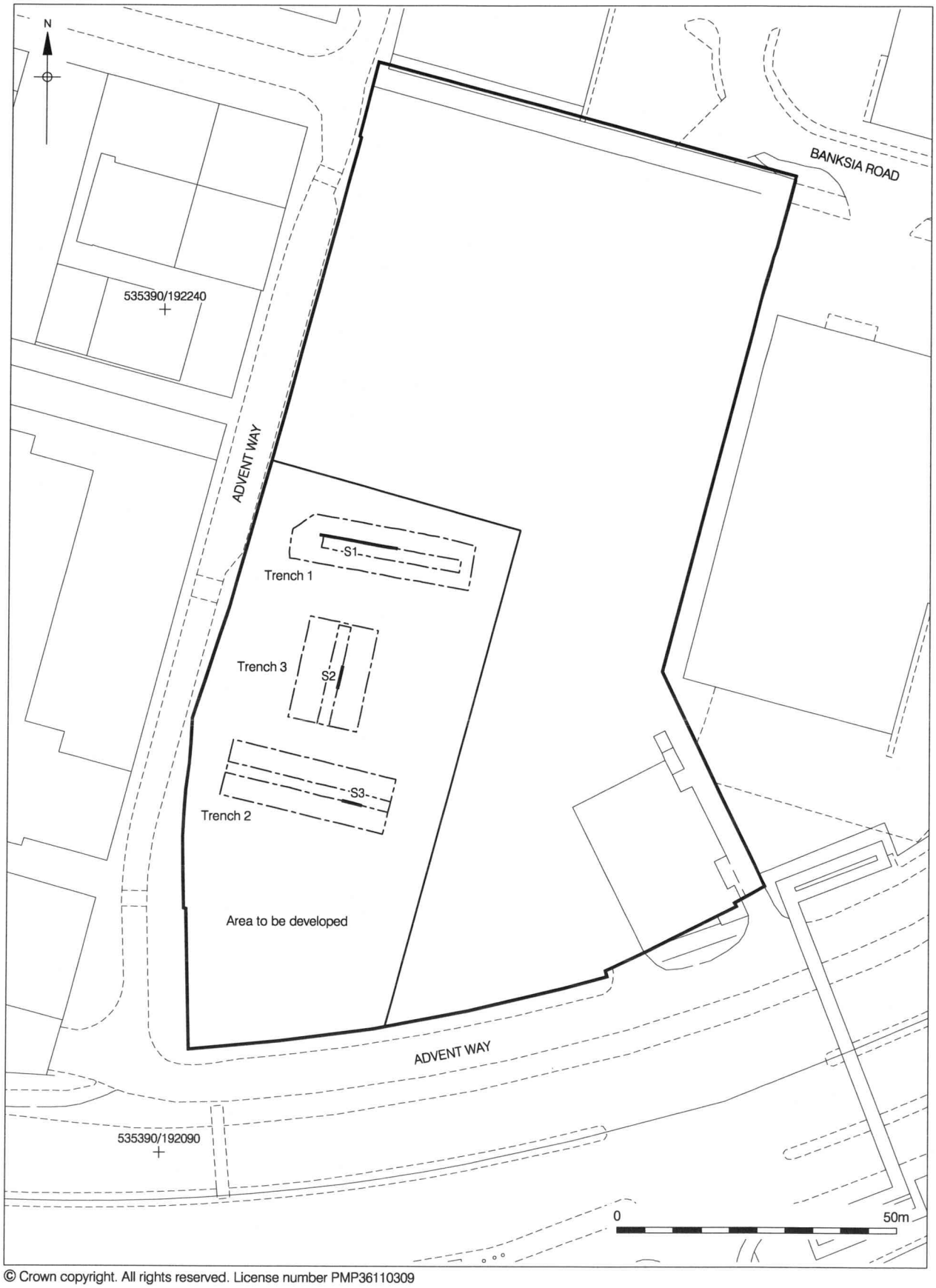

Figure 2
Trench Location
1:1000

3 PLANNING BACKGROUND

3.1 ARCHAEOLOGY IN THE LONDON BOROUGH OF ENFIELD AND THE UDP

3.1.1 In November 1990 the Department of the Environment issued Planning Policy Guidance Note 16 (PPG16) "Archaeology and Planning", providing guidance for planning authorities, property owners, developers and others on the preservation and investigation of archaeological remains.

3.1.2 In considering any planning application for development, the local planning authority will be guided by the policy framework set by government guidance, in this instance PPG16, by current Development Plan policy and by other material considerations.

3.2 The study aims to satisfy the objectives of the London Borough of Enfield, which fully recognises the importance of the buried heritage for which they are the custodians. The Borough's deposited draft 'Unitary Development Plan' 1994 contains policy statements in respect of protecting the buried archaeological resource.

Conservation and Townscape
POLICY (I) C1: TO ENSURE THAT, WHERE APPROPRIATE, AREAS, SITES, BUILDINGS AND LANDSCAPE FEATURES OF ARCHAEOLOGICAL, ARCHITECTURAL OR HISTORIC INTEREST, TOGETHER WITH THEIR CHARACTER AND SETTING, ARE PRESERVED OR ENHANCED.

3.3 The proposed development lies within an Archaeological Priority Zone as defined by the London Borough of Enfield UDP.

3.4 There are no Scheduled Ancient Monuments within the development site.

4 GEOLOGY AND TOPOGRAPHY

4.1 The British Geological Survey indicates that the site is situated on the eastern edge of the Enfield Silt's[1]. Directly to the east the geology changes to alluvium, described as mainly sand, silt and clay, associated with the River Lea and its tributaries.[2].

4.2 The site lies on relatively level ground at an average level across site of approximately 10.50m OD.

4.3 The River Lea is approximately 600m east of the study site. The river rises in Luton and eventually joins the River Thames at Bow Creek. Pymmes Brook, which is culverted, is approximately 25m south of the study site. Salmon's Brook is approximately 180m east of the study site.

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[1] British Geological Survey England and Wales Sheet 256 *North London* 1993

[2] ibid

5 ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

5.1 An Archaeological Desktop Assessment of the site has previously been conducted. The report considered the site to have a high potential for prehistoric remains, a low potential for Roman remains, and a low potential for Saxon and medieval remains. There is a low potential for post-medieval features[3].

5.2 Prehistoric

5.2.1 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 established[4]. 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). Archaeological work in the vicinity of the site has revealed finspots and activity dating to all prehistoric periods[5].

5.3 Roman

5.3.1 The Roman road Ermine Street, which runs from London to York, passes through the borough of Enfield. It lies approximately 1.5km to the west of the study site. Little evidence of the Roman period in the area exists however, other than isolated finspots.

5.4 Saxon

5.4.1 The River Lea featured prominently during the Danish invasion of England in 794-5 AD, during the reign of King Alfred. The Danish invasion force sailed up the River Thames and then up the Lea to a point approximately twenty miles north of London, this has been theorised as being in the area of Ware. In response to this King Alfred's forces obstructed the course of the river downstream, which forced the Danes to

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[3] Hawkins, 2006

[4] Meddens, 1996

[5] Hawkins, 2006

abandon their boats and escape overland[6]. Archaeological work, findspots and documentary evidence in the area attests to this Saxon activity[7].

5.5 Medieval

5.5.1 At the time of the Norman conquest of 1066, the manors of Edmonton and Enfield were held by Ansgar, Sheriff of London and Middlesex, who was also formerly a prominent official in the court of King Edward the Confessor. Ansgar was of Anglo-Danish descent, he was the grandson of Tovi the Proud, who was a follower of Cnut, and who founded the collegiate church that subsequently became Waltham Abbey. At the time of the Domesday Book, 1086, the manor of Edmonton was held by the Norman Geoffrey de Mandeville. Edmonton was a well-established settlement even by 1086, as it is recorded as having sufficient woodland to sustain two thousand pigs. The River Lea continued to play an important role into the medieval period; it was used to carry cargoes of grain from Hertfordshire to London[8]. Evidence for the medieval period is present in the archaeological record, notably as manors at Willoughby House and Chingford[9].

5.6 Post-Medieval

5.6.1 The post-medieval history of the area is marked by the development of Edmonton into a town and then suburb of London. By the 19th century the population had risen drastically, bringing with it problems of ill-health and overcrowding. The site however was located on the periphery of this development in an area of agricultural usage[10].

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[6] Dalling, 1996, p.8

[7] Hawkins, 2006

[8] Dalling 1996

[9] Hawkins, 2006

[10] Hawkins, 2006

6 METHODOLOGY

6.1 The excavation of three trenches was outlined in the Specification for an Archaeological Field Evaluation prepared by Pre-Construct Archaeology Ltd[11]. The fieldwork was designed to assess the presence or absence of significant archaeological remains, which may require further investigation.

6.2 All trenches were excavated with a 360° mechanical excavator fitted with a flat-bladed ditching bucket, under the supervision of an archaeologist. The maximum dimensions of the trenches are 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 at trench base	Max height (m OD)
1	30.00m x 2.00m	10.53
2	10.00m x 2.00m	10.55
3	30.00m x 2.00m	10.58

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 A temporary benchmark, 11.00m OD, was traversed onto the site from the Ordnance Survey Benchmark of 11.26m OD, located on the corner of Block A Nobel Road.

[11] Butler, 2006

7 ARCHAEOLOGICAL SEQUENCE

7.1 Phase 1 – Natural Terrace Gravel

7.1.1 The earliest deposit encountered throughout Trenches 1-3 was the natural terrace gravel, [6], [30] and [16] respectively. In Trench 1, [6], it was encountered at c. 6.67m OD. In Trench 2, [30], it was encountered at c. 6.06m OD. In Trench 3, [16], it was encountered at c. 6.44m OD.

7.2 Phase 2 – Alluvial Clays, Silts, Peat and Marl

7.2.1 Sealing the gravel, [6], in Trench 1 was a thin deposit of organic silt [5]. This was encountered at a level of 6.85m OD and had a thickness of c. 0.18m. At the western end of the trench this layer was sealed by a thin bed of peat, [10], which was encountered at 7.02m OD. This was overlain by a sandy layer [9]. In the eastern end of the trench the peat was replaced by layers of marly and gravely sand [4] and [3], which were overlain by a similar layer [2] that ran throughout the trench. These were encountered between 6.69m OD and 7.97m OD. These deposits were apparently overlying and cutting into the peat, layers [8] and [7], at the western end of the trench, with an erosional contact. This deposit is discussed in more detail in Appendix 3 but is described as being very variable in character, with slightly undulating horizontal bedding separating discontinuous beds of gravely sand, marly sand, silty clay, wood rich horizons and redeposited peat[12]. Rich in molluscan remains, a major component of this deposit was rolled clasts of weakly cemented tufaceous marl[13]. Sealing this was an alluvial silty clay layer, [1], equivalent to layers [18] and [17] in Trench 2 and layers [12] and [11] in Trench 3, which was encountered at a highest level of 8.46m OD and had a maximum thickness of 1.04m.

7.2.2 Sealing the gravel, [30], in Trench 2 was a layer of fine sand, [27], encountered at 6.26m OD, which was overlain by well-humified wood peat, [26], [25] and [24] and [19], encountered between 6.26m OD and 7.38m OD. These were overlain by alluvial silt layers [18] and [17], encountered between 7.38m OD and 8.56m OD. In the eastern end of the trench a bed of marly and gravely sand, similar to the sequence encountered in Trench 1, was present within the peat sequence. These peat layers [23], [22] and [21], were encountered between 7.06m OD and 7.25m OD, and formed

[12] Appendix 3

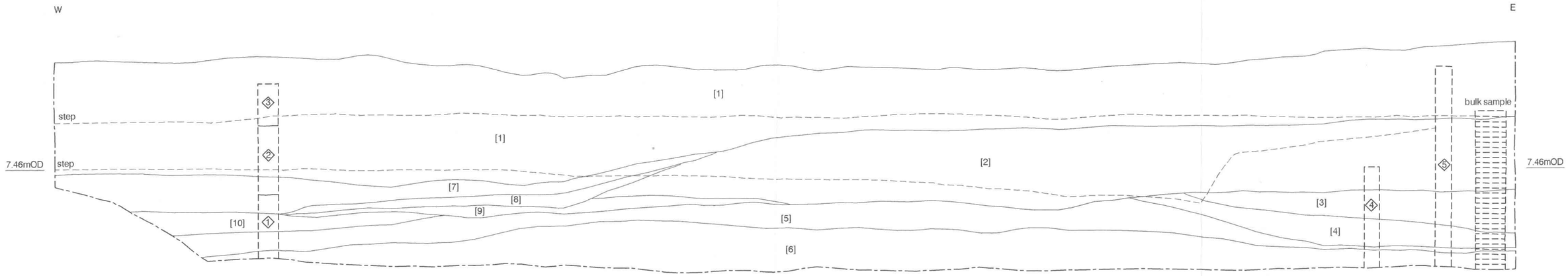
[13] Green *et al*, this volume

a wedge shaped inclusion which thickened eastward. As with Trench 1 it appeared to be cutting down into the peat but also with peat overlying it, layer [19].

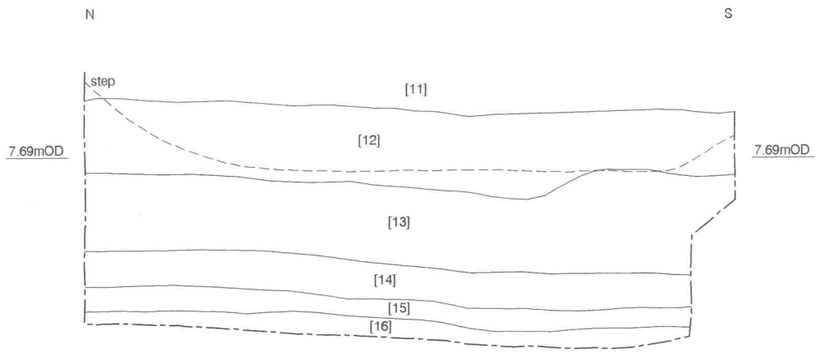
7.2.3 Sealing the gravel, [16], in Trench 3 was a thin layer of organic silt, [15], which was overlain by peat deposits, [14] and [13]. This was encountered at a level of 7.60m OD and had a thickness of c. 0.80m. This was sealed by layers of alluvial silty clay, [12] and [11], equivalent to layer [1] in Trench1 and layers [18] and [17] in Trench 2. This was encountered at a level of 9.29m OD and had a thickness of c. 1.80m.

7.3 Phase 3 – Modern Made Ground

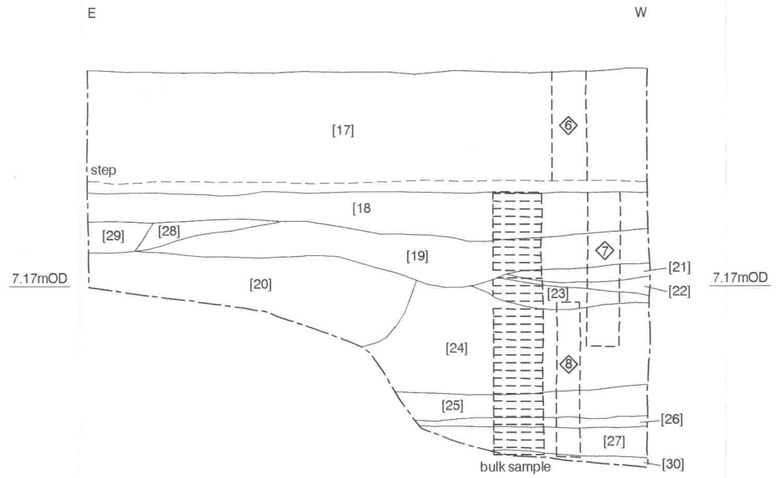
7.3.1 In all the trenches the uppermost alluvial layers were sealed by a layer c. 2m thick of modern made ground, including new crush material to be used as a pile mat.



Section 1
South Facing
Trench 1



Section 3
West Facing
Trench 2



Section 3
North Facing
Trench 2

Figure 3
Sections 1, 2 & 3
1:40

8 TRENCH SUMMARY

8.1 TRENCH 1

8.1.1 Trench 1 revealed natural terrace gravel overlain by a sequence of alluvial clays, silts, peat and marl sealed by more alluvial silty clay, overlain by modern made ground.

8.2 TRENCH 2

8.2.1 Trench 2 revealed natural terrace gravel overlain by a sequence of alluvial clays, silts, peat and marl sealed by more alluvial silty clay, overlain by modern made ground.

8.3 TRENCH 3

8.3.1 Trench 3 revealed natural terrace gravel overlain by a sequence of alluvial clays, silts, peat and marl sealed by more alluvial silty clay, overlain by modern made ground.

9 CONCLUSIONS

9.1.1 The evaluation revealed natural deposits in all trenches consistent with the underlying terrace gravels and alluvial deposits associated with the River Lea. No evidence for human activity before the 20th century was encountered within any of the evaluation trenches.

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 ArchaeoScape[14].

9.1.3 Results of radiocarbon samples taken from Trenches 1 and 2 give an indication of the time period when the deposits formed. The organic silt at the base of Trench 1, context [5], was dated to 9390 to 9220 cal BC. In Trench 2 the transition between the fine sand, [27], and the peat, [26], was dated to 9990 to 9330 cal BC, this indicates organic sedimentation from the early postglacial (Holocene) and during the Mesolithic cultural period. The top of the peat in Trench 2, context [19], was dated to 3020 to 2860 / 2800 to 2760 cal BC, indicating that peat continued to accumulate during the middle Holocene and into the Neolithic[15].

9.1.4 Results of the pollen recovered can reconstruct the environment from the early postglacial (Holocene) on the site. The pollen record from Trench 1 suggests a wetland vegetation cover consisting of grass and sedge swamp, and a dryland cover dominated by oak woodland, shortly before 9390 to 9220 cal BC. Later in the sequence it indicates a wetland vegetation cover dominated by alder, forming alder Carr woodland, with an understorey comprising sedges and grasses. Dryland consists of a vegetation cover consisting of pine, oak and probably hazel, forming mixed coniferous and deciduous woodland. In Trench 2 birch and pine are dominant shortly after 9990 to 9330 cal BC, suggesting the presence of pine and birch woodland nearby. After this distinct wetland and dryland plant communities can be discerned. The wetland includes willow, perhaps forming willow Carr woodland, with an understorey comprising sedge and meadowsweet. Pine woodland continued to dominate the dryland. Succeeding willow in the wetland was alder, forming an alder Carr woodland. This is later replaced by grass and reedmace in the pollen sequence

[14] Green *et al*, this volume

[15] Green *et al*, this volume

suggesting a retrogressive succession to grass and reedmace swamp. This is highlighted as coinciding with the transition from peat to mineral rich sediment at c. 2800 cal BC. Throughout this interval the dryland vegetation consisted of pine succeeded by oak and lime, forming mixed deciduous woodland[16].

9.1.5 The palaeo-environmental sequence encountered at the site has been identified as being of particular interest because of its' proximity to the 'Lea Valley Arctic Bed' of Late Devensian age. Despite occupying the same OD height range as the 'Arctic Bed' in nearby Angel Road, the flora encountered in this evaluation are warm loving trees and shrubs, whereas the previous investigation indicate tundra conditions (cold climate). The evidence indicates that the organic deposits encountered on site are clearly Holocene in age and related in part to the previously mentioned 'Arctic Beds'. Also noted as being of particular interest is the occurrence of a distinctive tufaceous deposit in close association with a sequence of peat and organic sediments. This tufa bearing deposit is described as resting on an uneven surface apparently resulting from erosion of the underlying peaty sediments. This is thought to have developed in a quiet water environment in which episodes of more active movement were regularly experienced. Formation in a substantial shallow lake occupying a depression on the floodplain seems probable, at a distance from the main channel of the river but subject to regular flooding[17].

[16] Green *et al*, this volume

[17] Green *et al*, this volume

10 ACKNOWLEDGEMENTS

10.1 Pre-Construct Archaeology Limited would like to thank Mark Sheehan of the Big Yellow Company for commissioning the work, on behalf of someone who kindly funded the project.

10.2 Pre-Construct Archaeology Limited would also like to thank Kim Stabler of English Heritage for monitoring the work. Special thanks also to Royal Holloway for undertaking the palaeo-environmental work.

10.3 The author would also like to thank the field staff Shane Maher and Mary-Ellen Crothers, Hayley Baxter for the illustrations, Lisa Lonsdale for the logistics and Jon Butler for his project management and editing.

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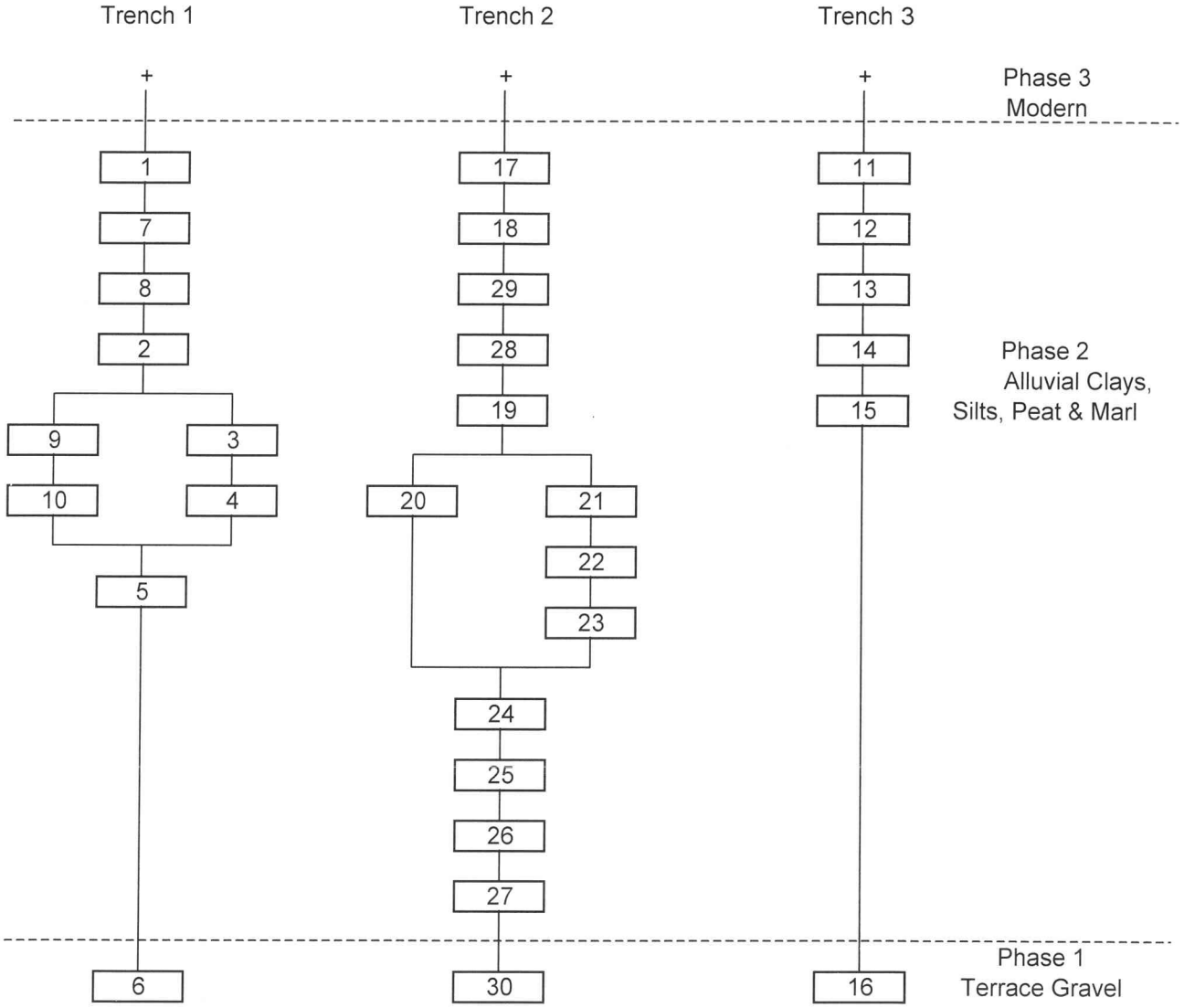
APPENDIX 1: Context Descriptions

Context No.	Type	Trench	Phase	Description
1	Layer	1	2	Alluvium
2	Layer	1	2	Alluvium
3	Layer	1	2	Alluvium
4	Layer	1	2	Course shelly sand
5	Layer	1	1	Alluvium
6	Layer	1	2	Terrace gravel
7	Layer	1	2	Sandy Layer
8	Layer	1	2	Peaty Layer
9	Layer	1	2	Sandy Layer
10	Layer	1	2	Peaty Layer
11	Layer	3	2	Alluvium
12	Layer	3	2	Alluvium
13	Layer	3	2	Alluvium
14	Layer	3	2	Peat
15	Layer	3	2	Alluvium
16	Layer	3	1	Terrace gravel
17	Layer	2	2	Alluvium
18	Layer	2	2	Alluvium
19	Layer	2	2	Peat
20	Layer	2	2	Calcarious Deposit
21	Layer	2	2	Calcarious Deposit
22	Layer	2	2	Alluvium
23	Layer	2	2	Peat
24	Layer	2	2	Alluvium
25	Layer	2	2	Alluvium
26	Layer	2	2	Peat
27	Layer	2	2	Clay Sand Layer
28	Layer	2	2	Marl Layer
29	Layer	2	2	Gravelly Layer
30	Layer	2	1	Terrace gravel

APPENDIX 2: SITE MATRIX



APPENDIX 3: ENVIRONMENTAL ARCHAEOLOGICAL ASSESSMENT

ADVENT WAY, EDMONTON, LONDON BOROUGH OF ENFIELD (SITE CODE: AWE06): ENVIRONMENTAL ARCHAEOLOGICAL ASSESSMENT

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INTRODUCTION

This report summarises the findings arising out of the environmental archaeological assessment undertaken by *ArchaeoScape* in connection with the proposed development at Advent Way, Edmonton, London Borough of Enfield (Site Code: AWE06; National Grid Reference: TQ 3540 9220). During the archaeological evaluation, in conjunction with Pre-Construct Archaeology Ltd, excavation of three deep trenches (Trenches 1, 2 and 3) permitted systematic recording of the natural sedimentary successions. *ArchaeoScape* implemented a targeted sampling strategy, which enabled the collection of column and bulk samples suitable for an environmental archaeological assessment, and possible future analysis, from Trenches 1 and 2. The assessment was deemed necessary because of considerable research interest in the environmental context of human activities in the Lea valley, in particular during the late Devensian Lateglacial and early Holocene (*ca.* 14,000-8000 cal BP; 12,000-6000 cal BC). Therefore, the overarching aim of the environmental archaeological assessment was to establish the potential of the sedimentary successions for reconstructing the environmental history of the site and its environs. The assessment consisted of:

1. Recovering column samples <1>, <2>, <3>, <4> and <5>, and thirty-one bulk samples from Trench 1, and column samples <6>, <7> and <8>, and thirty bulk samples from Trench 2
2. Recording the lithostratigraphy (all column samples) and quantifying the organic matter content of column samples <1> and <2> (Trench 1), and <7> and <8> (Trench 2) to provide a preliminary reconstruction of the site formation processes
3. Assessment of the preservation and concentration of pollen grains and spores from Trench 2 (column samples <7> and <8>) to provide a preliminary reconstruction of the vegetation history

4. Assessment of the preservation and concentration of Mollusca from Trench 1 (bulk samples) to provide a preliminary reconstruction of the vegetation and hydrology
5. Radiocarbon dating of the peat deposits in Trench 2 (column samples <7> and <8>) and in Trench 1 (column sample <1>) to provide a provisional geochronological framework for the sedimentary successions.

GEOLOGICAL CONTEXT

The site is on the floor of the Lea valley, to the west of the river, in Edmonton and about 12 km upstream from the confluence of the River Lea with the River Thames. The ground level at the site is between 11.0m and 12.0m OD but variable amounts of Made Ground (1.0-2.0m) are present, and in Trench 2 (the most southerly of the three evaluation trenches), the top of the natural sequence was at 10.22m OD. The British Geological Survey (BGS) (1:50,000 Sheet 256 North London 1994) shows the site on the boundary between the Alluvium of the River Lea, to the east, and an outcrop of the Enfield Silt to the west. The cross section accompanying the map (Section 3) traverses this outcrop about 1km to the south of the site, and the Enfield Silt is shown as resting on the Kempton Park Gravel.

METHODS

Field investigations

Three column samples (<1>, <2> and <3>) were recovered from the western end of Trench 1 through the thin bed of peat. Two further column samples (<4> and <5>) and thirty-one continuous bulk samples, each 5cm in thickness (*ca.* 40 litres in volume), were recovered from the eastern end of Trench 1 through tufaceous marl (Table 1). Three column samples (<6>, <7> and <8>) and thirty bulk samples, each 5cm in thickness (*ca.* 40 litres in volume), were recovered from the eastern end of Trench 2 through the gravel, peat, marl and gravelly sand, and silty clay (Table 1). Samples were not recovered from Trench 3 as the deposits were consistent with those sampled in Trenches 1 and 2.

Lithostratigraphic descriptions

The lithostratigraphy of all 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 to 9, and Figures 1 and 2.

Organic matter determinations

Sixty-two sub-samples were taken from column samples <1> and <2> (between 6.64m and 8.01m OD) from Trench 1 to determine the organic matter content (Table 10, and Figure 3a). Seventy-five sub-samples were taken from column samples <7> and <8> (between 6.10m and 7.87m OD) from Trench 2 also to determine the organic matter content (Table 10, and Figure 3b). These records are important for two reasons: (1) they identify lithostratigraphic units with a high organic matter content 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 110^0C for 12 hours to remove excess moisture
2. Placing the sub-sample in a muffle furnace at 550°C for 2 hours to remove organic matter (thermal oxidation)
3. Re-weighing the sub-sample to obtain the 'loss-on-ignition' value (see Bengtsson and Enell, 1986).

Radiocarbon dating

Sub-samples were taken from the top (7.36 to 7.37m OD) and base (6.23 to 6.24m OD) of the peat in Trench 2 (column samples <7> and <8>). An additional sample (6.78 to 6.79m OD) was taken from the base of the peat sequence in Trench 1 (column sample <1>). All sub-samples were submitted for radiocarbon dating to Beta Analytic Inc, Florida, USA (Table 11). The results have been calibrated with Oxcal v.3.5 (Bronk-Ramsey, 1995 and 2001), using data from Stuiver *et al.* (1998).

POLLEN ASSESSMENT

Twenty sub-samples were extracted from Trench 1 from column samples <1> and <2> (between 6.64 and 8.01m OD) for assessment of the pollen content. Nineteen further sub-samples were extracted from Trench 2 from column samples <8> and <7> (between 6.10 and 7.51m 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 coarse mineral and organic fractions (>125µ)
4. Removal of finer minerogenic fraction using Sodium polytungstate (specific gravity of $2.0g/cm^3$)
5. 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 is 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 12).

MOLLUSCA ASSESSMENT

Fifteen bulk sub-samples (*ca.* 2 litres in volume) from the tufa sequence in Trench 1 were processed for the Mollusca assessment. The samples were dispersed in hot water, and hydrogen peroxide (5%) added to oxidise the organic matter content. The samples were then sieved through a 500-micron mesh. The residues were scanned using a low power zoom-stereo microscope. The assessment procedure consisted of scanning the residues and recording the concentration and state of preservation of Mollusca, and the principal taxa (Table 13).

RESULTS OF THE LITHOSTRATIGRAPHIC ANALYSES

Trench 2

Trench 2, located at the southern most end of the site, exposed 2.50m of fine-grained deposits resting on gravel (context (30)) at *ca.* 6.06m OD (3.95m including the Made Ground). At the western end of the trench, the fine-grained deposits comprised a sequence of fine sand (context (27); 6.06-6.26m OD), well-humified wood peat (contexts (26), (25), (24) and (19); 6.26-7.38m OD) overlain by silt (contexts (18) and (17); 7.38-8.56m OD). However, passing eastward, a bed of marly and gravelly sand was present within the peat sequence (contexts (23), (22) and (21); 7.06-7.25m OD), forming a crudely wedge-shaped inclusion that thickened eastward, cutting down into the peat but also having peat overlying it (context (19)) and feathering out in an easterly direction. Near the eastern end of the Trench, the marly sand was cut by bright orange-brown sandy gravel, which thickened eastward.

Trench 1

Fine-grained deposits were also present in Trench 1 (the most northerly trench) resting on gravel (context (6)) at 6.67m OD. At the western end of Trench 1, a thin bed of organic silt was present at the bottom of the sequence (context (5); 6.67-6.85m OD), resting directly on

the underlying gravel. This was succeeded by a thin bed of peat (context (10); 6.85-7.02m OD) and a fine sand with tufa particles (context (7); 7.02-7.42m OD). As in Trench 2 the peat was replaced eastward by marly and gravelly sand (contexts (4), (3) and (2); 6.69-7.97m OD), apparently overlying and cutting into the peat with an erosional contact. This deposit was very variable in character, with slightly undulating horizontal bedding separating discontinuous beds of gravelly sand, marly sand, silty clay, wood-rich horizons and redeposited peat. Pieces of wood (up to 2.0m x 0.3m) were scattered throughout this context, which was also very rich in molluscan remains. Rolled clasts of weakly cemented tufaceous marl formed a major component of this deposit. This variable context was overlain by silty clay (context (1); 7.42-8.46m OD) resembling the silty clay forming the upper part of the sequence in Trench 2. At the eastern end of the trench, the contact between the variable sands and the overlying silty clay was at 7.96m OD.

Trench 3

In Trench 3, located between Trenches 1 and 2, the fine-grained deposits overlying the gravel consisted of a thin (*ca.* 20cm) bed of organic sand at the base of the sequence, overlain by peat (up to *ca.* 0.8m in thickness). This was overlain by silty clay resembling the silty clay forming the upper part of the fine-grained sequences in Trenches 1 and 2, but incorporating (mainly towards the base of the context) lenses and partings of sand, scattered pebbles, thin and discontinuous wood-rich horizons and larger (up to 0.5m) pieces of wood.

RESULTS OF THE RADIOCARBON DATING

The results of the radiocarbon dating indicate that the age of the organic silt at the base of Trench 1 (context (5)) is 9390 to 9220 cal BC (6.78 to 6.79m OD). The age at the transition between the fine sand and peat in Trench 2 (context (27)) is 9990 to 9330 cal BC (6.23 to 6.24m OD). Both dates are substantially older than the ages obtained from the base of the sequence at Enfield Lock (Chambers *et al.*, 1996), and indicate organic sedimentation from the early postglacial (Holocene) and during the Mesolithic cultural period. The age ranges at the top of the peat in Trench 2 (context (19)) are 3020 to 2860 / 2800 to 2760 cal BC (7.36 to 7.37m OD), indicating that peat continued to accumulate during the middle Holocene and into the Neolithic cultural period. The δ13C (‰) values are consistent with that expected for organic sediment, and there is no evidence for mineral or biogenic carbon contamination.

RESULTS AND INTERPRETATION OF THE POLLEN ASSESSMENT

The results of the assessment from Trench 2 indicate poor pollen preservation and a low concentration between 6.30-6.79m OD (contexts (26), (25) and the lowermost part of (24)).

During this interval, the dominant pollen taxa were *Betula* (Birch) and *Pinus* (Pine), suggesting the presence of pine and birch woodland near to the site from shortly after 9990 to 9330 cal BC. Above 6.79m OD (context (24)), the pollen preservation and concentration considerably improve, and indicate distinctive wetland and dryland plant communities. The former included *Salix* (Willow), perhaps forming willow Carr woodland, with an understorey comprising Cyperaceae (Sedge) and *Filipendula* (Meadowsweet). On dryland, pine woodland continued to dominate the woodland cover. The pollen record indicates that succeeding willow, *Alnus* (Alder) colonised the wetland surface forming alder Carr woodland (contexts (24), (23), (22), (21) and (19)). This persisted until 7.42m OD, when the pollen record indicates a dominance of Poaceae (Grass) and *Typha latifolia* (Reedmace), suggesting a retrogressive succession to grass and reedmace swamp (context (18)). This event coincides with the transition from peat to mineral rich sediment accumulation at *ca.* 2800 cal BC (3020 to 2860 / 2800 to 2760 cal BC). The pollen record indicates that throughout this interval, the dryland vegetation consisted of pine, succeeded by *Betula, Quercus* (Oak) and *Tilia* (Lime), formed mixed deciduous woodland. The absence of pollen preservation between 6.10-6.23m OD (context (27)), and 7.18-7.19m OD (context (22)), is attributed to either physical destruction during deposition within the coarse mineral-rich sediment matrix, or chemical oxidation due to the suspected neutral-alkaline pH of the sediment and pore water.

The results of the assessment from Trench 1 are highly variable, with low to medium pollen concentration, and poor to good preservation. Between 6.70-6.77m OD (context (5)), the pollen record is dominated by Poaceae (Grass), Cyperaceae (Sedge), *Taraxacum* type (e.g. Dandelion) and *Quercus* (Oak). This suggests a wetland vegetation cover consisting of grass and sedge swamp, and a dryland cover dominated by oak woodland, shortly before 9390 to 9220 cal BC. Above 6.77m OD, there is no pollen preservation until 7.00m OD (context (10)), when the pollen record once again indicates swamp vegetation on the site. The absence of pollen preservation between 6.77-7.00m OD is surprising, given the organic nature of the sedimentary sequence. From 7.06-7.13m OD (context (7)), pollen is once again absent. Between 7.18-8.01m OD (contexts (7) and (1)) the pollen record indicates a wetland vegetation cover dominated by *Alnus* (Alder), forming alder Carr woodland, with an understorey comprising sedges and grasses. On dryland, the pollen record indicates a vegetation cover consisting of pine, oak and probably hazel (*Corylus* type), forming mixed coniferous and deciduous woodland.

RESULTS AND INTERPRETATION OF THE MOLLUSCA ASSESSMENT

Fifteen sample residues from bulk samples taken in Trench 1 alongside column samples <4> and <5> were examined, and all samples, except one, 6.52-6.57m OD (context (6)), yielded

shells of aquatic molluscs. The preservation was generally good, although some shells were encrusted with tufa. Shells were abundant in most samples, except between 6.67m to 7.12m OD where lower totals were recovered. The assemblages were dominated throughout by *Valvata piscinalis* and *Bithynia tentaculata,* but from 7.17m to 7.22m OD (contexts (3) and (2) boundary), these two co-dominants were joined by *Theodoxus fluviatilis*. Other aquatic species included *Valvata cristata*, *Bithynia leachii*, *Lymnaea peregra*, *Gyraulus albus*, *G. crista*, *Bathyomphalus contortus*, *Acroloxus lacustris* and *Ancylus fluviatilis*. Occasional land snails (e.g. *Carychium minimum*, *Zonitoides nitidus*, *Oxyloma pfeifferi* and *Vertigo antivertigo*) were present in a few samples. The assemblages are clearly Holocene in age. The presence of *Discus rotundatus* in some levels (7.42-7.47m OD, 7.62-7.67m OD and 7.82-7.87m OD; context (2)) implies that these are younger than about 7500 cal BC (cf. Preece, 1998).

DISCUSSION OF THE PROXY RECORDS

The deposits exposed at Edmonton are of particular interest because of their proximity to well-documented occurrences of the enigmatic 'Lea Valley Arctic Bed' of Late Devensian age (Ponders End Stage) described in the early years of the 20th century by Hazzeldine Warren (1912, 1916, 1923 and 1938). Gibbard (1994) notes the problematic relationship between the 'Arctic Bed' and other deposits on the floor of the Lea valley:

> ".....it is apparent that the sediments containing the 'Arctic Bed' were extensive beneath a 'Low Terrace' 1-2m above the modern floodplain.....However, from the descriptions, it is clear that the underlying deposits are continuous, at least in part, with the sediments beneath the alluvium.....neither the previous descriptions nor modern observations offer clear evidence for an erosional event between these two accumulations"

Therefore, until the matter can be clarified, the noncommittal member term 'Lea Valley Gravel' is proposed here for the sand and gravel unit underlying the modern floodplain and Warren's 'Low Terrace' (The sediments underlying Warren's 'Low Terrace' are now mapped by the BGS as Kempton Park Gravel).

The Edmonton site is less than 1km to the south and slightly east of the Angel Road pit (NGR: TQ 352 930) described by Warren (1916) where he illustrates the 'Arctic Bed' at levels between approximately 15 and 30 feet OD (4.60-9.10m OD). It is evident therefore that the richly organic deposits exposed at the Edmonton site occupy the same height range OD as

the 'Arctic Bed' in the nearby Angel Road pit. According to the results of the assessment, however, the Edmonton deposits do not form part of the 'Arctic Bed' as the flora recorded in deposits of the Ponders End Stage indicate tundra conditions (cold climate) in which warmth loving trees and shrubs e.g. alder, oak, lime and hazel, such as those recorded at Edmonton, are not present. It may also be significant that no remains of large cold stage mammals (e.g. mammoth, rhinoceros) have been recorded at Edmonton, whereas they were common in association with the 'Arctic Bed'.

Based on the evidence presented here, the organic deposits at the Edmonton site are clearly of Holocene age and related in part to those described by Chambers *et al* (1996) at Enfield Lock, and by Allison *et al* (1952) from the floor of the Lea valley at Nazeing, *ca.* 6.5km and 16km upstream from the present site (respectively). At Enfield Lock, Chambers *et al* (1996) describe a sequence of organic sediments overlain by shell marl at a level between 14m and 15m OD. Radiocarbon dates from the base of this sequence indicate an early Holocene age (*ca.* 8750 cal BC (9546±55 BP and 9550±70 BP)), while the pollen record indicates deposition of the organic sediments in the period up to approximately 6900 cal BC. This pollen sequence is similar to that recorded by Allison *et al* (1952) at Nazeing at levels of about 24m to 25m OD. Because of pollen evidence, the Nazeing deposits were assigned to pollen zones IV (Pre-Boreal) to VIIa (Atlantic). This interpretation is entirely supported by the new pollen records from Trench 2 at Edmonton, suggesting a landscape initially dominated by pine and birch woodland, which was succeeded by mixed deciduous woodland with oak, lime and hazel. The possible correlation of the deposits at Nazeing and Enfield Lock with those at Edmonton can be tentatively inferred from the continuity of the downstream gradient between the sites. A gradient of 1.06m/km projected downstream from the base of the pollen sequence at Nazeing intersects the base of the organic sequence at Enfield Lock at *ca.* 14m OD and the base of the organic sequence at Edmonton site at *ca.* 7.0m OD.

Of particular interest at Edmonton is the occurrence of a well-developed and distinctive tufaceous deposit in close association with a sequence of peat and organic sediments. In all three trenches at Edmonton, gravel was seen to underlie the organic sequences. At the western end of Trench 1, and in Trench 2, a thin layer of fine-grained organic-rich mineral sediment rests directly on the gravel and is succeeded upward by peat or peaty silt. At the eastern end of Trench 1, tufa-bearing sand rests directly on the gravel at a level of 6.71m OD and can be traced westward to overlie the peat and organic silt at 7.02m OD. The contact appears to be erosional; an interpretation supported by the pollen assessment from Trench 1, which has provided an incomplete, and rather confusing, record of vegetation succession on the wetland surface. Similar tufa-bearing sand is present in Trench 2, resting on peat,

possibly also with an erosional contact and at a level (7.06m OD) closely similar to the level at the base of the tufa-bearing sands at the western end of Trench 1 (7.02m OD). Thus, the tufa-bearing deposit rests on an uneven surface apparently resulting from erosion of the underlying peaty sediments and separated from them stratigraphically by an indeterminate period. The predominantly oncoidal form of the tufa accumulation, and the composition of the Mollusca assemblage, suggests that it developed in a quiet water environment in which episodes of more active water movement were regularly experienced. Formation in a substantial shallow lake occupying a depression on the floodplain seems likely, probably at a distance from the main channel of the river but subject to regular flooding.

The tufa-bearing sands extend up to a level of 7.97m OD at the eastern end of Trench 1 but at the western end of the trench are replaced by organic silts at a level of *ca.* 7.47m OD, and in Trench 2 are replaced by peat at a level of 7.25m OD. These changes appear to indicate a renewed phase of erosion, with the removal of most of the tufa-bearing sand in Trench 2 and a resumption there of peat accumulation on its truncated surface after an unknown period of time, prior to the deposition of the silts forming the floodplain alluvium. The complete absence of the tufa-bearing deposits in Trench 3, lying between Trenches 1 and 2, tends to support the evidence in Trenches 1 and 2 for a history of localised erosional and depositional phases. Either the lacustrine depression in which the tufa-bearing sediments formed did not extend into the area of Trench 3, or these deposits were completely removed in Trench 3 during the erosional episode that substantially truncated them in Trench 2.

In conclusion, the deposits at Edmonton are obviously different from those described at Nazeing or at Enfield Lock and therefore have the potential to extend our understanding of valley floor process in the early Holocene. Therefore, this is a site of considerable interest and importance for the understanding of environment and process in the river valleys of southeast England during the transition from the cold climate conditions of the Late Devensian to the fully temperate conditions of the early Holocene. Further investigation prior to publication of the Edmonton deposits recovered from these samples will permit a detailed reconstruction of the environmental history of this part of the Lea valley, and allow us to explore two important issues:

1. Marl deposits were recorded at both Nazeing and Enfield Lock, with those at Nazeing pre-dating the Holocene pollen sequence, whereas those at Enfield Lock overlie and are therefore later than the early Holocene pollen sequence there. At Enfield Lock, Chambers *et al* (1996) did not satisfactorily date them. The well-developed and distinctive oncoidal tufa-bearing deposits at Edmonton, both overlying and

interpenetrating the peat, therefore provide an important opportunity to establish more clearly the age and environmental significance of Holocene floodplain marls and tufa/travertine deposits within and beyond the Lea valley.

2. A preliminary examination of a small sample from the base of the tufa-bearing sand at the eastern end of Trench 1 established the presence of the mollusc species *Theodoxus fluviatilis*. The Mollusca assessment confirms the common presence of this species and shows that it first appears at this site part way through the deposition of the tufaceous sediment. This species was also present at Enfield Lock but was not recorded from the Nazeing deposits. The date at which *T. fluviatilis* migrated into Britain remains uncertain and its appearance part way through the depositional sequence at Edmonton provides a new opportunity to examine this issue.

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TABLE 1: DETAILS OF SAMPLES RECOVERED FROM TRENCH 2 AND TRENCH 1, ADVENT WAY, EDMONTON (AWE06)

Trench Number	Sample Type	Column Sample	Height (m OD)	
			From	To
2	Column	8	6.06	7.06
2	Column	7	6.78	7.78
2	Column	6	7.78	8.56
2	Bulk		6.18	6.23
2	Bulk		6.23	6.28
2	Bulk		6.28	6.33
2	Bulk		6.33	6.38
2	Bulk		6.38	6.43
2	Bulk		6.43	6.48
2	Bulk		6.48	6.53
2	Bulk		6.53	6.58
2	Bulk		6.58	6.63
2	Bulk		6.63	6.68
2	Bulk		6.68	6.73
2	Bulk		6.73	6.78
2	Bulk		6.78	6.83
2	Bulk		6.83	6.88
2	Bulk		6.88	6.93
2	Bulk		6.93	6.98
2	Bulk		6.98	7.03
2	Bulk		7.03	7.08
2	Bulk		7.08	7.13
2	Bulk		7.13	7.18
2	Bulk		7.18	7.23
2	Bulk		7.23	7.28
2	Bulk		7.28	7.33
2	Bulk		7.33	7.38
2	Bulk		7.38	7.43
2	Bulk		7.43	7.48
2	Bulk		7.48	7.53
2	Bulk		7.53	7.58

2	Bulk		7.58	7.63
2	Bulk		7.63	7.78
1 (west)	Column	1	6.59	7.20
1 (west)	Column	2	7.21	7.89
1 (west)	Column	3	7.89	8.30
1 (east)	Column	4	6.50	7.47
1 (east)	Column	5	7.46	8.46
1	Bulk		6.47	6.52
1	Bulk		6.52	6.57
1	Bulk		6.57	6.62
1	Bulk		6.62	6.67
1	Bulk		6.67	6.72
1	Bulk		6.72	6.77
1	Bulk		6.77	6.82
1	Bulk		6.82	6.87
1	Bulk		6.87	6.92
1	Bulk		6.92	6.97
1	Bulk		6.97	7.02
1	Bulk		7.02	7.07
1	Bulk		7.07	7.12
1	Bulk		7.12	7.17
1	Bulk		7.17	7.22
1	Bulk		7.22	7.27
1	Bulk		7.27	7.32
1	Bulk		7.32	7.37
1	Bulk		7.37	7.42
1	Bulk		7.42	7.47
1	Bulk		7.47	7.52
1	Bulk		7.52	7.57
1	Bulk		7.57	7.62
1	Bulk		7.62	7.67
1	Bulk		7.67	7.72
1	Bulk		7.72	7.77
1	Bulk		7.77	7.82

1	Bulk		7.82	7.87
1	Bulk		7.87	7.92
1	Bulk		7.92	7.97
1	Bulk		7.97	8.02

TABLE 2: LITHOSTRATIGRAPHIC SEQUENCE FROM COLUMN SAMPLE <8>, TRENCH 2, ADVENT WAY, EDMONTON (AWE06)

Depth (m OD)	Context Number	Description
6.06 to 6.26	27	5Y 4/2 olive grey; fine sand with scattered coarse sand grains, granules and fine gravel; fine gravel bed at 6.13m OD; diffuse boundary
6.26 to 7.06	26/25/24	10YR 2/1 black; wood peat with clay parting at 6.61m OD and thin clay band (<5mm) at 6.43m OD associated with piece of wood; several clay partings at 6.26m OD

TABLE 3: LITHOSTRATIGRAPHIC SEQUENCE FROM COLUMN SAMPLE <7>, TRENCH 2, ADVENT WAY, EDMONTON (AWE06)

Depth (m OD)	Context Number	Description
6.78 to 7.06	24	10YR 2/1 black; wood peat with common wood macrofossil remains; sharp boundary
7.06 to 7.25	23/22/21	10YR 6/2 light brownish grey; coarse sand mainly of tufa/travertine particles, weakly cemented in places by calcium carbonate; plant remains, common whole and broken mollusc shells; sharp boundary
7.25 to 7.38	19	10YR 2/1 black; wood peat; sharp boundary
7.38 to 7.78	18	5Y 5/1 grey; silt

TABLE 4: LITHOSTRATIGRAPHIC SEQUENCE FROM COLUMN SAMPLE <6>, TRENCH 2, ADVENT WAY, EDMONTON (AWE06)

Depth (m OD)	Context Number	Description
7.78 to 8.56	17	5Y 5/1 grey; silt

TABLE 5: LITHOSTRATIGRAPHIC SEQUENCE FROM COLUMN SAMPLE <1>, TRENCH 1 (WEST), ADVENT WAY, EDMONTON (AWE06)

Depth (m OD)	Context Number	Description
6.59 to 6.67	6	Gravel; sharp boundary
6.67 to 6.85	5	2.5Y 3/2 very dark greyish brown; organic sandy silty wood peat; diffuse boundary
6.85 to 7.02	10	2.5Y 3/2 very dark greyish brown; silty wood peat; diffuse boundary
7.02 to 7.20	7	2.5Y 3/2 very dark greyish brown; mainly fine sand with tufa particles; abundant plant remains; shell debris and some thin beds with many whole shells; mollusc-rich bed at 7.17 to 7.20m OD

TABLE 6: LITHOSTRATIGRAPHIC SEQUENCE FROM COLUMN SAMPLE <2>, TRENCH 1 (WEST), ADVENT WAY, EDMONTON (AWE06)

Depth (m OD)	Context Number	Description
7.21 to 7.42	7	2.5Y 3/2 very dark greyish brown; mainly fine sand with tufa particles; abundant plant remains; shell debris and some thin beds with many whole shells; diffuse boundary
7.42 to 7.89	1	2.5Y N3 very dark grey; peaty sandy silt becoming more sandy and tufaceous below 7.47m OD; horizontally bedded; scattered broken shell becoming more common below 7.47m OD

TABLE 7: LITHOSTRATIGRAPHIC SEQUENCE FROM COLUMN SAMPLE <3>, TRENCH 1 (WEST), ADVENT WAY, EDMONTON (AWE06)

Depth (m OD)	Context Number	Description
7.89 to 8.30	1	2.5Y N4 dark grey becoming gradually darker downward; silt becoming gradually sandier downward; organic content increasing downward

TABLE 8: LITHOSTRATIGRAPHIC SEQUENCE FROM COLUMN SAMPLE <4>, TRENCH 1 (EAST), ADVENT WAY, EDMONTON (AWE06)

Depth (m OD)	Context Number	Description
6.50 to 6.69	6/5	2.5Y 3/2 very dark greyish brown; fine sand with tufa particles; abundant plant remains; abundant mollusc shell, whole and broken, including thin beds of whole shells; diffuse boundary
6.69 to 6.97	4	2.5Y 3/2 very dark greyish brown, coarse tufa sand with tufa granules; $CaCO_3$ overgrowth on flint pebbles; diffuse boundary
6.97 to 7.25	3	2.5Y 3/2 very dark greyish brown; fine sand with tufa particles; abundant plant remains; abundant mollusc shell, whole and broken, including thin beds of whole shells; diffuse boundary
7.25 to 7.47	2	10YR 5/4 yellowish brown; oncoidal tufaceous medium to coarse quartz sand; inclusions of peat; plant remains; wood fragments; whole and broken mollusc shells; ostracods; peaty in upper 40 mm

TABLE 9: LITHOSTRATIGRAPHIC SEQUENCE FROM COLUMN SAMPLE <5>, TRENCH 1 (EAST), ADVENT WAY, EDMONTON (AWE06)

Depth (m OD)	Context Number	Description
7.46 to 7.97	2	10YR 5/4 yellowish brown; oncoidal tufaceous medium to coarse quartz sand; inclusions of peat; plant remains; wood fragments; whole and broken mollusc shells; ostracods; very sharp boundary
7.97 to 8.05	1	2.5Y 3/2 very dark greyish brown; sandy silty clay; plant remains; charcoal; diffuse boundary
8.05 to 8.46	1	2.5Y 4/2 dark greyish brown with 5YR 4/4 reddish brown mottles becoming less common downward; silt with sandy patches below 8.16m OD

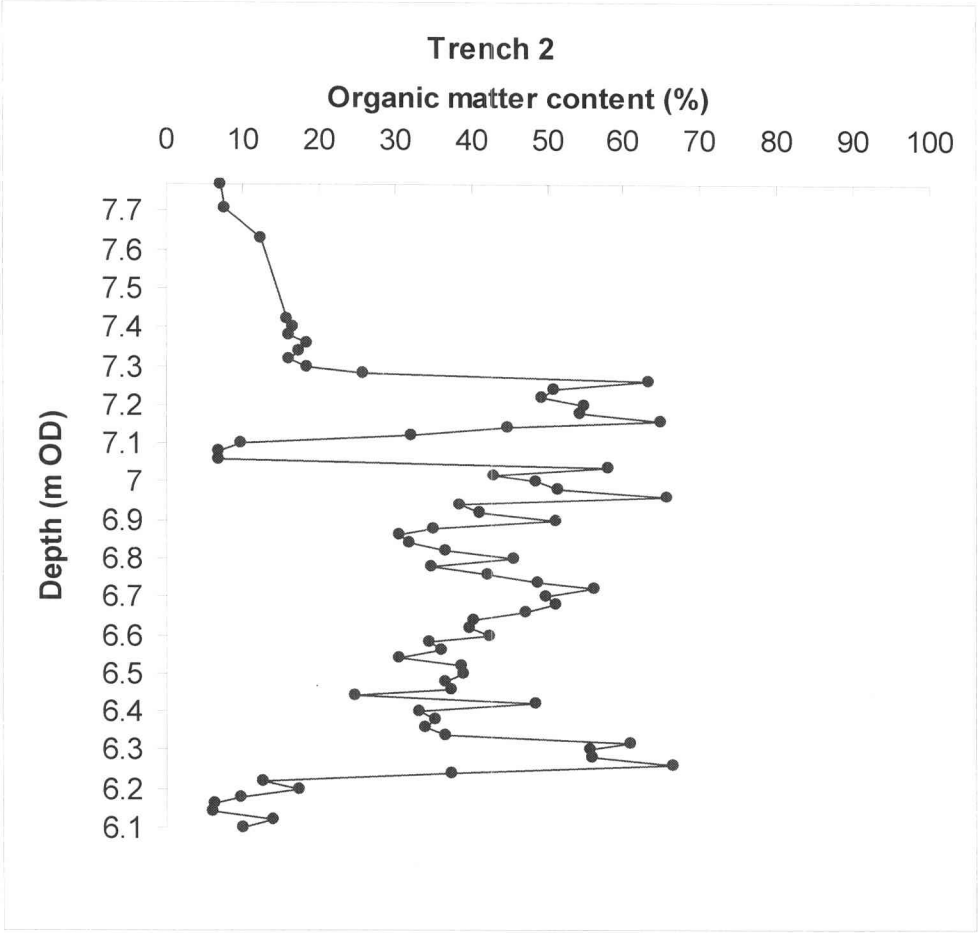

Figure 3a: Organic matter determinations, Trench 2, Advent Way, Edmonton (AWE06)

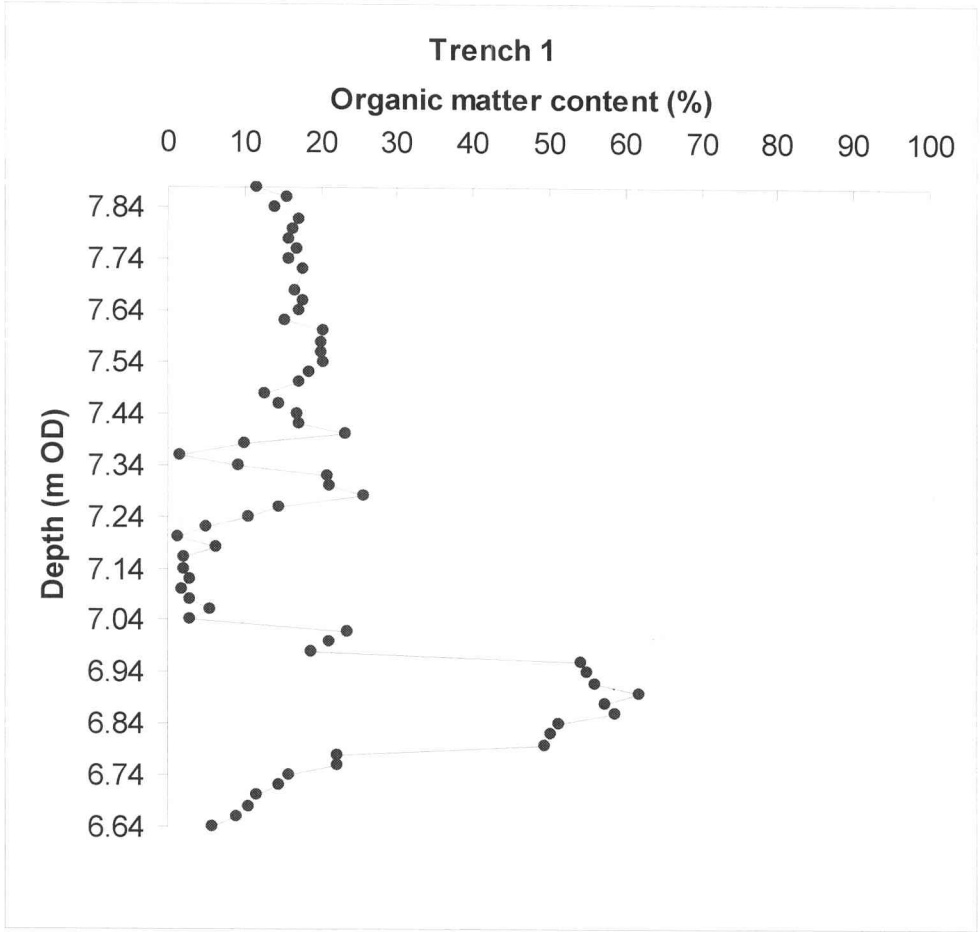

Figure 3b: Organic matter determinations, Trench 1, Advent Way, Edmonton (AWE06)

Table 10: Organic matter determinations from Trench 2 and Trench 1, Advent Way, Edmonton (AWE06)

Trench	Context Number	Column Sample	Depth (m OD)		% Organic matter
			From	To	
2	27	8	6.10	6.11	10.00
2	27	8	6.12	6.13	13.86
2	27	8	6.14	6.15	6.07
2	27	8	6.16	6.17	6.31
2	27	8	6.18	6.19	9.78
2	27	8	6.20	6.21	17.54
2	27	8	6.22	6.23	12.75
2	27	8	6.24	6.25	37.50
2	26	8	6.26	6.27	66.43
2	26	8	6.28	6.29	55.92
2	26	8	6.30	6.31	55.71
2	25	8	6.32	6.33	60.84
2	25	8	6.34	6.35	36.65
2	25	8	6.36	6.37	34.16
2	25	8	6.38	6.39	35.32
2	25	8	6.40	6.41	33.19
2	25	8	6.42	6.43	48.46
2	25	8	6.44	6.45	24.78
2	25	8	6.46	6.47	37.55
2	25	8	6.48	6.49	36.68
2	24	8	6.50	6.51	39.01
2	24	8	6.52	6.53	38.86
2	24	8	6.54	6.55	30.58
2	24	8	6.56	6.57	36.27
2	24	8	6.58	6.59	34.59
2	24	8	6.60	6.61	42.49
2	24	8	6.62	6.63	39.88

2	24	8	6.64	6.65	40.28
2	24	8	6.66	6.67	47.27
2	24	8	6.68	6.69	51.25
2	24	8	6.70	6.71	49.84
2	24	8	6.72	6.73	56.25
2	24	8	6.74	6.75	48.70
2	24	8	6.76	6.77	42.28
2	24	8	6.78	6.79	34.93
2	24	8	6.80	6.81	45.55
2	24	8	6.82	6.83	36.77
2	24	8	6.84	6.85	31.82
2	24	8	6.86	6.87	30.53
2	24	8	6.88	6.89	35.14
2	24	8	6.90	6.91	51.12
2	24	8	6.92	6.93	41.17
2	24	8	6.94	6.95	38.61
2	24	8	6.96	6.97	65.68
2	24	8	6.98	6.99	51.33
2	24	8	7.00	7.01	48.47
2	24	8	7.02	7.03	43.00
2	24	8	7.04	7.05	58.17
2	23	7	7.06	7.07	6.86
2	23	7	7.08	7.09	6.99
2	22	7	7.10	7.11	9.83
2	22	7	7.12	7.13	32.18
2	22	7	7.14	7.15	44.87
2	21	7	7.16	7.17	64.95
2	21	7	7.18	7.19	54.40
2	21	7	7.20	7.21	54.86
2	21	7	7.22	7.23	49.41
2	21	7	7.24	7.25	50.84
2	19	7	7.26	7.27	63.31
2	19	7	7.28	7.29	25.98
2	19	7	7.30	7.31	18.43
2	19	7	7.32	7.33	16.00

2	19	7	7.34	7.35	17.38
2	19	7	7.36	7.37	18.44
2	18	7	7.38	7.39	16.13
2	18	7	7.40	7.41	16.73
2	18	7	7.42	7.43	15.72
2	18	7	7.63	7.64	12.37
2	18	7	7.71	7.72	7.67
2	18	7	7.77	7.78	7.13
1	6	1	6.64	6.65	5.80
1	6	1	6.66	6.67	9.08
1	5	1	6.68	6.69	10.60
1	5	1	6.70	6.71	11.51
1	5	1	6.72	6.73	14.60
1	5	1	6.74	6.75	15.82
1	5	1	6.76	6.77	22.23
1	5	1	6.78	6.79	22.28
1	5	1	6.80	6.81	49.34
1	5	1	6.82	6.83	50.35
1	5	1	6.84	6.85	51.31
1	10	1	6.86	6.87	58.61
1	10	1	6.88	6.89	57.32
1	10	1	6.90	6.91	61.87
1	10	1	6.92	6.93	56.21
1	10	1	6.94	6.95	55.00
1	10	1	6.96	6.97	54.36
1	10	1	6.98	6.99	18.87
1	10	1	7.00	7.01	21.08
1	7	1	7.02	7.03	23.48
1	7	1	7.04	7.05	2.83
1	7	1	7.06	7.07	5.50
1	7	1	7.08	7.09	3.00
1	7	1	7.10	7.11	1.91
1	7	1	7.12	7.13	2.99
1	7	1	7.14	7.15	1.99
1	7	1	7.16	7.17	2.13

1	7	1	7.18	7.19	6.38
1	7	2	7.20	7.21	1.40
1	7	2	7.22	7.23	4.97
1	7	2	7.24	7.25	10.58
1	7	2	7.26	7.27	14.42
1	7	2	7.28	7.29	25.70
1	7	2	7.30	7.31	21.04
1	7	2	7.32	7.33	20.83
1	7	2	7.34	7.35	9.19
1	7	2	7.36	7.37	1.59
1	7	2	7.38	7.39	10.01
1	7	2	7.40	7.41	23.20
1	1	2	7.42	7.43	17.11
1	1	2	7.44	7.45	16.84
1	1	2	7.46	7.47	14.67
1	1	2	7.48	7.49	12.61
1	1	2	7.50	7.51	17.19
1	1	2	7.52	7.53	18.47
1	1	2	7.54	7.55	20.49
1	1	2	7.56	7.57	20.23
1	1	2	7.58	7.59	20.14
1	1	2	7.60	7.61	20.50
1	1	2	7.62	7.63	15.43
1	1	2	7.64	7.65	17.13
1	1	2	7.66	7.67	17.71
1	1	2	7.68	7.69	16.71
1	1	2	7.72	7.73	17.65
1	1	2	7.74	7.75	15.97
1	1	2	7.76	7.77	17.00
1	1	2	7.78	7.79	16.00
1	1	2	7.80	7.81	16.37
1	1	2	7.82	7.83	17.25
1	1	2	7.84	7.85	13.93
1	1	2	7.86	7.87	15.53
1	1	2	7.88	7.89	11.59

Table 11: Results of the radiocarbon dating from Trench 2 and Trench 1, Advent Way, Edmonton (AWE06)

Laboratory Code / Method	Trench	Location	Context Number	Taken from column Sample	Height (M OD)	Un-calibrated Radiocarbon Years Before Present (yrs BP)	Calibrated age BC (BP) (2-sigma, 95.4% probability)	δ13C (‰)
Beta-215406 AMS	2	Transition between fine sand and peat	27	8	6.23 to 6.24	10040 ± 50 BP	9990 to 9330 Cal BC (11940 to 11280 Cal BP)	-27.8
Beta-215405 Standard	2	Top of peat	19	7	7.36 to 7.37	4290 ± 60 BP	3020 to 2860 Cal BC (4970 to 4810 Cal BP) AND 2800 to 2760 Cal BC (4750 to 4710 Cal BP)	-27.4
Beta-215404 Standard	1	Organic silty peat	5	1	6.78 to 6.79	9860 ± 70 BP	9390 to 9220 Cal BC (11340 to 11170 Cal BP)	-26.0

Table 12: Pollen-stratigraphic assessment from Trench 2 and Trench 1, Advent Way, Edmonton (AWE06)

Trench	Context Number	Column Sample	Depth (m OD)		Main Pollen Taxa Present	Common Name	Concentration	Preservation
2	27	8	6.10	6.11	None			
2	27	8	6.14	6.15	None			
2	27	8	6.22	6.23	None			
2	26	8	6.30	6.31	*Betula*	Birch	Low	Poor
2	25	8	6.38	6.39	*Betula* *Thelypteris palustris*	Birch Fern	Low	Poor
2	25	8	6.46	6.47	*Betula*	Birch	Low	Poor
2	24	8	6.54	6.55	Liliaceae *Thelypteris palustris*	Lily family Fern	Low	Poor
2	24	8	6.62	6.63	*Pinus*	Pine	Low	Poor
2	24	8	6.70	6.71	*Pinus*	Pine	Low	Poor
2	24	8	6.78	6.79	Cyperaceae	Sedge family	Low	Poor
2	24	8	6.86	6.87	*Salix* Cyperaceae *Pinus* *Filipendula*	Willow Sedge family Pine Meadowsweet	Medium	Good
2	24	8	7.04	7.05	Poaceae *Alnus* *Pinus*	Grass family Alder Pine	Low	Good
2	23	7	7.10	7.11	Filicales *Quercus* *Alnus*	e.g. Male fern Oak Alder	Medium	Good
2	22	7	7.12	7.13	Poaceae *Artemisia* *Plantago lanceolata* *Alnus*	Grass family Mugwort Ribwort plantain Alder	Medium	Good
2	22	7	7.18	7.19	None			
2	19	7	7.26	7.27	*Corylus* type	e.g. Hazel	Medium	Good

					Alnus *Plantago lanceolata* Cyperaceae	Alder Ribwort plantain Sedge family		
2	19	7	7.34	7.35	Cyperaceae *Alnus* *Typha latifolia* *Tilia*	Sedge family Alder Reedmace Lime	Medium	Good
2	18	7	7.42	7.43	Poaceae	Grass family	Low	Poor
2	18	7	7.50	7.51	*Betula* Poaceae *Galium* type Cyperaceae *Chenopodium* type *Sanguisorba officinalis*	Birch Grass family Bedstraw Sedge family e.g. Fat hen Great burnet	High	Good
1	6	1	6.64	6.65	None			
1	5	1	6.70	6.71	Poaceae Cyperaceae *Taraxacum* type *Quercus*	Grass family Sedge family e.g. Dandelion Oak	Medium	Good
1	5	1	6.76	6.77	Cyperaceae *Taraxacum* type	Sedge family e.g. Dandelion	Low	Poor
1	5	1	6.82	6.83	None			
1	10	1	6.88	6.89	None			
1	10	1	6.94	6.95	None			
1	10	1	7.00	7.01	Filicales Cyperaceae *Typha latifolia*	e.g. Male fern Sedge family Reedmace	Medium	Good
1	7	1	7.06	7.07	None			
1	7	1	7.12	7.13	None			
1	7	1	7.18	7.19	*Alnus*	Alder	Low	Poor
1	7	2	7.24	7.25	Cyperaceae Poaceae	Sedge family Grass family	Low	Poor

1	7	2	7.30	7.31	*Alnus* Poaceae Cyperaceae	Alder Grass family Sedge family	Medium	Good
1	7	2	7.36	7.37	None			
1	1	2	7.42	7.43	Filicales Poaceae	e.g. Male fern Grass family	Low	Poor
1	1	2	7.48	7.49	*Pinus* *Corylus* type	Pine e.g. Hazel	Low	Poor
1	1	2	7.54	7.55	None			
1	1	2	7.60	7.61	*Plantago lanceolata* *Alnus* Poaceae Filicales *Potentilla* type	Ribwort plantain Alder Grass family e.g. Male fern Tormentil	Medium	Good
1	1	2	7.66	7.67	*Alnus* *Pinus* Poaceae *Sorbus* type	Alder Pine Grass family Mountain ash	Medium	Good
1	1	2	7.78	7.79	Poaceae *Quercus* *Pinus* *Plantago lanceolata*	Grass family Oak Pine Ribwort plantain	Medium	Good
1	1	2	8.00	8.01	Cyperaceae	Sedge family	Low	Poor

Table 13: Mollusca-stratigraphic assessment from Trench 1, Advent Way, Edmonton (AWE06)

Context Number	Volume (L)	Depth (m OD)		Main Taxa Present	Abundance	Preservation
6	2.0	6.52	6.57	No shells seen		
6/5	2.0	6.62	6.67	*Valvata piscinalis, Bithynia tentaculata*	Sparse	Good
4	2.0	6.72	6.77	*Valvata piscinalis, Bithynia tentaculata*	Moderate to high	Good
4/3	2.0	6.82	6.87	*Valvata piscinalis, Bithynia tentaculata*	Sparse to moderate	Good
3	2.0	6.92	6.97	*Valvata piscinalis, Bithynia tentaculata*	High	Good
3	2.0	7.02	7.07	*Valvata piscinalis, Bithynia tentaculata*	Moderate	Good
3	2.0	7.12	7.17	*Valvata piscinalis, Bithynia tentaculata*	Moderate	Good
3/2	2.0	7.22	7.27	Valvata piscinalis, Bithynia tentaculata *Theodoxus fluviatilis*	High	Good
2	2.0	7.32	7.37	*Valvata piscinalis, Bithynia tentaculata Theodoxus fluviatilis*	High	Good
2	2.0	7.42	7.47	*Valvata piscinalis, Bithynia tentaculata Theodoxus fluviatilis*	High	Good
2	2.0	7.52	7.57	*Valvata piscinalis, Bithynia tentaculata Theodoxus fluviatilis*	High	Medium to good
2	2.0	7.62	7.67	*Valvata piscinalis, Bithynia tentaculata Theodoxus fluviatilis*	High	Good
2	2.0	7.72	7.77	*Valvata piscinalis, Bithynia tentaculata Theodoxus fluviatilis*	High	Good
2	2.0	7.82	7.87	*Valvata piscinalis, Bithynia tentaculata Theodoxus fluviatilis*	High	Medium to good
2	2.0	7.92	7.97	*Valvata piscinalis, Bithynia tentaculata Theodoxus fluviatilis*	High	Good

APPENDIX 4: OASIS FORM

OASIS ID: preconst1-15484

Project details

Project name	An Archaeological Evaluation at Advent Way, Edmonton, London Borough of Enfield
Short description of the project	An Archaeological Evaluation at Advent Way, Edmonton, London Borough of Enfield. 3 trenches encountered natural terrace gravel overlain by a sequence of alluvial clays, silts, organic peat and marl, sealed by later alluvial flooding. No archaeological for human activity was encountered.
Project dates	Start: 06-02-2006 End: 10-02-2006
Previous/future work	No / No
Any associated project reference codes	AWE 06 - Sitecode
Type of project	Field evaluation
Site status	Local Authority Designated Archaeological Area
Current Land use	Other 13 - Waste ground
Methods & techniques	'Targeted Trenches'
Development type	Urban commercial (e.g. offices, shops, banks, 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 ENFIELD EDMONTON Advent Way, Edmonton, London Borough of Enfield
Postcode	N18
Study area	5000.00 Square metres
National grid reference	TQ 3544 9219 Point
Height OD	Min: 6.06m Max: 6.67m

Project creators

Name of Organisation	Pre-Construct Archaeology Ltd
Project brief originator	Pre-Construct Archaeology
Project design originator	Pre-Construct Archaeology Ltd

Project director/manager	Jon Butler
Project supervisor	Neil Hawkins
Sponsor or funding body	Big Yellow Construction Company

Project archives

Physical Archive recipient	LAARC
Physical Contents	'Animal Bones'
Digital Archive recipient	LAARC
Digital Media available	'Survey','Text'
Paper Archive recipient	LAARC
Paper Media available	'Context sheet','Drawing','Map','Matrices','Photograph','Plan','Report','Section','Survey','Unpublished Text'

Project bibliography 1

Publication type	Grey literature (unpublished document/manuscript)
Title	An Archaeological Evaluation at land at Advent Way, Edmonton, London Borough of Enfield, N18
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	8 June 2006

OASIS:

Please e-mail English Heritage for OASIS help and advice