BELLOT STREET

LONDON SE10

LONDON BOROUGH OF GREENWICH

ARCHAEOLOGICAL EVALUATION

GBL 05

JUNE 2005

PRE-CONSTRUCT ARCHAEOLOGY

DOCUMENT VERIFICATION

BELLOT STREET
LONDON SE10
LONDON BOROUGH OF GREENWICH

EVALUATION

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An Archaeological Evaluation at Bellot Street, Maze Hill, London Borough of Greenwich, SE10

Site Code: GBL 05
Central National Grid Reference: TQ 3935 7849

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1 ABSTRACT

1.1 An archaeological evaluation was undertaken by Pre-Construct Archaeology Ltd. at the Garage Site at Bellot Street, Maze Hill, London Borough of Greenwich, SE10. The evaluation was conducted between 16th and 22nd March 2005, in advance of the proposed redevelopment of the site. The central National Grid Reference is TQ 3935 7849. The work was commissioned by Martin Johnson of Building Associates Limited. The site was supervised for Pre-Construct Archaeology by the author and project managed by Jon Butler.

1.2 The evaluation consisted of two trial trenches, aimed at comprehensive coverage of the site and the targeting of prehistoric features identified during previous work directly next to the site. The trenches revealed natural sand and gravel overlain by a palaeo-environmental sequence of peat, a Bronze Age wooden structure, and palaeochannels, which were sealed by a sequence of alluvial clay and modern deposits.

2 INTRODUCTION

2.1 This report details the results and working methods of an archaeological evaluation undertaken by Pre-Construct Archaeology Ltd at the Garage Site, Bellot Street, Maze Hill, London Borough of Greenwich, SE10 (see site location map, Fig. 1). The evaluation was commissioned by Martin Johnson of Building Associates Limited, in advance of the redevelopment of the site for new housing.

2.2 The evaluation covers an area of land centred on National Grid Reference TQ 3935 7849. The land at the time of the investigation was occupied by a number of garages located in the south side of the site. The property is bounded to the east by gardens, to the north by residential units and gardens fronting onto Bellot Street, to the west by Bellot Street and to the south by housing and gardens fronting onto Bellot Street and Flavell Mews. The archaeological evaluation involved the excavation and recording of two targeted trial trenches, with a third slot/trench excavated to ascertain if the uncovered structure continued south-east. It aimed at comprehensive coverage of the area of the proposed development (see trench location map, Fig. 2).

2.3 The evaluation was conducted between 16th and 22nd March 2005 and followed a written scheme of investigation prepared by Pre-Construct Archaeology Ltd. The fieldwork was supervised by the author, Neil Hawkins, under the Project Management of Jon Butler. The site was monitored by Mark Stevenson of GLAAS.

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 GBL 05.

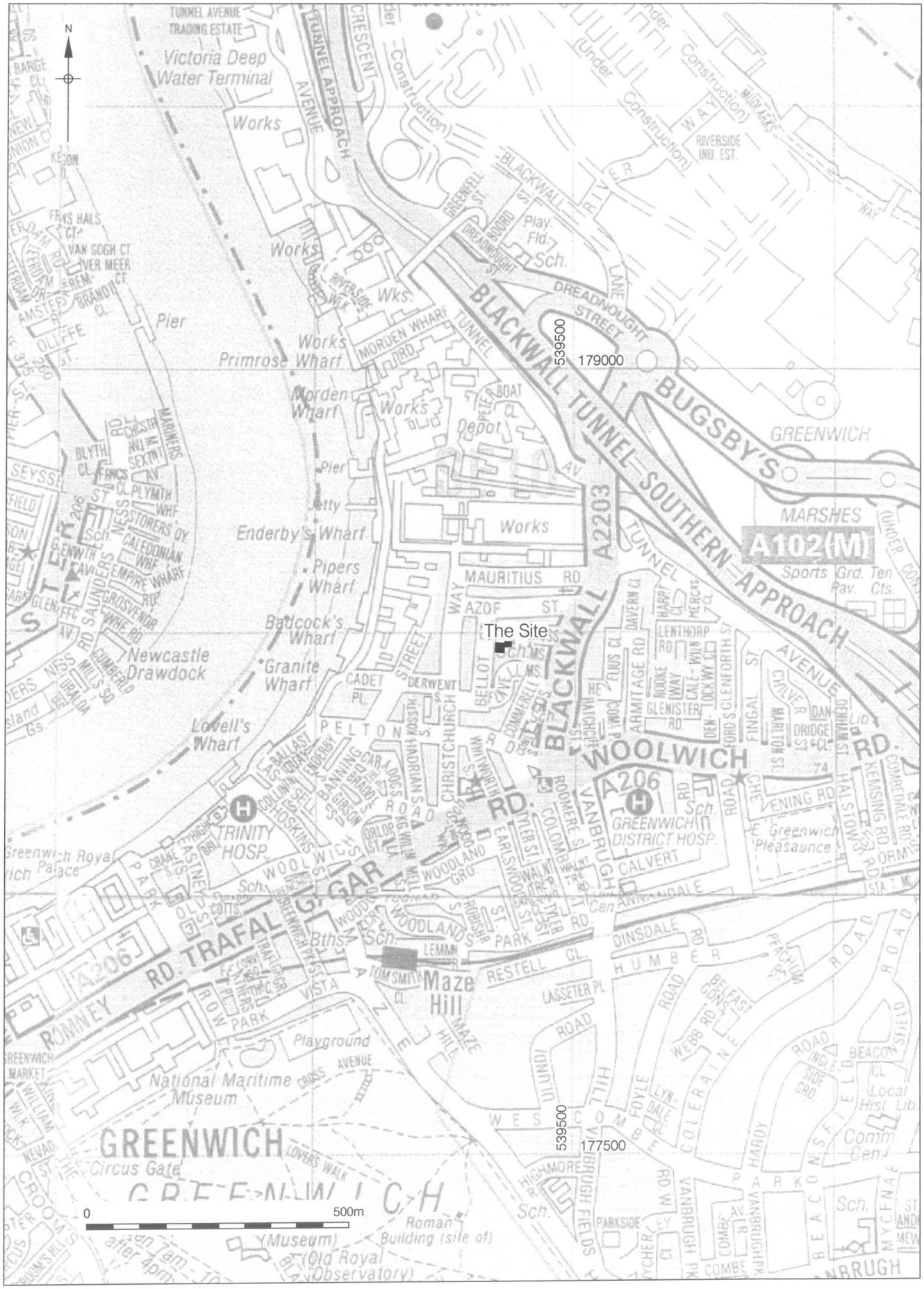


Figure 1
Site Location
1:10,000

Figure 2
Trench Location
1:500

3 PLANNING BACKGROUND

3.1 Archaeology in Greenwich and the UDP

3.1.1 The study aims to satisfy the objectives of the London Borough of Greenwich, which fully recognises the importance of the buried heritage for which they are the custodians. The Borough's deposited draft 'Unitary Development Plan' 2002 contains policy statements in respect of protecting the buried archaeological resource.

3.1.2 The proposed development of the site will be subject to the Council's Archaeology Policy:

Archaeology

6.48 D29A

At identified sites of known archaeological remains of national importance, including scheduled monuments, there will be a presumption in favour of the physical preservation of the remains in situ and to allow for public access and display. For sites of lesser importance the Council will seek to preserve the remains in situ, but where this is not feasible the remains should be either be investigated, excavated and removed from the site, or investigated, excavated and recorded before destruction. Appropriate conditions/legal agreements may be used to ensure this is satisfied.

D29B

The Council will expect applicants to properly assess and plan for the impact of proposed developments on archaeological remains where they fall within 'Areas of Archaeological Potential' as defined on the constraints Map 10. In certain instances preliminary archaeological site investigations may be required before proposals are considered. The Council will seek to secure the co-operation of developers in the excavation, recording and publication of archaeological finds before development takes place by use of planning conditions/legal agreements as appropriate.

Reason

6.49 PPG16 gives guidance on how archaeological remains should be preserved or recorded. It recommends that UDPs should include policies for the protection,

enhancement and preservation of sites of archaeological interest and of their settings, as well as a map defining where these policies apply. The Borough's archaeological heritage represents a local community asset, which is desirable to preserve and utilise both as an educational and recreational resource. The objectives of new development can often conflict with the need to preserve, or to remove and record such remains. Potential developers should be alerted early on in the planning process of likely remains so as to secure their preservation. The support of local archaeological groups is essential to this process. The potential for discovery of significant remains in large areas of the Borough is high, whist the opportunity to record and preserve such finite resources is usually restricted.

6.50 The Council will also:

i. Pursue land use policies which are sensitive to the potential threat development can pose to archaeological remains and adopt a flexible approach to the design of new development in areas where the preservation of archaeological remains is paramount.

ii. Encourage co-operation amongst landowners, developers and archaeological groups by promoting the principles laid down in the British Archaeologists and Developers Liaison Group Code of Practice.

iii. Encourage developers to allow an appropriate level of archaeological investigation where significant remains are unexpectedly discovered during construction, and if applicable make provision for the preservation or recording of such finds by a recognised archaeological organisation.'

3.1.3 The Greenwich 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 are known, and where follow-up trial work is known to be necessary or otherwise, 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.

3.1.4 An area of Archaeological Potential as defined by the Greater London Archaeological Advisory Service lies between the Thames waterfront and a line running North-South between Bellot Street and Christchurch Street. The site is therefore just outside this area.

4 GEOLOGY AND TOPOGRAPHY

4.1 GEOLOGY

4.1.1 The 1:50,000 scale British Geological Survey (sheet 270) indicates the area to be located on alluvium, very close to the edge of the Kempton Park Gravel Terrace. The underlying geology is of Lambeth Group clay with beds of sand.

4.1.2 The geological map also records an area of worked ground and made ground. This just skims the northern extent of the site and is thought to represent works in the Brick Field labelled on the 1867 OS map.

4.1.3 A geotechnical investigation comprised two boreholes which recorded different sequences. Both found natural clay sealed with silty sand to a depth of approx. 3.60m, covered by further layers of fairly humic silty clay. Within this upper clay sequence, a layer of peat 1.10m thick was recorded in BH 1, to the north of the site. This peat layer has been encountered on other nearby archaeological investigations, including to within just 10m of this site. Here the peat appeared to get thicker to the north. Closest to the proposed development site, the peat was approx. 0.70m thick, with the surface found at approx. –0.05mOD. A date of 1195+/- 60 BC to 1595 +/- 70 BC was secured through carbon dating.

4.1.4 At 1.30m below ground level, BH 1 recorded a layer with weathered chalk inclusions which may have an archaeological origin. Made ground was found to a thickness of 0.40m to 0.80m.

4.2 TOPOGRAPHY

4.2.1 The site is located less than 300m east of the River Thames as it turns to meander north from the Isle of Dogs around the Blackwall Peninsula.

4.2.2 The site is on low lying, level ground; formed as part of the flood plain of the River Thames.

5 ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

5.1 Palaeolithic and Mesolithic

5.1.1 To date, there has been no evidence of Palaeolithic or Mesolithic activity within the vicinity of the proposed development site.

5.2 Neolithic to Iron Age

5.2.1 From various works conducted since 1989, a number of timber structures, including trackways and platforms, have been identified as being constructed across the former wetlands of the lower Thames during the Bronze Age. This activity has mostly been concentrated in the middle Bronze Age and has been found in various areas along the floodplain of the River Thames and other tributaries such as the Lea. A large concentration of timber structures exist in Beckton in East London, but they have also been found in Dagenham, Rainham in Essex and Erith, in South East London. These wooden structures are thought to have served a variety of purposes, such as exploitation of wetland resources, including fish, birds, reeds and wood. They may have been used to access places within the marshland such as moorings for boats, other settlements, sweat lodges, shrines, or other areas of ritual importance[1].

5.2.2 A Bronze Age site was excavated at 72-88 Bellot Street in 1992. Of the five trenches that were opened, the two northernmost contained the remains of a prehistoric trackway. Peat was encountered at –0.05m OD, and was found to be 0.70m thick. The trackway was found within this layer at c. –0.50m OD. No vertical supports or associated artefactual evidence was found, but there was evidence of woodworking. The trackway and the peat in which it was preserved were carbon dated to 1195+/- 60 BC and 1595 +/- 70 BC. The two other prehistoric entries on the SMR refer to contemporary peat deposits, as being located to the north-east of this site, by the Blackwall Tunnel Southern Approach Road. Many interesting spot finds have been identified in the Thames floodplain, and several prehistoric artefacts have been recovered from the waters near Greenwich.

5.3 Roman

[1] Carew, 2003, p.18

5.3.1 Evidence for a Roman settlement at central Greenwich is limited, but a tessellated pavement has been recorded in the grounds of Trinity Hospital, and from the same site an "official axe" suggested as evidence for a municipium. Also, possible foundations have been found near the Trafalgar public house (Douglas, 2001, 12) and beneath the Royal Naval Hospital. No *in situ* Roman archaeology has been identified within the SMR study area, however residual sherds were found within medieval deposits during excavations under the Trinity Hospital.

5.4 Saxon

5.4.1 Greenwich is believed to date back to the middle Saxon period. The manor was held by the kings of Kent from at least the early 7th century, and the manor itself was thought to have been located on the site now occupied by the Naval College. This was later to become the Ghent manor which by the 12th century was called the old court (Norton 1996, 12).

5.5 Medieval

5.5.1 Court functions continued here after the Conquest. Greenwich is referenced twice in the Doomsday Book; as the manor of the late King Harold, and as the lands of the Abbey of St. Peter, Ghent. Both entries list large areas of meadow land, thought to include the Greenwich Marshes. The focus of Greenwich at this time was on the higher land near the river between the present Church Street and the Naval College. During the 500 years of Ghent abbey's tenure, there continued to be a royal residence at Greenwich (Norton, 1996, 12). In the late medieval period Greenwich was a fishing port and riverside town, but it did also see the foundation of the Royal palaces (Spurgeon, 1991). In 1427 the manor of Greenwich passed to Humphrey, Duke of Gloucester and brother of the late Henry V, who built the Palace of Bella Court. The history of how this was inherited and became the Royal Palace of Placentia is covered in many historical books on Greenwich, also including the foundation of the Royal Naval College, the Natural Maritime Museum and Greenwich Park.

5.5.2 As the centre of Greenwich thrived, the marshes to the east saw little development. The first of a number of Commissions to "overlook the river walls and ditches" was set up in 1315 (Bartlett, 1964, 70). Through the medieval into the Post-Medieval period such measures continued, with sluices being constructed, but the ground remained largely uninhabitable. The East Greenwich survey of 1695 shows two conduit heads, and the drainage ditches running between the fields are evident.

5.6 Post-Medieval

5.6.1 There is a rich history to the development of Greenwich from the Tudor period onwards. Architecturally, the town centre is quite remarkable, reflected by the number of listed buildings on the Sites and Monuments Record. As the study site is located to the east of the centre, it is considered more relevant to focus on a more local history.

5.6.2 The Greenwich Peninsula was marshland and cattle pasture through most of the post-medieval period. Clay extraction pits were located to the north of the study site. These appear to have been partially flooded and connected to a drainage scheme cutting through the marsh. As a virtually uninhabited area, it was deemed appropriate that in 1694 the Gunpowder storage works be moved from the Tower of London to the west bank of the peninsula (Mills, 1999), appearing as the Magazine on Roques map of 1741. In 1834 the Enderby family built a wharf for their whaling business and set up a rope walk.

5.6.3 These changes marked the beginning of the industrial development of the Greenwich Peninsula (Spurgeon, 1991), which created an impetus for the spread of residential accommodation eastwards from the centre of the town. The East Greenwich Estate of late Georgian style houses which surrounds the study area was planned and designed by George Smith, and built between 1842 and 1869. Pelton Road was the first to be built and lies along an old field boundary evident on the Survey of East Greenwich of 1695.

5.6.4 Despite the presence of these houses a Royal Commission examined a proposal in 1902 to make a cut across East Greenwich Marsh from Angerstein's Wharf to Pelton Road to create a series of docks. This was evidently turned down, but shows the importance of the area for industry at this time.

5.6.5 The study site did not get developed for residential accommodation until between 1948 and 1951, when three buildings were erected.

6 METHODOLOGY

6.1 The excavation of three trenches was outlined in the Method Statement prepared by Pre-Construct Archaeology Ltd[2]. The fieldwork was designed to assess the presence or absence of significant archaeological remains, which might require further investigation.

6.2 The original Trench 3 was abandoned due to the space constraints onsite. This was due to the necessity of stepping the sides of Trenches 1 and 2 in for health and safety reasons. A third small trench/slot was excavated directly to the south-east of Trench 1 to determine if the wooden structure continued along this line. No wooden remains were encountered within this trench/slot.

6.3 All trenches were machine excavated with a 360 degree 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 (m)	Max height (m OD)
1	3.50 x 1.80	1.50
2	7.30 x 1.80	1.55
3	4.20 x 0.80	1.50

Table 1: Trench Dimensions

6.4 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.

6.5 A temporary benchmark to the value of 1.66m OD, was established on site from a Benchmark on a Public House on the corner of Christchurch Way and Pelton Road, value 2.91m OD.

[2] Butler, J. (2003)

7 ARCHAEOLOGICAL SEQUENCE

7.1 Phase 1 – Natural

7.1.1 The earliest deposit encountered within both evaluation trenches was the natural sand and gravel, [5]. This context comprised a very firm deposit in a silty sand matrix, with frequent small sub-round/sub-angular flint pebbles, mid grey in colour. In Trench 1 it was encountered at a highest level of –0.70m OD, and –1.49m OD in Trench 2. This major difference in the depths reflects a sharp slope down towards the northern end of the site and is apparent throughout equivalent later deposits in both trenches.

7.2 Phase 2 – Peat Formations

Trench 1

7.2.1 Sealing the natural sand and gravel, [5], in Trench 1 was a layer of natural organic peat [17]. This context comprised a firm deposit of organic silt matrix, dark brown black in colour. A single piece of worked flint, with light retouch, was recovered from this deposit. This flint flake could not be diagnostically dated (see Appendix 5), and it is suggested that it may be either Neolithic or Bronze Age in date. This layer was at a level of –0.46m OD and had a maximum thickness of 0.25m. This was then sealed by another layer of natural organic peat, [16]. The deposit was very similar in composition to [17] below, with the exception of an increased amount of wood fragments within it. Recovered from it were four fragments of burnt flint weighing 37g. It was encountered at a depth of –0.22m OD and had a maximum thickness of 0.24m.

Trench 2

7.2.2 Within Trench 2, two distinct layers of peat were also identified. Sealing the natural sand and gravel, [5], was a layer of organic peat [4]. This context comprised a friable deposit of organic silty clay, dark reddish brown in colour. The layer was encountered at a level of –1.11m OD and had a maximum thickness of 0.35m. Sealing it was the second layer of peat [3]. This context existed as a compact deposit of organic silty clay, dark reddish black in colour. The layer contained sixteen fragments of burnt flint weighing 220g and had very frequent wood fragments and chips as inclusions. It was encountered at a level of –0.39m OD and had a maximum thickness of 0.76m.

7.3 Phase 3a – Wooden Structure

Trench 1

7.3.1 Sealing the peat layer [16] in Trench 1 was a small section of what appeared to be a wooden structure, [11], possibly a trackway or platform. It was composed of a single layer of wooden logs lain horizontally one next to the other, corduroy style, and appeared to be orientated north-west south-east. It measured 0.70m north-west south-east and 1.40m north-east south-west and was encountered at a depth of –0.21m OD. The structure appeared to continue south-east past the limit of excavation of the trench. Although it was not located in the vicinity of the projected alignment of the trackway found during previous excavations it might possibly be associated with it in some way[3].

7.4 Phase 3b – Peat Layer

Trench 1

7.4.1 Sealing the wooden structure [11] was a thin layer of natural peat, [15], which formed naturally after its abandonment. This context existed as a moderately firm deposit of organic clay silt, dark greyish black in colour. The layer was encountered at a level of –0.07m OD and had a maximum thickness of 0.20m.

7.5 Phase 4 - Palaeochannels

Trench 1

7.5.1 Cutting the peat layer [15] at the western end of Trench 1 was a possible palaeochannel, [10], with a very sinuous edge. The channel ran approximately north-south, and measured 2.60m north-south and 1.80m east-west. It was encountered at a depth of –0.09m OD and was 0.30m deep. The channel was filled with a firm, light greyish blue alluvial clay [9].

Trench 2

7.5.2 Cutting the peat layer [3] in Trench 2 was a palaeochannel, [2], which also had a very sinuous edge. This palaeochannel was aligned east-west, running throughout Trench

[3] Philp, 1992

2, it measured 7.33m east-west and 1.68m north-south. It was encountered at a depth of –0.53m OD and was 0.57m deep. The channel was filled with a very firm and sticky, mid grey alluvial clay [1].

7.6 Phase 5 – Alluvium

Trench 1

7.6.1 Sealing the possible channel in Trench 1 was a series of layers of alluvial clay, [21], [20], [19], [14], [18] and [12], with some sandy lenses. The uppermost of these layers was encountered at a depth of 1.29m OD and the total depth of the alluvial sequence was 1.65m.

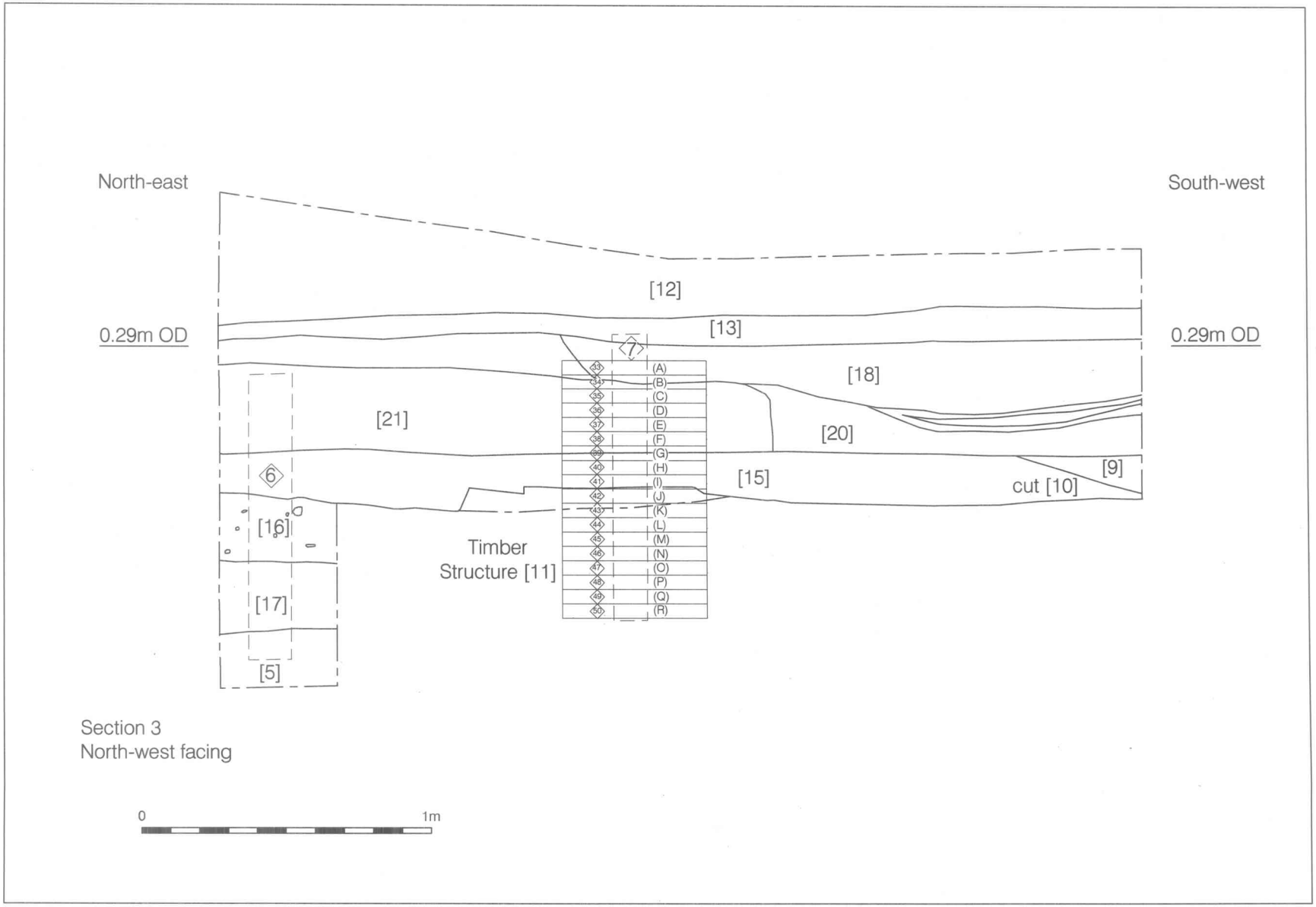
Trench 2

7.6.2 Sealing the channel in Trench 2 were two distinct layers of alluvial clay, [8] and [7]. The highest level of the clay was encountered at 0.13m OD and the total depth of the alluvial sequence was 0.54m.

7.7 Phase 6 – 20th Century Activity

7.7.1 The final phase of activity was represented by a layer of 20th century made ground sealed by tarmac encountered within both trenches.

Figure 3
Trench 1: Wooden Structure [11] and Palaeochannel [10]
1:20



Section 3
North-west facing

Figure 4
Section 3
1:20

Figure 5
Trench 2: Palaeochannel [2]
1:40

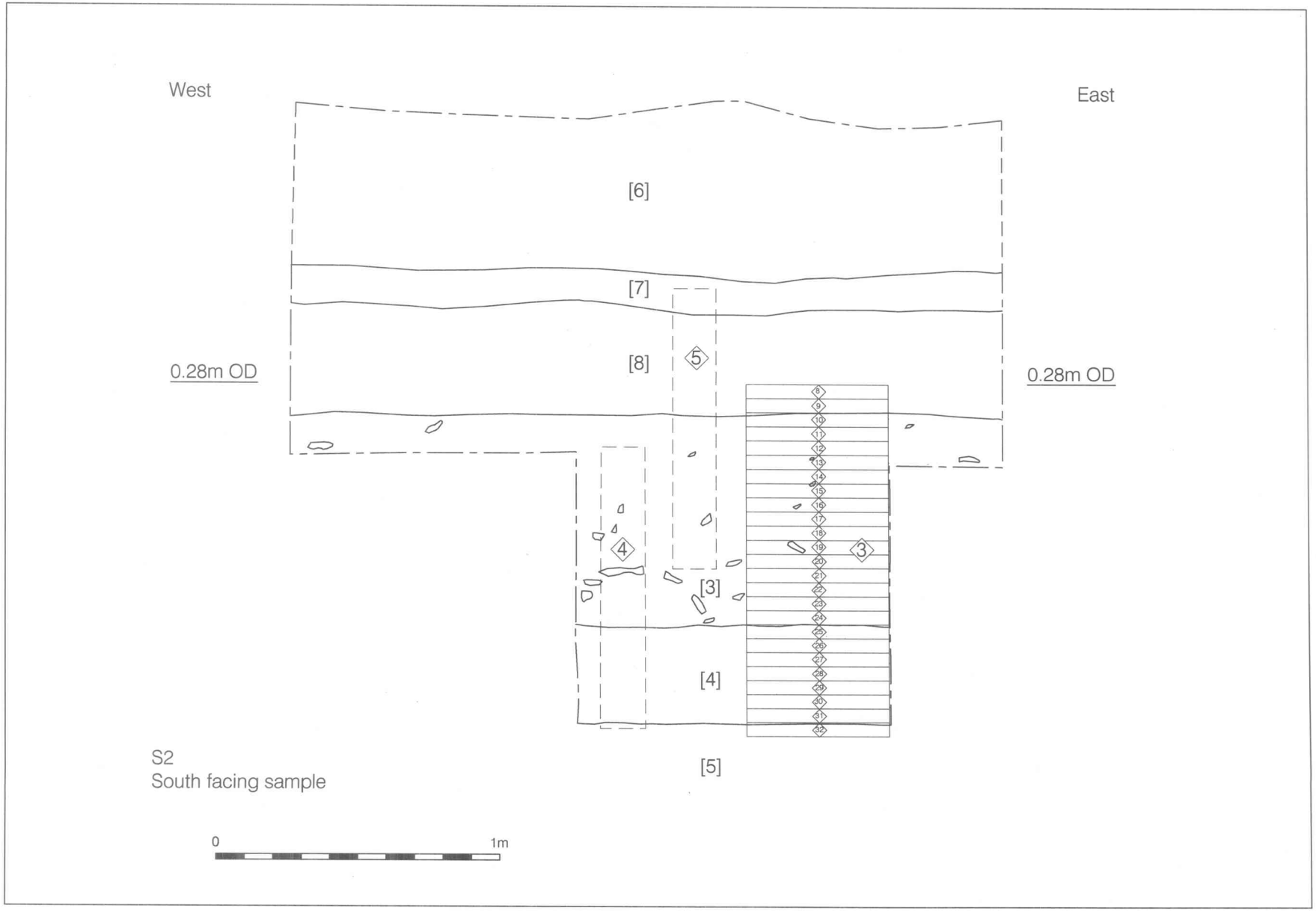


Figure 6
Section 2
1:20

8 TRENCH SUMMARY

8.1 TRENCH 1

8.1.1 Trench 1 revealed natural sand and gravel, overlain by a sequence of peat within which was a brushwood structure. A possible palaeochannel cut the uppermost peat deposit which sealed the wooden structure. Overlying this was a sequence of alluvial clay which was sealed by modern deposits.

8.2 TRENCH 2

8.2.1 Trench 2 revealed natural sand and gravel, overlain by a sequence of peat. Truncating the peat was a sinuous palaeochannel running the length of the trench. Sealing this was a sequence of alluvial clay overlain by modern deposits.

9 DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS

9.1 DISCUSSION

9.1.1 The evaluation was undertaken because of the close proximity of the site to previously identified Bronze Age archaeology and the possibility of the continuation of this activity, including a possible Bronze Age trackway, into the area of the site[4]. Within Trench 2, which was targeted along the projected line of the possible trackway encountered in the 1992 excavations, no evidence of any wooden structures was encountered. Within Trench 1, however, a small area of a wooden structure, [11], was encountered, which appeared to bear no relationship to the projected alignment of the trackway excavated previously.

9.1.2 Comparison between the wooden structure encountered in this evaluation and the wooden structure encountered in earlier work also illustrates differences between the two features. Philp's trackway, encountered in two trenches, was suggested to be running north-west south-east, as was the wooden structure encountered within the evaluation in Trench 1. Both structures were built predominantly with alder roundwood. Here the similarities end. Philp's trackway was encountered at –0.43m OD in the southern Trench 5 and –0.64m OD in the northern Trench 1. The wooden structure [11] encountered during this evaluation was encountered within Trench 1 at –0.21m OD, the variation in levels, encountered in Trench 2, may however be a reflection of the topography as it slopes north down towards the Thames. Philp's trackway consisted of two or more layers of wood, forming a compact mass. The small wooden structure [11] encountered within this evaluation was constructed of a single layer of thin alder logs, laid neatly next to each other in the 'corduroy' style. A single broken off upright remained driven through the peat. A third trench was excavated directly south-east of Trench 1 to determine if the structure continued in that direction. No wood was encountered and the wooden structure [11] appeared therefore to be a small isolated feature. A 'standard' environmental sequence of peat and alluvial clay was encountered.

9.1.3 The carbon dating for both structures is also relevant. Philp's possible trackway was dated to between 1595+/- 70 BC and 1195+/- 60 BC, placing it somewhere in the Late Bronze Age. Carbon Dating from above and below the wooden [11] structure found during the current evaluation dated this to between 1940-1730 cal BC and 1770-1620 cal BC, a period of approximately 320 years in the Middle Bronze Age.

[4] Philp, 1992

The environmental evidence shows that periods of increased wetness occurred before and after the construction of the wooden structure and this therefore may have contributed to its abandonment. Subsequently Philp's possible trackway, may have been constructed in an attempt to gain access once again to the natural resources within the marshland.

9.1.4 Questions have been raised as to whether the wood encountered during the excavation in 1992 was actually some form of structure or not. It is undeniable that Philp encountered worked wood within the peat deposits, however the plan of the possible trackway in his Trench 1 does not appear to be structural. In Trench 4 Philp also mentioned the existence of a series of collapsed wooden upright posts, possibly part of a revetment, which may play a greater role in understanding the nature of any wooden structures within the localised area. No peat deposits, however, were encountered within this trench. The possibility exists that the wood encountered in 1992 may have been drift wood that had been displaced from a more substantial structure somewhere in the local area, possibly associated with the wooden structure [11] encountered in the current excavation. The environmental sequence highlights flooding and significantly wetter surface conditions after the construction of the wooden structure [11], which may have led to its abandonment (see Appendix 3).

9.1.5 The assessment of the wood recovered from structure [11], tentatively suggested that the structure might have been a platform used for hunting or fowling (see Appendix 4). The remnant of the small upright stake, it is suggested, may have been a wattle hurdle or a support for a brushwood screen which may possibly have hidden a hunter (see Appendix 4). The small apparently isolated nature of the wooden structure [11] supports the hypothesis of the structure functioning as a hunting blind, possibly segregated in a quiet location away from disturbances from trackways or platforms. However, it has been suggested that during the Bronze Age, fish and waterfowl, were an untapped resource. The lack of archaeological evidence such as fish bones, fish traps, fish hooks and other associated features, relevant to these activities from pre-historic sites in England before the later Iron Age, supports this hypothesis. Although fish and waterfowl remains are notoriously vulnerable to decay, the distinct lack of these remains is surprising. It has been suggested that from the Neolithic to the Iron Age there may have been a sociological and cultural inhibition, possibly some kind of social taboo, against the eating of fish and waterfowl[5].

[5] Carew, 2003, p.18

9.1.6 The environmental evidence from the evaluation has revealed vital information about the environmental sequence within the localised area and the broader environmental picture along the Thames floodplain (see Appendix 3). The generalised sequence reveals that prior to and during the construction and usage of the wooden structure, a strong anthropogenic signal, derived from insect fauna, focuses around animal husbandry. During this period of construction and usage the area is subject to persistent flooding, this may be one of the reasons why the structure was built and then later abandoned. Above the level of the brushwood structure the pollen record, from a strong signal of cereal pollen, implies a possible shift in subsistence practices away from the wetland and animal husbandry to dryland and cereal cultivation (Branch pers comm.). In this context the structure might represent a resting platform for herders keeping an eye on the grazing herd (Meddens pers comm.).

9.2 CONCLUSIONS

9.2.1 No direct correlation between the wooden structure [11], encountered in Trench 1, and the possible trackway found by Philp during excavations in 1992, can be made. The possibility of their being contemporary cannot be ruled out, but more likely they represent varying phases in the occupation of the marshland that formed part of the Thames floodplain.

9.2.2 A conclusive interpretation of the wooden structure encountered cannot be achieved. The small area of excavation only revealed limited information. The apparent small area of the structure suggests that it probably wasn't part of a trackway, unless it had broken away from the main body of such a feature due to the intensive flooding known to have happened after its construction. The information gleaned from this evaluation and the previous work undertaken by Philp in 1992 does however attest to widespread and intensive activity during the Bronze Age in the general locale.

9.2.3 A very high quality palaeo-environmental signal has been achieved from the various column and bulk samples taken, the importance of which cannot be overstated. This environmental information, when systematically applied to other environmental information from the Thames floodplain will provide invaluable information about palaeo-environmental conditions during and after the Holocene.

9.3 RECOMMENDATIONS FOR FURTHER WORK AND REVISED RESEARCH QUESTIONS

9.3.1 A high resolution of environmental analysis will be completed on the samples from this excavation. Coupled with the environmental information from the previous excavation in 1992[6], a broader picture of the environmental sequence and cultural development in the local area will be generated, helping to understand the nature of the prehistoric wooden structures, the environmental background to their construction, usage, function and subsequent abandonment.

9.3.2 The environmental information recovered from the excavation will be compared and contrasted with the depositional sequences of other similar sites along the Thames floodplain on both the north and south sides of the river. This comparative analysis can answer questions on how this site fits into the wider sequence, as well as questions relating to climate change and anthropogenically driven changes being causally implicated in the local developments.

9.3.3 Comparisons between the construction techniques involved in the construction of the structure encountered in this excavation should be made with examples of other wooden structures identified in the Thames floodplain and wider afield, from examples elsewhere in Britain, Ireland and north-west Europe.

9.3.4 The environmental record can demonstrate the impact of climate change on human activity in the local area versus influence on the environment by human activity. This relationship between man and his surrounding environment is key to understanding how local resources were utilised and how interaction affected these resources as well as the implications this had on the land-use pattern of Bronze Age peoples.

9.3.5 The place of the wooden structure in the environmental sequence may be able to reveal the development of agricultural practices during the Bronze Age in the area. In particular pollen and insect analysis, etc. should be able to determine the relationship of the wooden structure to resource use in the marsh with respect to arable farming on the nearby dry land and its interaction with, or replacement by animal husbandry as the principal subsistence activity in the area.

9.3.6 Analysis of the fossil pollen grains and spores, and insects, from Trench 1 at Bellot Street will provide detailed information on the environmental history of the site,

[6] Philp, 1992

enabling quantification of periods of vegetation and hydrological change. These analyses will provide important new information on the impact of prehistoric human activities on the local environment prior to, during and following the period in which the wooden structure was in use.

9.3.7 The radiocarbon dates indicate that the wooden structure was used during the middle Bronze Age. The biological remains indicate human activities in the local area before and following the use of the structure, causing important changes to the local vegetation cover and hydrology. Further radiocarbon dating will establish the timing and duration of these events.

9.3.8 The wider implications of the environmental records from Bellot Street will be established by comparison of the data with previous published records from the lower Thames valley.

9.3.9 The results of the analysis will be integrated with unpublished environmental archaeological data from Thamesmead and Slade Green.

9.3.10 The presence of artefacts, albeit in small quantities, recovered from the excavation is interesting. The recovery of such artefacts is rare from other similar sites, raising the questions what makes this location different. This cultural material will therefore require description for publication and a localised topographic model will be generated to establish whether the presence of this material is related to the site's proximity to localised dry land during the Bronze Age.

9.3.11 The position of the wooden structure in relation to the interface between the dry land and marshy wetland areas may be significant. The generation of a topographical model of the area, combined with environmental analysis will reveal information about the interaction between the two.

9.3.12 The results of the further analysis will be incorporated in a publication text which will be produced for submission to and publication by a regional or national peer reviewed academic journal.

10 ACKNOWLEDGEMENTS

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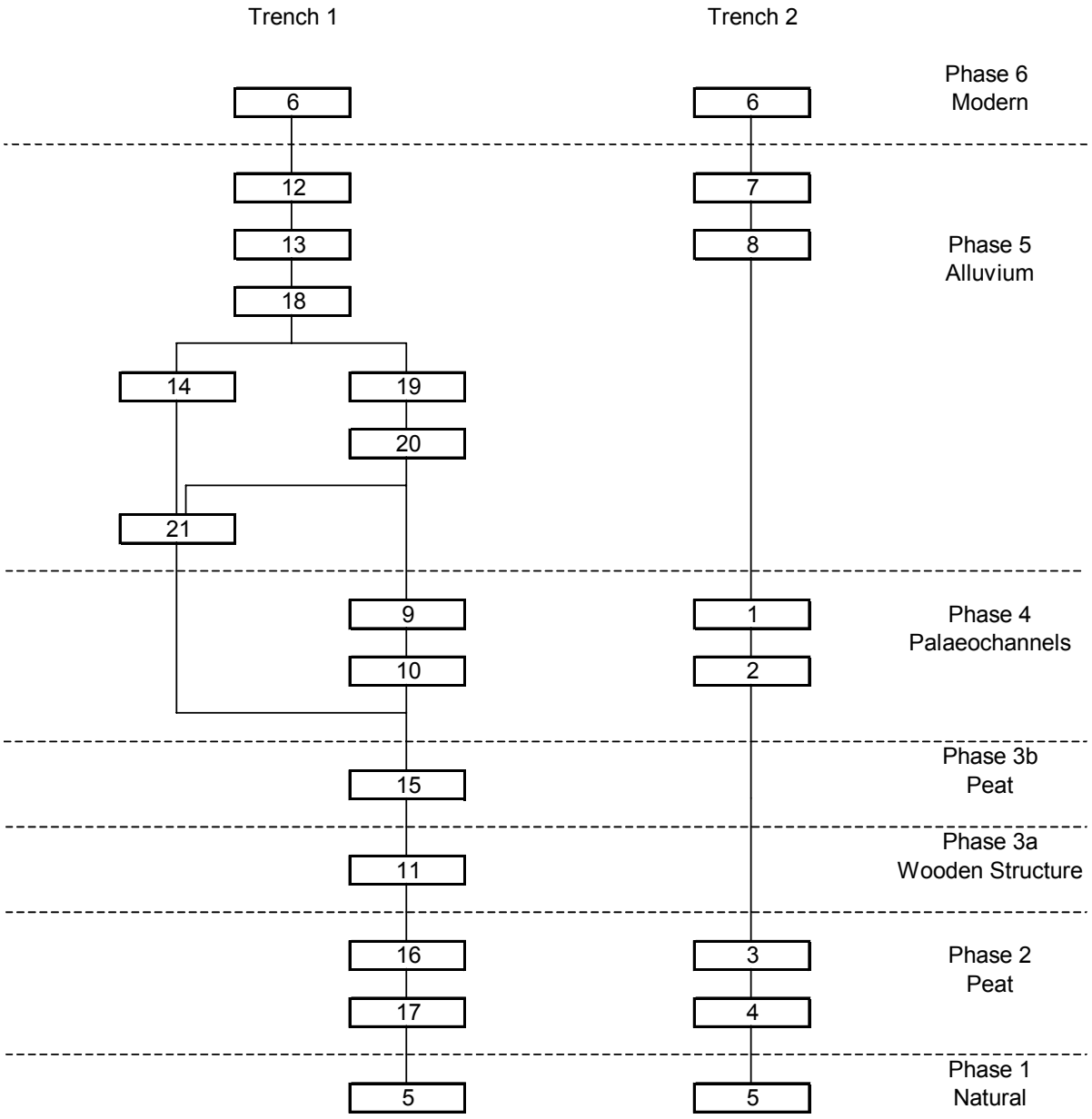
APPENDIX 1: Context Descriptions

Context No.	Type	Trench	Phase	Description
1	Fill	2	4	Fill of channel [2]
2	Cut	2	4	Cut of palaeochannel
3	Layer	2	2	Peat
4	Layer	2	2	Peat
5	Layer	1 & 2	1	Natural sand and gravel
6	Layer	1 & 2	6	Modern tarmac and made ground
7	Layer	2	5	Alluvial clay
8	Layer	2	5	Alluvial clay
9	Fill	1	4	Fill of pos. channel [10]
10	Cut	1	4	Cut of pos. palaeochannel
11	Structure	1	3a	Structure No. for brushwood structure
12	Layer	1	5	Alluvial clay
13	Layer	1	5	Alluvial clay
14	Layer	1	5	Alluvial clay
15	Layer	1	3b	Peat
16	Layer	1	2	Peat
17	Layer	1	2	Peat
18	Layer	1	5	Alluvial clay
19	Layer	1	5	Alluvial clay
20	Layer	1	5	Alluvial clay
21	Layer	1	5	Alluvial clay
22	Timber	1	3a	Roundwood timber, part of structure [11]
23	Timber	1	3a	Roundwood timber, part of structure [11]
24	Timber	1	3a	Roundwood timber, part of structure [11]
25	Timber	1	3a	Roundwood timber, part of structure [11]
26	Timber	1	3a	Roundwood timber, part of structure [11]
27	Timber	1	3a	Roundwood timber, part of structure [11]
28	Timber	1	3a	Roundwood timber, part of structure [11]
29	Timber	1	3a	Roundwood timber, part of structure [11]
30	Timber	1	3a	Roundwood timber, part of structure [11]
31	Timber	1	3a	Roundwood timber, part of structure [11]
32	Timber	1	3a	Roundwood timber, part of structure [11]
33	Timber	1	3a	Roundwood timber, part of structure [11]
34	Timber	1	3a	Roundwood timber, part of structure [11]
35	Timber	1	3a	Roundwood timber, part of structure [11]
36	Timber	1	3a	Roundwood timber, part of structure [11]
37	Timber	1	3a	Roundwood timber, part of structure [11]
38	Timber	1	3a	Roundwood timber, part of structure [11]
39	Timber	1	3a	Roundwood timber, part of structure [11]
40	Timber	1	3a	Roundwood timber, part of structure [11]
41	Timber	1	3a	Roundwood timber, part of structure [11]
42	Timber	1	3a	Roundwood timber, part of structure [11]

APPENDIX 2: SITE MATRIX



APPENDIX 3: ENVIRONMENT ASSESSMENT

BELLOT STREET, MAZE HILL, LONDON BOROUGH OF GREENWICH (SITE CODE: GBL 05): 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 Bellot Street, London Borough of Greenwich (Site Code: GBL05; National Grid Reference: TQ 3935 7849). During the archaeological evaluation conducted by Pre-Construct Archaeology Ltd, excavation of two trenches (Trench 1, measuring 3.5m x 1.8m, and Trench 2, measuring 7.30m x 1.8m) permitted systematic recording of sequences of archaeological and natural deposits. Six depositional Phases were determined based upon spatial and temporal variations in the sequences:

Phase 1: Natural sand and gravel (context (5)) at a depth of -0.70m OD (Trench 1) and -1.49m OD (Trench 2)

Phase 2: Peat (contexts (17) and (16) in Trench 1 and contexts (4) and (3) in Trench 2) with surfaces between -0.22m OD (Trench 1) and -0.49m OD (Trench 2)

Phase 3a: Wooden structure (trackway or platform) in Trench 1 (context (11))

Phase 3b: Peat (context (15)) at a depth of -0.08m OD in Trench 1

Phase 4: Palaeochannels cutting peat layers (15) and (3)

Phase 5: Alluvium with surfaces between 1.29m OD and 0.13m OD in Trench 1 and 2 respectively

Phase 6: 20th century activity

Based upon these records, *ArchaeoScape* implemented a targeted sampling strategy, which enabled the collection of column and bulk samples suitable for an environmental archaeological assessment. The overarching aim of the assessment was to establish the potential of the deposits for reconstructing the environmental history of the site and, in particular, the timing, duration and nature of human activities. The environmental archaeological assessment consisted of:

1. Recovering two column samples (<6> and <7>) and eighteen bulk samples (<A> to <R>) from Trench 1, and two column samples (<4> and <5>) and twenty five bulk samples (<8> - <32>) from Trench 2
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 from 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 diatom frustules from Trench 1 to provide a preliminary reconstruction of the hydrology of the site
5. Assessment of the preservation and concentration of macroscopic plant (seeds, wood) and insect remains of selected bulk samples (<B>, <D>, <F>, <G>, <H>, <I>, <J>, <K>, <L>, <N>, <P> and <R>) from Trench 1 to provide a preliminary reconstruction of the vegetation history and general environmental context of the site
6. Radiocarbon dating of peat extracted from column sample <6> directly above and below the stratigraphic position of the wooden structure in Trench 1 to provide a provisional geochronological framework for the sequence

GEOLOGICAL CONTEXT

The site is on the floodplain of the River Thames where the river forms a bold northward meander, now occupied at its northern end by the Millennium Dome. Bellot Street is on the west side of the meander core towards the southern end and *ca.* 0.25km from the modern waterfront. To the south of the site over a distance of *ca*. 0.1km, the ground rises and forms an inconspicuous bluff separating the floodplain from the Kempton Park Terrace. The site is mapped by the British Geological Survey (BGS) as Alluvium overlying Lambeth Group (Reading Beds) sediments (1:50,000 Sheet 270 South London 1998). A section along the A102 (M), approximately parallel with and about 0.5km to the east of Bellot Street (Gibbard, 1994 Figure 42) shows the floodplain surface at a level *ca.* 1.0m above OD and underlain by Tilbury Deposits resting on Shepperton Gravel. The Shepperton Gravel is a late Devensian Late Glacial deposit. Its upper surface is uneven, representing bars and channels formed during the final stages of its deposition. The base of the Shepperton Gravel is also uneven at levels between *ca.* -8m and -10m OD. The Tilbury Deposits are equivalent to the Staines Alluvial Deposits of the Middle Thames and represent the Holocene alluvium of the river. The Tilbury Deposits vary in thickness from *ca.* 2.0m to *ca.* 6.0m reflecting the uneven surface of the underlying Shepperton Gravel. In the deeper Tilbury sequences sand is often present at the base of the sequence overlain by alluvial clayey silt. The A102 (M) section shows a rather persistent detritus mud unit, *ca*. 1.0m to *ca*. 3.0m thick, within the alluvial sequence, with an upper surface *ca.* 1.0m below OD. Gibbard (1994) suggests that a similar deposit at similar

levels in the alluvium of the nearby Isle of Dogs 'could relate attitudinally to Devoy's Tilbury III and IV units.' Devoy (1982) records dates for the base of these units of respectively *ca.* 3,850 BP (un-calibrated years before present) and *ca.* 2,600 BP (un-calibrated years before present).

METHODS

Field investigations

Two column samples (<6> and <7>) and eighteen continuous bulk samples, each 5cm in thickness (<A> to <R>) were recovered from Trench 1 (Figure 1). Two column samples (<4> and <5>) and twenty-five continuous bulk samples, each 5cm in thickness (<8> to <32>) were recovered from Trench 2 (Figure 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 1 to 4, and Figures 1 and 2.

Organic matter determinations

Fifty sub-samples were taken from column samples <6> and <7> (between -0.81 and 0.33m OD) and 40 sub-samples were taken from column samples <4> and <5> (between -1.52m and 0.07mOD) for determination of the organic matter content (Table 5, and Figures 3a and 3b). 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 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 obtain the 'loss-on-ignition' value (see Bengtsson and Enell, 1986)

Radiocarbon dating

Two sub-samples of peat (-0.31 to -0.32m OD) and (-0.22 to -0.21m OD) were submitted for radiocarbon dating from column sample <7> to Beta Analytic Inc, Florida, USA (Table 6). 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 column samples <6> and <7> (between -0.81 and 0.33m OD) and fourteen sub-samples were extracted from column samples <4> and <5> (between -1.52 and 0.07m 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 7).

Diatom assessment

Eight sub-samples for diatom assessment were extracted from the column samples <6> and <7> (Trench 1) from those layers most likely to preserve diatoms (i.e. having a higher mineral sediment content) (Figure 1). The diatom extraction involved the following procedures:

1. Treatment of the sub-sample (0.2g) with Hydrogen peroxide (30%) to remove organic material and Hydrochloric acid (50%) to remove remaining carbonates
2. Centrifuging the sub-sample at 1200 for 5 minutes and washing with distilled water (4 washes)
3. Removal of clay from the sub-samples in the last wash by adding a few drops of Ammonia (1%)
4. Two slides prepared, each of a different concentration of the cleaned solution, were fixed in mounting medium of suitable refractive index for diatoms (Naphrax)

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 diatoms, and the principal diatom taxa (Table 8).

Plant macrofossil assessment

Twelve bulk samples from Trench 1 were processed for the plant macrofossil assessment. The samples were wet-sieved using 300 micron and 1mm mesh sizes. The residues were scanned using a low power zoom-stereo microscope. Identifications were made with reference to the modern seed collection at Royal Holloway University London, and Berggren (1981) and Anderberg (1994). Plant nomenclature follows Stace (1997). The assessment procedure consisted of scanning the residues and recording the concentration and state of preservation of plant macrofossils, and the principal taxa (Table 9).

Insect assessment

Twelve bulk samples from Trench 1 were processed for the insect assessment. The samples were prepared following the methodology outlined in 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

The assessment procedure consisted of scanning the residues and recording the concentration and state of preservation of insect remains, and the principal taxa (Table 10).

WATERLOGGED WOOD ASSESSMENT

Twelve bulk samples from Trench 1 were processed for the wood assessment. Wood was extracted from the bulk samples during stages 1-3 of the insect preparation described above. The samples were prepared using standard methods (Gale and Cutler, 2000). Anatomical structures were examined using transmitted light on a Nikon Labophot-2 compound microscope at magnifications up to x400 and matched to prepared reference slides of modern wood. When possible, the maturity of the wood was assessed (i.e. heartwood / sapwood) and stem diameters recorded (Table 11).

RESULTS AND INTERPRETATION OF THE LITHOLOGICAL ASSESSMENT

In Trench 1 (column sample <6>), clayey sandy gravel (Phase 1, context (5)) underlies organic sandy clayey silt (Phase 2, context (17)) between **-0.81m OD and -0.71m OD**. During this period of deposition, the organic matter values rise from *ca.* 2% to *ca.* 7%. The sequence indicates deposition of mainly coarse-grained alluvial / colluvial sediments overlying gravels forming the terrace edge. In Trench 1 (column sample <7>), deposition of organic sandy clayey silt (Phase 2, context (17)) occurs between **-0.71m OD and -0.55m OD**. During this period, the organic matter values are *ca.* 20%. The sequence indicates deposition of mainly fine-grained alluvial sediments. The mineral sediments indicate deposition on the margins of a slow moving ('low energy') water body, such as a channel, probably during intermittent flooding of the floodplain surface. The increased organic matter content reflects the progressively terrestrial nature of the local environment, due to either the lateral migration of the nearby channel away from the site, or rapid sedimentation to a level above the zone of regular flooding. Above **-0.55m OD**, peat formation (organic matter: *ca.* 47%) indicates the formation a semi-terrestrial environment (context (16)), which was colonised by woodland adapted to the waterlogged conditions (Phase 2). The presence of mineral sediment (clay) within the peat indicates continued intermittent flooding of the peat surface and/or localised erosion and deposition of colluvial sediments from nearby dryland. The same context recorded in column sample <6>, between -0.71m OD to –0.31m OD, indicates some lateral variation in thickness, probably reflecting distance from the wetland margin. Between **-0.33m OD to -0.12m OD** in column sample <7>, peat formation continued (Phase 3), with a high organic matter (*ca.* 53%) and lower mineral sediment content. This suggests either lower incidence of flooding due to continued lateral migration of the channel away from the site, lower levels of colluviation or that the level of peat growth was significantly higher than the zone of flooding (context (15)). Column sample <6> records the same context between -0.31m OD to -0.10m OD. Between **-0.31m OD and -0.22m OD** in Trench 1 a wooden structure was discovered (context (11)). Overlying the peat (**-0.12m OD to 0.33m OD**), the lower organic matter content (*ca.* 18% to *ca.* 7%) and increased mineral content (contexts (21) and (14)) indicates fluvial environmental conditions, and the renewal of alluvial sedimentation together with the formation of a floodplain (Phase 5). Column sample <6> records the same context between -0.10m OD to 0.19m OD.

In Trench 2 (column sample <4>), highly organic sandy clayey silt (Phase 2, context (4)) underlies wood peat between **-1.52m OD to -1.16m OD**. During this period, organic matter values rise from *ca.* 30% to *ca.* 68%, representing a transitional zone from alluvial sediment deposition to peat formation. This context is broadly compatible with context (17) in Trench 1, with the higher organic matter values probably reflecting reduced rates of mineral sediment deposition and higher rates of peat accumulation in a wetter, less marginal (distal to the fen edge), wetland context. The high mineral sediment content in the lower part of the sequence

indicates deposition on the margins of a slow moving ('low energy') water body, such as a channel, probably during intermittent flooding (i.e. a floodplain surface). However, localised colluviation, from higher ground near Trench 1, may have also contributed some of the mineral content. The organic matter content undoubtedly reflects the increasingly terrestrial nature of the local environment, due to either the lateral migration of the nearby channel away from the site, or rapid sedimentation to a level above the zone of regular flooding.

Above **-1.16m OD**, peat formation (organic matter: *ca.* 72%) indicates the formation a semi-terrestrial environment (context (3)), which was colonised by woodland adapted to the waterlogged conditions (Phase 2). This context is broadly compatible with context (16) in Trench 1, with the higher organic matter values probably reflecting reduced rates of mineral sediment deposition and higher rates of peat accumulation in a wetter, less marginal (distal to the fen edge), wetland context. Between **-0.48m OD to -0.41m OD** in column sample <5> (Phase 2), the deposition of organic-rich silt represents a transitional zone from semi-terrestrial to fluvial environmental conditions, and the renewal of alluvial sedimentation together with the formation of a floodplain (organic matter: *ca.* 42% to 28%). Above **-0.41m OD**, (Phase 5, contexts (8) and (7)), the lower organic matter content (*ca.* 17% to *ca.* 11%) and increased mineral content indicates the formation of a fully developed fluvial environment, with the fine-grained sediments indicating deposition on the margins of a low-energy water body (river or stream channel). These contexts are compatible with contexts (21) and (14) in Trench 1.

RESULTS AND INTERPRETATION OF THE RADIOCARBON DATING

The results of the radiocarbon dating indicate that the peat (context (16)) immediately underneath the wooden structure (context (11)) in Trench 1 is **1940-1730 cal BC (-0.31 to -0.32m OD)**, and the peat (context (15)) immediately above the wooden structure is **1770-1620 cal BC (-0.22 to -0.21m OD)**. The δ13C (‰) values are consistent with that expected for peat, and there is no evidence for mineral or biogenic carbon contamination. The results indicate that the wooden structure is middle Bronze Age in date, with the peat accumulating between -0.32 to -0.21m OD for a maximum of 320 years before enveloping the structure.

RESULTS AND INTERPRETATION OF THE POLLEN ASSESSMENT

The results of the pollen-stratigraphic assessment for both Trenches 1 and 2 indicate the presence of a moderately high concentration of well-preserved pollen grains and spores. The results suggest that both stratigraphic sequences are suitable for detailed pollen analysis. In Trench 1, the presence of alder pollen (*Alnus*) throughout the sequence indicates its colonisation, and dominance, of the wetland ecosystem. Together with an understory consisting of sedges (Cyperaceae), grasses (Poaceae) and ferns (*Polypodium*), they collectively formed alder Carr woodland. The pollen record indicates that on nearby dryland,

lime (*Tilia*), oak (*Quercus*), elm (*Ulmus*) and birch (*Betula*) were present forming mixed deciduous woodland. Above -0.25m OD, the pollen record suggests that hazel (*Corylus*) shrubland invaded the woodland cover, forming mixed alder-hazel woodland on the Carr surface (context (11), Phase 3). The presence of hazel suggests that the woodland became open in character, allowing the hazel to flower and produce seed. Correspondingly, the composition of the woodland floor changed, with the pollen record indicating that herbaceous taxa, especially grasses, and ferns became more common. The reason for this remains unclear, but there is some evidence in the pollen record to suggest that the nearby dryland witnessed a reduction in woodland cover, and an increase in herbaceous light-loving taxa common to meadows, such as black knapweed (*Centurea nigra*). Above 0.11m OD, there is a strong anthropogenic signal in the pollen record indicated by a further reduction in dryland woodland cover. Supporting this evidence are pollen stratigraphic indicators of disturbance of the ground surface (indicated by the presence of the herb *Plantago lanceolata*), incidence of burning (microscopic charred particles), which may have facilitated the spread of bracken ferns (*Pteridium*), and cereal cultivation (contexts (21) and (14), Phase 5).

In Trench 2, the pollen record indicates that alder Carr woodland also dominated the local wetland ecosystem for much of the stratigraphic sequence. On nearby dryland, the pollen record indicates that lime, birch and oak were co-dominant. The record indicates that above -0.32m OD the woodland cover declined, and was succeeded by hazel shrubland and herbaceous taxa, especially those found in grassland (context (8), Phase 5). Although there are no direct pollen stratigraphic indicators of anthropogenic activity (e.g. cereal pollen), the decline in woodland, presence of light loving ground flora and incidence of burning (microscopic charred particles) may suggest deliberate woodland clearance by human groups.

RESULTS AND INTERPRETATION OF THE DIATOM ASSESSMENT

Unfortunately, no diatom frustules were preserved in the sedimentary succession. A number of factors influence diatom preservation, and it is probable that in the contexts examined here diatom concentrations were always low and that post-depositional destruction of the frustules has occurred due to drying-out, abrasion and possibly unfavourable chemical conditions. Dissolution of the diatom silica, for example, can occur as a response to the ambient dissolved silica concentration, the pH in open water, and the interstitial water in sediments. Using both fossil and modern diatoms, these and other environmental factors have been shown to affect the quality of preservation of assemblages (Flower, 1993; Ryves *et al*., 2001). These studies have been particularly important in demonstrating differential preservation of diatom species and their effects on the results and interpretation of diatom-based environmental reconstruction.

RESULTS AND INTERPRETATION OF THE PLANT MACROFOSSIL ASSESSMENT

Bulk Sample <R>: -0.67 to -0.61m OD (context (17), Phase 2)

Abundant wood dominated this sample with occasional waterlogged seeds of cinquefoil (*Potentilla* sp.), bramble (*Rubus* sp.), gypsywort (*Lycopus europaeus*), and seeds from the sedge family (Cyperaceae sp.), and pink family (Caryophyllaceae sp.). The concentration of plant material was low. Preservation was of a good standard.

Bulk Sample <P>: - 0.56 to -0.51 m OD (context (17), Phase 2)

Abundant wood dominated this sample, with occasional waterlogged seeds of bramble (*Rubus* sp.), cinquefoil (*Potentilla* sp.), and seeds from the goosefoot family (Chenopodiaceae sp.). Fragments of hazelnut shell (*Corylus avellana*) were also preserved, including one whole one. The concentration of plant material was low. Preservation was of a good standard.

Bulk Sample <N>: -0.46 to -0.41m OD (context (16), Phase 3)

Abundant seeds of alder (*Alnus* sp.), cinquefoil and buttercup (*Ranunculus* sp.) occurred in this sample. The concentration of plant material was low. Preservation was of a good standard.

Bulk Sample <L>: -0.36 to -0.31m OD (context (16), Phase 3)

Frequent wood was present in this sample, with occasional fragments of hazelnut shell. The concentration of plant material was low. Preservation was of a good standard.

Bulk Sample <K>: -0.31 to – 0.26m OD (context (16)/(11), Phase 3)

Frequent wood was present in this sample, with occasional seeds of dock (*Rumex* sp.) and buttercup (*Ranunculus* sp.). The concentration of plant material was low. Preservation was of a good standard.

Bulk Sample <J>: -0.26 to -0.21m OD (context (11), Phase 3)

Frequent wood was present in this sample, with occasional seeds of gypsywort and bramble. The concentration of plant material was low. Preservation was of a good standard.

Bulk Sample <I>: -0.21 to -0.16m OD (context 15), Phase 3)

Occasional seeds from the sedge family, bramble, gypsywort and knapweed (*Centaurea* sp.) were present in this sample. The concentration of plant material was low. Preservation was of a good standard.

Bulk Sample <H>: -0.16 to -0.11m OD (context (15), Phase 3)

Occasional wood was present in this sample, with seeds of sedge, buttercup, gypsywort, common spikerush (*Eleocharis palustris*) and dock. The concentration of plant material was low. Preservation was of a good standard.

Bulk Sample <G>: -0.11 to -0.06m OD (context (15), Phase 3)
Occasional seeds of common spikerush, buttercup, knotgrass (*Polygonum* sp.), gypsywort, cinquefoil, and seeds from the sedge and deadnettle (Lamiaceae sp.) families were present in this sample. The concentration of material was low. Preservation was of a good standard.

Bulk Sample <F>: -0.06 to -0.01m OD (context (21), Phase 5)
Frequent wood was present in this sample, with occasional seeds of buttercup, knotgrass (*Polygonum* sp.), gypsywort, pondweed (*Potamogeton* sp.), and seeds from the sedge and deadnettle families. The concentration of plant material was low. Preservation was of a good standard.

Bulk Sample <D>: 0.04 to 0.09m OD (context (21), Phase 5)
Occasional seeds from the sedge family along with those of gypsywort and possible cinquefoil were present in this sample. The concentration of plant material was low. Preservation was of a good standard.

Bulk Sample <B>: 0.14 to 0.19m OD (context (21), Phase 5)
Occasional seeds of goosefoot family were present in this sample. The concentration of plant material was low. Preservation was of a moderate standard.

Well-preserved waterlogged plant macrofossils were recorded throughout the sequence in Trench 1. The seeds and fruits were present in low to very low concentrations. The seeds are representative of plants commonly found in damp habitats, such as fen communities (e.g. sedge family, gypsywort, cinquefoil and spikerush), along with plant taxa that typically colonise open disturbed ground (e.g. bramble and goosefoot). The presence of hazelnut shells in the uppermost part of the sequence (above -0.36m OD) is particularly interesting, since this indicates that hazel shrubland had colonised the fen Carr woodland, which was dominated by alder (*Alnus glutinosa*). This implies that the Carr woodland was open in character allowing the shrubland to colonise the understorey, and with sufficient light penetration to enable hazel to flower and produce seed.

RESULTS AND INTERPRETATION OF THE INSECT ASSESSMENT

Bulk Sample <R>: -0.67 to -0.61m OD (context (17), Phase 2)

The insect taxa indicate the presence of leaf-rich bodies of open water in woodland, local rivers and/or streams, and horse and cattle dung.

Bulk Sample <P>: - 0.56 to -0.51 m OD (context (17), Phase 2)

The insect taxa indicate the presence of leaf-rich bodies of open water in woodland, riverbanks and salt marshes, and in particular a woodland peat bog with alder woodland (*Alnus glutinosa*) and ivy (*Hedera helix*) shrubland. In this environment, horse and cattle dung is also present. Interestingly, the presence of pine woodland is also noted.

Bulk Sample <N>: -0.46 to -0.41m OD (context (16), Phase 3)

The insect taxa indicate the presence of leaf-rich and vegetation-rich bodies of open water containing duckweed (*Lemna*) in woodland, a woodland peat bog with alder carr woodland (*Alnus glutinosa*) and sedges, cattails and reeds. The taxa also indicate wet woodland and damp meadows with marsh marigold (*Caltha palustris*), and woodland margins and meadows. The presence of willow (*Salix*) and hazel (*Corylus*) shrubland, and oak (*Quercus*) woodland, are also indicated. Surprisingly, the taxa also indicate shingle and gravel banks of streams.

Bulk Sample <L>: -0.36 to -0.31m OD (context (16), Phase 3)

The insect taxa indicate the presence of vegetation-rich bodies of open water containing duckweed (*Lemna*) in woodland, a woodland peat bog with alder Carr woodland (*Alnus glutinosa*). The taxa also indicate wet woodland and damp meadows with marsh marigold (*Caltha palustris*). The taxa also indicate riverbanks and/or streams with mosses and salt marshes. In this environment, taxa indicative of dung and carrion are also present.

Bulk Sample <K>: -0.31 to – 0.26m OD (context (16)/(11), Phase 3)

The insect taxa indicate the presence of a woodland peat bog with alder Carr (*Alnus glutinosa*), with willow and birch woodland and shrubland, and vegetation-rich bodies of open water containing duckweed (*Lemna*) in woodland.

Bulk Sample <J>: -0.26 to -0.21m OD (context (11), Phase 3)

The insect taxa indicate the presence of riverbanks and salt marshes, and river flood debris, with taxa specific to marginal aquatic plants such as water plantain.

Bulk Sample <I>: -0.21 to -0.16m OD (context 15), Phase 3)

The insect taxa indicate the presence of riverbanks, streams and salt marshes, leaf-rich woodland water, dung and carrion, also dry and damp meadows and clearings.

Bulk Sample <H>: -0.16 to -0.11m OD (context (15), Phase 3)

The insect taxa indicate the presence of riverbanks, streams and salt marshes, leaf-rich and vegetation-rich woodland water in a nutrient-rich (eutrophic) fen.

Bulk Sample <G>: -0.11 to -0.06m OD (context (15), Phase 3)
The insect taxa indicate the presence of riverbanks, streams and salt marshes, leaf-rich and vegetation-rich woodland water probably within a *Phragmites* swamp, also dry and damp meadows and clearings.

Bulk Sample <F>: -0.06 to -0.01m OD (context (21), Phase 5)
The insect taxa indicate the presence of leaf-rich woodland water probably within a *Phragmites* swamp, also flood debris, and dry and damp meadows and clearings.

Bulk Sample <D>: 0.04 to 0.09m OD (context (21), Phase 5)
The insect taxa indicate the presence of vegetation-rich woodland water probably within a *Phragmites* swamp (swamps and swampy meadows), also mosses by streams/rivers, and oak, willow and hazel woodland and shrubland.

Bulk Sample <B>: 0.14 to 0.19m OD (context (21), Phase 5)
The insect taxa indicate the presence of leaf-rich woodland water probably within a *Phragmites* swamp, also flood debris, and dry and damp meadows and clearings.

To summarise, from the base of the sequence to -0.26m OD there is insect evidence for local alder Carr woodland growing on a peat surface and comprising areas of open vegetation-rich water (contexts (17) and (16), Phases 2 and 3). The presence of insect taxa indicative of rivers, streams and gravel banks suggests intermittent flooding of the peat surface. Above -0.26m OD, however, there is no insect evidence for the presence of local wetland woodland; instead, the insects indicate a marginal aquatic environment with an increased representation of dry and damp meadows, and evidence for further flooding (context (11), Phase 3). Further changes in the general environment occur above -0.16m OD (context (15), Phase 3), with evidence for increased flooding and grass swamp formation.

The insect taxa indicate that the wooden structure was constructed on a peat surface (-0.36m to -0.31m OD), dominated by alder, but with willow, hazel and oak, and near to bodies of open water containing duckweed, probably fringed by sedges, cattails and reeds (context (16), Phase 3). This surface has provided additional evidence for nearby anthropogenic activity, which probably involved animal husbandry (cattle and/or horses); this continued after the structure was enveloped in peat and abandoned (-0.21 to -0.16m OD; context (15), Phase 3). During the period in which the wooden structure was visible on the peat surface (-0.31 to -0.22m OD), the vegetation cover remained relatively stable until -0.26m OD when there is

evidence for a decline in woodland cover and further flooding. It is possible that abandonment of the structure occurred due to these flood events. The increased representation of insect taxa specific to an open vegetation cover, such as meadowland, above -0.26m OD may be linked to continued anthropogenic activity in the area.

RESULTS AND INTERPRETATION OF THE WOOD ASSESSMENT

The samples consisted of a mixture of narrow round wood and fragments from larger wood, most of which was identified as alder (*Alnus glutinosa*), although ash (*Fraxinus excelsior*) was recorded in samples at -0.36 to -0.31m OD and -0.31 to -0.26m OD. The character of the wood suggested that the accumulation of organic material had developed through natural deposition on wetland, in an environment of alder carr or woodland dominated by alder. The wooden structure was level with samples at -0.31 to -0.26m OD and -0.26 to -0.21m OD and it is feasible that the ash wood was associated with this structure. Interestingly, samples at -0.66 to -0.61m OD and -0.56 to -0.51m OD, underlying the structure, contained hazel (*Corylus avellana*) nutshells, which could be indicative of a drier land surface. Sample -0.56 to -0.51m OD also included wood fragments that appeared to be partially charred. Although wood was generally abundant in these samples, its condition was extremely poor. As noted above, bark was common and sometimes accounted for most of the sample. Unfortunately, it is not possible to identify archaeological bark from the anatomical structure.

CONCLUSIONS AND RECOMMENDATIONS

The environmental archaeological assessment of the stratigraphic sequences at Bellot Street indicates the following:

1. Sedimentation commenced in Trench 1 prior to 1940-1730 cal BC, and consisted of the deposition of alluvium (coarse and fine-grained), and possibly colluvium, over the terrace edge gravels during intermittent flood events (Phases 1 and 2, context (5) and the lower part of context (17), -0.81 to -0.55m OD). Trench 2 uncovered a similar context to (17) from -1.52 to -1.16m OD (context (4)). The vegetation cover during this period consisted of alder Carr woodland, whilst on the nearby dryland lime, oak, elm and birch woodland dominated the vegetation cover. The insect and plant macrofossils (including wood) are broadly supportive of this reconstruction.
2. Increasing terrestrial conditions finally gave way to peat formation in Trench 1, which was subject to continued flooding, although localised colluviation remains a possibility (Phase 2, context (16), -0.55 to -0.33m OD). Trench 2 uncovered a similar context to (16) from -1.16 to -0.48m OD (context (3)). The vegetation cover during this phase consisted of alder Carr woodland, whilst on the nearby dryland lime, oak, elm and birch woodland dominated the vegetation cover. During this period, hazel shrubland invaded the alder woodland, suggesting a decline in the wetland woodland. The

insect and plant macrofossils (including wood) are broadly supportive of this reconstruction.

3. Peat formation was 'interrupted' in part of Trench 1 by the construction of a wooden structure on the bog surface, which was overlain by further peat formation (Phase 3, contexts (11) and (15), -0.33 to -0.12m OD). Intermittent flooding of the peat surface, indicated by the presence of fine-grained mineral sediment within the peat, occurred before building of the structure, during its use and after its abandonment. Construction and use of the structure occurred between 1940-1730 cal BC and 1770-1620 cal BC, a period of approximately 320 years. During this phase, alder-hazel woodland persisted in wetland areas, but there was a general reduction in woodland cover on dryland. The plant macrofossils (including wood) are broadly supportive of this reconstruction. In contrast, however, the insect taxa do not record wetland woodland but instead indicate increased flooding and the formation of a marginal aquatic environment above -0.26m OD. These flood events, creating significantly wetter surface conditions, may have been responsible for abandonment of the structure.
4. Renewal of alluvial sedimentation over the peat surface in Trench 1 indicates a return to fluvial conditions and the formation of a floodplain (Phase 5, contexts (21) and (14), -0.12 to 0.33m OD). Trench 2 uncovered similar contexts from -0.48m OD (contexts (8) and (7)). During this phase, there is evidence for a further reduction in dryland woodland cover and cereal cultivation. The insects and plant macrofossils (including wood) are broadly supportive of this reconstruction, indicating the development of grass swamp within a fluvial environment.

Based upon these results, the following are recommended for the analysis and publication stage:

1. The results of the assessment of fossil pollen grains and spores, and insects, from Trench 1 at Bellot Street indicates that both classes of biological remains will provide detailed information on the environmental history of the site, enabling quantification of periods of vegetation and hydrological change during Phases 2, 3 and 5. In particular, these analyses will provide important new information on the impact of prehistoric human activities on the local environment prior to, during and following the period in which the wooden structure was in use.
2. The results of the radiocarbon dating indicate that the wooden structure was in-use during the middle Bronze Age. However, the biological remains indicate human activities in the local area prior to and following the structure use, which caused important changes in the local vegetation cover and hydrology. Further radiocarbon dating will establish the timing and duration of these events.

3. The wider implications of the environmental archaeological records from Bellot Street will be established by comparison of the data with previous published records from the lower Thames valley.
4. The results of the analysis will be integrated with unpublished environmental archaeological data from Thamesmead and Slade Green, and disseminated in a peer reviewed international scientific journal, such as the *Journal of Environmental Archaeology.*

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TABLE 1: LITHOSTRATIGRAPHIC SEQUENCE FROM COLUMN SAMPLE <6>, TRENCH 1, BELLOT STREET, GREENWICH (GBL05)

Depth (m OD)	Depth (m from surface)	Context Number	Description
-0.81 to -0.71	1.00 to 0.90	5	10YR 5/2 greyish brown clayey sandy gravel; waterlogged wood penetrating from unit above; very sharp contact
-0.71 to -0.41	0.90 to 0.60	16/17	10YR 2/1 black sandy clayey silt with some small pieces of gravel; waterlogged wood; waterlogged plant macrofossils; diffuse contact
-0.41 to -0.31	0.60 to 0.50	16	10YR 2/1 black moderately humified clayey wood peat; waterlogged wood; waterlogged plant macrofossils; diffuse contact
-0.31 to -0.10	0.50 to 0.29	15/16	10YR 2/1 black highly humified wood peat some clay; waterlogged wood; waterlogged plant macrofossils; very sharp contact
-0.10 to 0.19	0.29 to 0.00	21	10YR 4/2 dark greyish brown silty clay with mottling (10YR 5/4 brown) organic detritus; root penetration

TABLE 2: LITHOSTRATIGRAPHIC SEQUENCE FROM COLUMN SAMPLE <7>, TRENCH 1, BELLOT STREET, GREENWICH (GBL05)

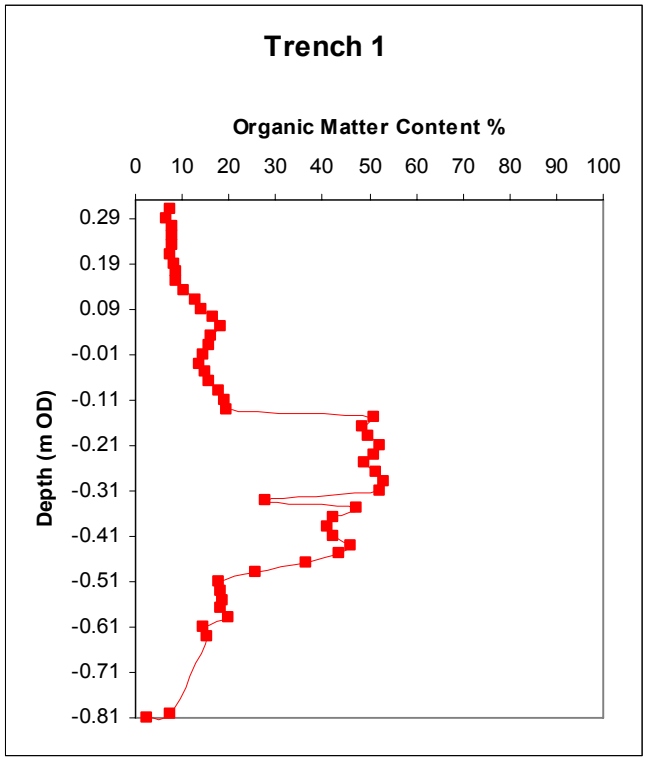
Depth (m OD)	Depth (m from surface)	Context Number	Description
-0.67 to -0.55	1.00 to 0.86	17	10YR 2/1 black sandy clayey silt with some small pieces of gravel; waterlogged wood; waterlogged plant macrofossils; diffuse contact
-0.55 to -0.33	0.86 to 0.66	16	10YR 2/1 black moderately humified silty wood peat; waterlogged wood; waterlogged plant macrofossils; diffuse contact
-0.33 to -0.12	0.66 to 0.45	15/11	10YR 2/1 black moderately humified silty wood peat; waterlogged wood; waterlogged plant macrofossils; very sharp contact
-0.12 to 0.00	0.45 to 0.33	21	10YR 4/2 dark greyish brown silty clay; diffuse contact
0.00 to 0.22	0.33 to 0.11	14/21	10YR 5/2 greyish brown silty clay; diffuse contact
0.22 to 0.33	0.11 to 0.00	14	10YR 6/4 light yellowish brown silty clay

Table 3: Lithostratigraphic sequence from column sample <4>, Trench 2, Bellot Street, Greenwich (GBL05)

Depth (m OD)	Depth (m from surface)	Context Number	Description
-1.52 to -1.16	1.02 to 0.66	4	10YR 2/1 black organic sandy clayey silt; small pieces of gravel; Large pieces of waterlogged wood; waterlogged plant macrofossils; diffuse contact
-1.16 to -0.50	0.66 to 0.00	3	10YR 2/1 black clayey wood peat; highly humified; waterlogged wood; waterlogged plant macrofossils; insect remains

TABLE 4: LITHOSTRATIGRAPHIC SEQUENCE FROM COLUMN SAMPLE <5>, TRENCH 2, BELLOT STREET, GREENWICH (GBL05)

Depth (m OD)	Depth (m from surface)	Context Number	Description
-0.97 to -0.48	1.00 to 0.55	3	10YR 2/1 black clayey wood peat; highly humified; waterlogged wood; waterlogged plant macrofossils; insect remains; sharp contact
-0.48 to -0.41	0.55 to 0.48	3	10YR 4/1 dark grey clayey silt; organic detritus; diffuse contact
-0.41 to -0.32	0.48 to 0.39	8	10YR 4/1 dark grey silty clay; organic detritus; diffuse contact
-0.32 to 0.05	0.39 to 0.02	7/8	10YR 4/2 dark greyish brown silty clay; organic detritus; sharp contact
0.05 to 0.07	0.02 to 0.00	7	10YR 3/1 very dark grey clayey silt



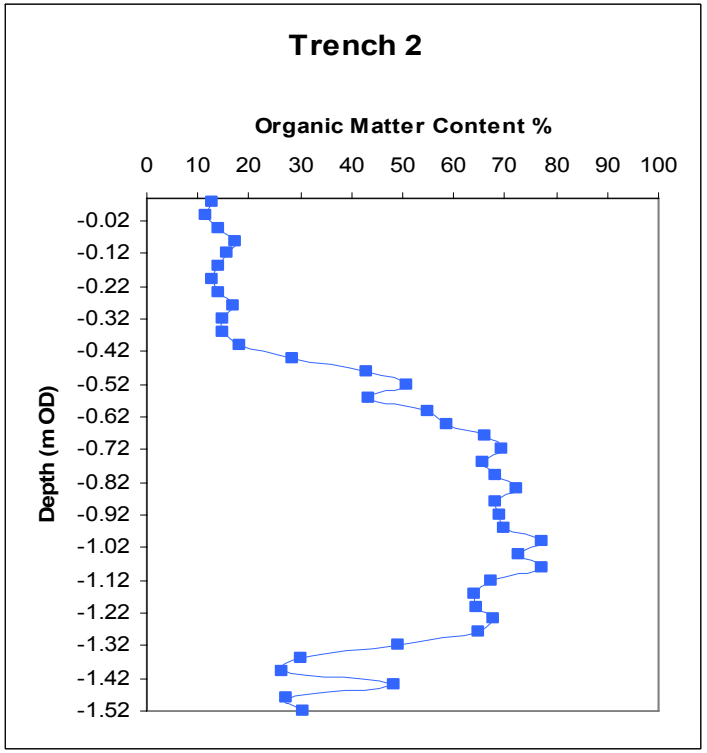


Figure 3a: Organic matter content of samples from Trench 1 ***Figure 3b: Organic matter content of samples from Trench 2***

Table 5: Organic matter content of column samples <4>, <5>, <6> and <7>, Bellot Street, Greenwich (GBL05)

Column sample Number	Trench Number	Context Number	Sample Depth *(m from surface)*		Depth (m OD)		Organic matter %
			From	To	From	To	
6	1	5	1.00	0.99	-0.81	-0.80	2.31
6	1	5	0.98	0.97	-0.80	-0.79	7.30
7	1	17	0.96	0.95	-0.63	-0.62	15.29
7	1	17	0.94	0.93	-0.61	-0.60	14.58
7	1	17	0.92	0.91	-0.59	-0.58	20.09
7	1	17	0.90	0.89	-0.57	-0.56	18.15
7	1	17	0.88	0.87	-0.55	-0.54	18.58
7	1	17	0.86	0.85	-0.53	-0.52	18.30
7	1	17	0.84	0.83	-0.51	-0.50	17.64
7	1	17	0.82	0.81	-0.49	-0.48	25.69
7	1	17	0.80	0.79	-0.47	-0.46	36.40
7	1	16	0.78	0.77	-0.45	-0.44	43.51
7	1	16	0.76	0.75	-0.43	-0.42	46.02

7	1	16	0.74	0.73	-0.41	-0.40	42.17
7	1	16	0.72	0.71	-0.39	-0.38	41.20
7	1	16	0.70	0.69	-0.37	-0.36	42.37
7	1	16	0.68	0.67	-0.35	-0.34	47.31
7	1	16	0.66	0.65	-0.33	-0.32	27.74
7	1	16	0.64	0.63	-0.31	-0.30	52.17
7	1	16	0.62	0.61	-0.29	-0.28	52.99
7	1	11	0.60	0.59	-0.27	-0.26	51.61
7	1	11	0.58	0.57	-0.25	-0.24	49.15
7	1	11	0.56	0.55	-0.23	-0.22	51.20
7	1	11	0.54	0.53	-0.21	-0.20	52.45
7	1	15	0.52	0.51	-0.19	-0.18	49.82
7	1	15	0.50	0.49	-0.17	-0.16	48.59
7	1	15	0.48	0.47	-0.15	-0.14	50.87
7	1	15	0.46	0.45	-0.13	-0.12	19.61
7	1	15	0.44	0.43	-0.11	-0.10	19.10
7	1	15	0.42	0.41	-0.09	-0.08	18.03
7	1	21	0.40	0.39	-0.07	-0.06	15.89
7	1	21	0.38	0.37	-0.05	-0.04	15.06
7	1	21	0.36	0.35	-0.03	-0.02	13.88
7	1	21	0.34	0.33	-0.01	0.00	14.72

7	1	21	0.32	0.31	0.01	0.02	15.58
7	1	21	0.30	0.29	0.03	0.04	16.27
7	1	21	0.28	0.27	0.05	0.06	18.34
7	1	21	0.26	0.25	0.07	0.08	16.53
7	1	21	0.24	0.23	0.09	0.10	14.28
7	1	21	0.22	0.21	0.11	0.12	12.70
7	1	21	0.20	0.19	0.13	0.14	10.56
7	1	21	0.18	0.17	0.15	0.16	8.83
7	1	21	0.16	0.15	0.17	0.18	8.53
7	1	14	0.14	0.13	0.19	0.20	8.44
7	1	14	0.12	0.11	0.21	0.22	7.44
7	1	14	0.10	0.09	0.23	0.24	7.90
7	1	14	0.08	0.07	0.25	0.26	7.77
7	1	14	0.06	0.05	0.27	0.28	7.95
7	1	14	0.04	0.03	0.29	0.30	6.73
7	1	13	0.02	0.01	0.31	0.32	7.47
4	2	5	1.59	1.58	-1.52	-1.51	30.39
4	2	4	1.55	1.54	-1.48	-1.47	27.37
4	2	4	1.51	1.50	-1.44	-1.43	48.41
4	2	4	1.47	1.46	-1.40	-1.39	26.60
4	2	4	1.43	1.42	-1.36	-1.35	30.12

4	2	4	1.39	1.38	-1.32	-1.31	49.18
4	2	4	1.35	1.34	-1.28	-1.27	64.85
4	2	4	1.31	1.30	-1.24	-1.23	67.96
4	2	4	1.27	1.26	-1.20	-1.19	64.34
4	2	4	1.23	1.22	-1.16	-1.15	64.25
4	2	3	1.19	1.18	-1.12	-1.11	67.34
4	2	3	1.15	1.14	-1.08	-1.07	77.19
4	2	3	1.11	1.10	-1.04	-1.03	72.67
4	2	3	1.07	1.06	-1.00	-0.99	77.16
4	2	3	1.03	1.02	-0.96	-0.95	69.87
4	2	3	0.99	0.98	-0.92	-0.91	69.07
4	2	3	0.95	0.94	-0.88	-0.87	68.20
4	2	3	0.91	0.90	-0.84	-0.83	72.33
4	2	3	0.87	0.86	-0.80	-0.79	68.09
4	2	3	0.83	0.82	-0.76	-0.75	65.54
4	2	3	0.79	0.78	-0.72	-0.71	69.34
4	2	3	0.75	0.74	-0.68	-0.67	65.96
4	2	3	0.71	0.70	-0.64	-0.63	58.58
4	2	3	0.67	0.66	-0.60	-0.59	54.96
4	2	3	0.63	0.62	-0.56	-0.55	43.25
5	2	3	0.59	0.58	-0.52	-0.51	50.80

5	2	3	0.55	0.54	-0.48	-0.47	42.85
5	2	3	0.51	0.50	-0.44	-0.43	28.49
5	2	8	0.47	0.46	-0.40	-0.39	17.98
5	2	8	0.43	0.42	-0.36	-0.35	14.77
5	2	8	0.39	0.38	-0.32	-0.31	14.90
5	2	8	0.35	0.34	-0.28	-0.27	17.03
5	2	8	0.31	0.30	-0.24	-0.23	13.97
5	2	8	0.27	0.26	-0.20	-0.19	12.95
5	2	8	0.23	0.22	-0.16	-0.15	14.04
5	2	8	0.19	0.18	-0.12	-0.11	15.59
5	2	8	0.15	0.14	-0.08	-0.07	17.17
5	2	8	0.11	0.10	-0.04	-0.03	14.05
5	2	7	0.07	0.06	0.00	0.01	11.69
5	2	7	0.03	0.02	0.04	0.05	13.00

Table 6: Results of the radiocarbon dating of column sample <7>, Bellot Street, Greenwich (GBL05)

Laboratory Code	Material and Location	Column Sample	Depth (m OD)	Sample Depth (m from surface)	Un-calibrated Radiocarbon Years Before Present (yrs BP)	Calibrated age BC (BP) (2-sigma, 95.4% probability)	δ13C (‰)
Beta-204347	Peat below wooden platform	7	-0.31 to -0.32	0.65 to 0.64	3510 ±40	1940-1730 cal BC (3880-3680 cal BP)	-28.6
Beta-204346	Peat above wooden platform	7	-0.22 to -0.21	0.55 to 0.54	3410 ±40	1770-1620 cal BC (3720-3570 cal BP)	-28.8

Table 7: Pollen-stratigraphic assessment column samples <6> and <7> (Trench 1) and column samples <4> and <5> (Trench 2), Bellot Street, Greenwich (GBL05)

Column sample No	Context Number	Depth (m OD)	Depth (m from surface)	Main Pollen Taxa Present	Common Name	Concentration	Preservation
6	5	-0.81 to -0.80	1.00 to 0.99	None			
7	17	-0.61 to -0.60	0.94 to 0.93	*Tilia* *Alnus*	Lime Alder	Moderate	Good
7	17	-0.55 to -0.54	0.88 to 0.87	*Alnus* *Betula* *Quercus* *Tilia* Cyperaceae	 Birch Oak Sedge family	Moderate	Good
7	16	-0.49 to -0.48	0.82 to 0.81	*Quercus* *Alnus*		Moderate	Good
7	16	-0.43 to -0.42	0.76 to 0.75	*Alnus*		Moderate	Good
7	16	-0.37 to -0.36	0.70 to 0.69	*Alnus* *Quercus* Filicales	 e.g. Male Fern	Moderate	Good
7	16	-0.31 to -0.30	0.64 to 0.63	*Alnus* *Betula* Polypodium *Tilia*	 Polypody	Moderate	Good

7	11	-0.25 to -0.24	0.58 to 0.57	*Chenopodium* type *Corylus* type Poaceae *Alnus* *Quercus*	e.g. Fat hen e.g. Hazel Grass family	Moderate	Good
7	15	-0.19 to -0.18	0.52 to 0.51	Poaceae *Betula*		Moderate	Good
7	15	-0.13 to -0.12	0.46 to 0.45	*Corylus* type *Alnus* *Quercus* *Betula* Poaceae		Moderate	Good
7	21	-0.07 to -0.06	0.40 to 0.39	*Pteridium* *Tilia* Poaceae *Quercus* *Alnus* *Ulmus* *Corylus* type *Betula*	Bracken Elm	Moderate	Good
7	21	-0.01 to 0.00	0.34 to 0.33	Poaceae *Centaurea nigra* *Chenopodium* type	 Black knapweed	Moderate	Good

				Pinus *Artemisia* *Corylus* type *Alnus*	Pine Mugwort		
7	21	0.05 to 0.06	0.28 to 0.27	Poaceae Cyperaceae *Alnus*		Moderate	Good
7	21	0.11 to 0.12	0.22 to 0.21	*Quercus* *Alnus* *Plantago lanceolata* Cyperaceae *Betula* *Pteridium* *Corylus* type *Cereale* type	 Ribwort plantain Cereal	Moderate	Good
7	14	0.19 to 0.20	0.14 to 0.13	Lactuceae *Alnus* Poaceae *Quercus* *Chenopodium* type *Corylus* type Cyperaceae	Daisy family	Moderate	Good
7	14	0.25 to 0.26	0.08 to 0.07	*Alnus*		Moderate	Good

				Corylus type Cyperaceae *Pteridium* *Salix* Poaceae Lactuceae *Ulmus* *Cereale* type *Chenopodium* type	Willow		
7	13	0.31 to 0.32	0.02 to 0.01	Cyperaceae *Pinus* Filicales *Alnus* *Artemisia* Poaceae *Pteridium* *Botrycoccus*	Algae	Moderate	Good
4	4	-1.52 to -1.52	1.59 to 1.58	Aster type *Tilia* *Alnus* *Quercus* Poaceae	Daisy family	Moderate	Good
4	4	-1.40 to -1.39	1.47 to 1.46	Filicales		Moderate	Good

				Tilia *Quercus* Poaceae *Alnus*			
4	4	-1.28 to -1.27	1.35 to 1.34	*Betula* *Alnus* *Tilia*		Moderate	Good
4	4	-1.16 to -1.15	1.23 to 1.22	*Typha latifolia* *Quercus* *Alnus* *Polypodium*	Bur-reed	Moderate	Good
4	3	-1.04 to -1.03	1.11 to 1.10	*Alnus*		Moderate	Good
4	3	-0.92 to -0.91	0.99 to 0.98	*Alnus*		Moderate	Good
4	3	-0.80 to -0.79	0.87 to 0.86	*Alnus*		Moderate	Good
4	3	-0.68 to -0.67	0.75 to 0.74	*Alnus* *Tilia* *Betula* *Quercus*		Moderate	Good
4	3	-0.56 to -0.55	0.63 to 0.62	*Alnus*		Moderate	Good
5	3	-0.44 to -0.43	0.51 to 0.50	*Alnus*		Moderate	Good
5	8	-0.32 to -0.31	0.39 to 0.38	*Chenopodium* type *Corylus* type Filicales		Moderate	Good

				Poaceae			
5	8	-0.20 to -0.19	0.27 to 0.26	*Alnus* *Chenopodium* type *Quercus*		Moderate	Good
5	8	-0.16 to -0.15	0.23 to 0.22	*Alnus*		Moderate	Good
5	8	-0.08 to -0.07	0.15 to 0.14	Filicales *Betula* *Quercus* *Alnus* *Polypodium* Cyperaceae Caryophyllaceae Poaceae Lactuceae *Pteridium* Filicales	Campion family	Moderate	Good
5	7	0.04 to 0.05	0.03 to 0.02	*Centaurea nigra* Poaceae *Chenopodium* type *Filipendula* *Pinus* *Sinapis* type *Alnus*	e.g. Charlock	Moderate	Good

				Taxus	Yew		

Table 8: Diatom-stratigraphic assessment for column samples <6> and <7>, Trench 1, Bellot Street, Greenwich (GBL05)

Column Sample No	Context Number	Depth (m OD)	Depth (m from surface)	Main Diatom Taxa Present	Concentration	Preservation
6	17	-0.81 to -0.80	1.00 to 0.99	-	-	-
7	15	-0.13 to -0.12	0.46 to 0.45	-	-	-
7	21	-0.01 to 0.00	0.34 to 0.33	-	-	-
7	21	0.05 to 0.06	0.28 to 0.27	-	-	-
7	21	0.11 to 0.12	0.22 to 0.21	-	-	-
7	21	0.19 to 0.20	0.14 to 0.13	-	-	-
7	21	0.25 to 0.26	0.08 to 0.07	-	-	-
7	21	0.31 to 0.32	0.02 to 0.01	-	-	-

Key:

- Absent

Table 9: Plant macrofossil assessment for Trench 1, Bellot Street, Greenwich (GBL05)

Depth (m OD)	Context Number	Sample Code	Sample vol. (l)	Residue vol. (ml)	Concentration of Waterlogged Seeds and Fruits	Density	Preservation	Main Taxa Present
-0.66 to -0.61	17	R	1.0	1000	*	Low	Good	Cyperaceae sp., *Lycopus europaeus*, *Rubus* sp., *Potentilla* sp., Caryophyllaceae sp.
-0.56 to -0.51	17	P	1.0	1000	*	Low	Good	*Corylus avellana*, *Rubus* sp., Chenopodiaceae sp., *Potentilla* sp.
-0.46 to -0.41	16	N	1.0	1000	*	Low	Good	*Alnus* sp., *Potentilla* sp., *Ranunculus* sp.
-0.36 to -0.31	16	L	1.0	1000	*	Low	Good	*Corylus avellana*
-0.31 to -0.26	11	K	1.0	1000	*	Low	Good	*Rumex* sp., *Ranunculus* sp.
-0.26 to -0.21	11	J	1.0	1000	*	Low	Good	*Lycopus europaeus*, *Rubus* sp.
-0.21 to -0.16	15	I	1.0	500	*	Low	Good	Cyperaceae sp., *Rubus* sp., *Centaurea* sp., *Lycopus europaeus*
-0.16 to -0.11	15	H	1.0	200	*	Low	Good	Cyperaceae sp., *Lycopus europaeus*, *Ranunculus* sp., *Rumex* sp., *Eleocharis palustris*
-0.11 to -0.06	21	G	1.0	200	*	Low	Good	Cyperaceae sp., *Lycopus europaeus*, *Ranunculus* sp., *Potentilla* sp., Lamiaceae sp., *Polygonum* sp.
-0.06 to -0.01	21	F	1.0	70	*	Low	Good	Cyperaceae sp., *Lycopus europaeus*,

								cf. *Potentilla* sp., *Potamogeton* sp., *Ranunculus* sp., Lamiaceae sp.
0.04 to 0.09	21	D	1.0	50	*	Low	Good	Cyperaceae sp., *Lycopus europaeus*, cf. *Potentilla* sp.
0.14 to 0.19	18	B	1.0	5	*	Low	Good	Chenopodiaceae sp.

Key:

* <11 ** 11-30 *** 31-50 **** >50

Table 10a: Insect assessment for Trench 1, Bellot Street, Greenwich (GBL05)

Depth (m OD)	Sample Code	Context Number	Sample vol. (l)
-0.66 to -0.61	R	17	5.50
-0.56 to -0.51	P	17	6.00
-0.46 to -0.41	N	16	8.00
-0.36 to -0.31	L	16	7.50
-0.31 to -0.26	K	11	6.00
-0.26 to -0.21	J	11	6.00
-0.21 to -0.16	I	15	7.50
-0.16 to -0.11	H	15	5.75
-0.11 to -0.06	G	21	5.00
-0.06 to -0.01	F	21	5.00
0.04 to 0.09	D	21	8.25
0.14 to 0.19	B	18	6.00

Table 10b: Insect assessment for Trench 1, Bellot Street, Greenwich (GBL05)

Taxon	Sample											
	B	**D**	**F**	**G**	**H**	**I**	**J**	**K**	**L**	**N**	**P**	**R**
	0.14 to 0.19	**0.04 to 0.09**	**-0.06 to -0.01**	**-0.11 to -0.06**	**-0.16 to -0.21**	**-0.21 to -0.16**	**-0.26 to -0.21**	**-0.31 to -0.26**	**-0.36 to -0.31**	**-0.46 to -0.41**	**-0.56 to -0.51**	**-0.66 to -0.61**
Carabidae												
Clivina collaris (Hbst.)	-	-	-	-	1	-	-	-	-	-	-	-
Dyschirius luedersi Wagn.	-	-	-	1	1	1	1	-	1	-	1	-
Trechus rivularis (Gyll.)	-	-	-	-	-	-	-	1	-	-	-	-
Bembidion spp.	-	-	1	1	1	1	-	1	1	-	1	1
Pterostichus minor (Gyll.)	-	-	-	-	-	-	-	-	1	1	1	-
Pterostichus spp.	-	-	-	-	-	-	-	-	1	-	1	-
Agonum thoreyi Dej.	-	-	-	-	-	-	-	-	-	1	-	-
Chlaenius sp.	-	-	-	-	-	-	-	1	-	-	-	-
Lebia cruxminor (L.)	-	-	1	1	-	1	-	-	-	-	-	-

Dytiscidae												
Hydroporus sp.	-	-	-	-	-	-	-	1	-	-	-	-
Hydraenidae												
Hydraena testacea (Curt.)	-	-	-	-	-	-	-	1	2	5	1	-
Hydraena sp.	-	-	-	-	-	-	-	2	2	1	-	-
Ochthebius minimus (f.)	-	1	-	2	2	-	-	-	-	1	-	-
Ochthebius spp.	1	-	1	-	-	1	2	3	2	-	-	2
Hydrochus sp.	-	-	-	-	-	-	1	-	-	-	-	-
Helophorus sp.	-	1	-	-	-	-	-	-	-	-	-	-
Hydrophilidae												
Cercyon marinus Thom.	-	-	-	-	-	1	-	-	-	-	-	1
Cercyon tristis (Ill.)	-	-	1	-	1	1	-	-	-	1	1	1
Cercyon spp.	-	-	-	-	-	-	-	-	-	1	-	2
Hydrobius fuscipes (L.)	-	-	-	-	-	-	-	-	-	-	-	1
Laccobius sp.	-	-	-	-	1	-	-	-	-	-	-	1
Silphidae												

Phosphuga atrata (L.)	-	-	-	-	-	-	-	-	-	1	-	-
Orthoperidae												
Corylophus cassidioides (Marsh.)	-	1	-	-	-	-	-	-	-	-	-	
Staphylinidae												
Eusphalerum minitum (L.)	-	-	-	-	-	-	-	-	1	1	-	-
Olophrum sp.	-	-	-	-	-	-	-	-	1	-	-	1
Arpedium quadrum (Grav.)	-	-	2	-	-	-	-	-	-	2	1	1
Geodromicus nigrita (L.)	-	-	-	-	-	-	-	-	-	1	-	-
Oxytelus sculpturatus Grav.	-	-	-	-	-	1	-	-	-	-	-	-
Oxytelus (Anotylus) sp.	-	1	-	1	1	-	-	-	-	2	-	-
Stenus spp.	-	8	3	2	4	2	3	2	2	2	1	3
Dianous coerulscens (Gyll.)	-	1	1	-	-	-	-	-	1	-	-	-
Lathrobium spp.	-	-	1	-	1	1	-	-	1	1	-	-
Tachyporus sp.	1	-	-	-	-	-	-	-	-	-	-	-
Tachinus subterraneus (L.)	-	-	-	-	-	-	-	-	1	-	-	-
Aleocharinae spp. indet.	-	1	1	1	-	-	-	-	2	1	-	1

Elateridae												
Athous haemorrhoidalis (Fab.)	-	1	-	-	-	-	-	-	-	1	-	-
Athous sp.	-	-	-	-	-	-	-	-	-	-	1	-
Dryopidae												
Helichus substriatus (Müll.)	-	-	-	-	1	1	-	-	-	-	-	1
Oulimnius tuberculatus (Müll.)	-	1	-	-	-	-	-	-	1	-	-	-
Cucujidae												
Genus et sp. indet.	-	-	-	1	-	-	-	-	-	-	-	-
Scarabaeidae												
Aphodius distinctus (Müll.)	-	-	-	-	-	-	-	-	-	2	2	1
Aphodius spp.	-	-	-	-	1	1	1	-	2	-	-	-
Psammodius sulcicollis (Ill.)	-	-	1	-	-	-	1	-	-	-	-	-
Chrysomelidae												
Donacia spp.	1	-	1	-	-	-	-	-	-	-	-	-
Plateumaris braccata (Scop.)	-	-	1	1	-	-	-	-	-	-	-	-
Prasocuris phellandrii (L.)	-	-	-	-	-	-	-	-	-	1	-	-

Melasoma aenea (L.)	-	-	-	-	-	-	-	-	-	1	-	-
Haltica sp.	-	-	-	-	-	-	-	-	1	1	-	-
Scolytidae												
Polygraphus sp.	-	-	-	-	-	-	-	-	-	-	1	-
Kissophagus hederae Schmitt	-	-	-	-	-	-	-	-	-	-	1	-
Curculionidae												
Apion sp.	-	-	-	-	1	-	-	-	-	-	-	-
Bagous spp.	1	-	-	-	-	-	-	-	1	-	-	-
Hydronomus alismatis (Marsh.)	-	-	-	-	-	1	1	-	-	-	-	-
Notaris sp.	-	-	-	-	-	-	-	1	-	-	-	-
Magdalis sp.	-	-	-	-	-	-	-	-	-	-	1	-
Coeliodes sp.	-	-	-	-	-	-	-	-	-	-	1	-
TRICHOPTERA												
Limnephilidae												
Genus et sp. indet.	-	-	1	1	-	-	-	-	-	1	-	-
HYMENOPTERA												

Formicidae												
Myrmica sp.	-	-	-	-	-	-	-	-	-	1	-	-

Table 11: Wood assessment, Bellot Street, Greenwich (GBL05)

Depth (m OD)	Context Number	Sample Code	Taxa Identified	Comments
-0.66 to -0.61	17	R	1 x alder (*Alnus glutinosa*), r/w, Ø 15mm incl bark	Mix of narrow roundwood, larger wood fragments and hazel nutshell. Very degraded. No further work recommended
	17	R	3 x alder (*Alnus glutinosa*), larger fragmenst	
-0.56 to -0.51	17	P	1 x alder (*Alnus glutinosa*), r/w, Ø 10mm	Large number of fragments but very degraded, probably mostly narrow roundwood, plus a small amount of bark. In addition, some partially charred larger wood fragments; also hazel nut shells. No further work recommended
	17	P	1 x alder (*Alnus glutinosa*), r/w, Ø 6mm inc. bark	
	17	P	1 x alder (*Alnus glutinosa*), larger wood fragment	
-0.46 to -0.41	16	N	2 x alder (*Alnus glutinosa*), r/w, Ø 70mm	17 fragments of bark, mostly large; 11 wood fragments, 36 fragments of r/w, Ø 4-20mm, some with bark. Remainder superficially similar to alder. No further work recommended
	16	N	1 x alder (*Alnus glutinosa*), r/w, Ø10mm	
	16	N	1 x alder (*Alnus glutinosa*), r/w, Ø 15mm	
	16	N	1 x alder (*Alnus glutinosa*), r/w, Ø 10mm	
-0.36 to -0.31	16	L	1 x ash (*Fraxinus excelsior*)	38 fragments of bark. Remaining fragments of wood too degraded for id
	16	L	1 x alder (*Alnus glutinosa*)	
	16	L	1 x alder (*Alnus glutinosa*), r/w, Ø 40mm	
	16	L	1 x alder (*Alnus glutinosa*), r/w, 15mm	
-0.31 to -0.26	11	K	2 x alder (*Alnus glutinosa*)	27 fragments of bark from wide

	11	K	1 x ash (*Fraxinus excelsior*), roundwood	roundwood. Remainder of sample too degraded for id.
-0.26 to -0.21	11	J	1 x alder (*Alnus glutinosa*), r/w, Ø 10mm	7 fragments of narrow roundwood; 17 pieces from larger wood; 34 fragments of bark. Very degraded. No further work recommended
	11	J	1 x ash (*Fraxinus excelsior*), r/w	
	11	J	1 x alder (*Alnus glutinosa*), larger fragment	
-0.21 to -0.16	15	I	1 x alder (*Alnus glutinosa*), r/w, Ø 5mm incl bark	18 fragments of r/w, Ø from 5-10mm incl bark; 9 fragments of larger wood; 29 fragments of unidentified bark from wide roundwood. All very degraded. No further work recommended
	15	I	1 x alder (*Alnus glutinosa*), r/w, Ø 10mm incl bark	
	15	I	1 x alder (*Alnus glutinosa*), larger fragment	
-0.16 to -0.11	15	H	1 x alder (*Alnus glutinosa*), r/w, Ø15mm, incl bark	21 fragments of r/w, Ø from 4-15mm (bark suggests alder; 13 x unidentified bark fragments, from wide roundwood/ trunk. No further work recommended
	15	H	1 x alder (*Alnus glutinosa*), r/w, Ø6mm incl bark	
	15	H	1 x alder (*Alnus glutinosa*), larger fragment	
-0.11 to -0.06	21	G	1 x alder (*Alnus glutinosa*), r/w, Ø 8mm incl. bark	9 very degraded fragments. No further work recommended
	21	G	1 x r/w, Ø 5mm incl bark, too degraded to id	
	21	G	1 x ?alder (*Alnus glutinosa*)	
-0.06 to -0.01	21	F	2 x alder (*Alnus glutinosa*), r/w, Ø = 8mm, incl. bark	7 small fragments, very degraded. 3 pieces examined, remainder probably similar. No further work recommended
	21	F	1 x alder (*Alnus glutinosa*), larger fragment	

0.04 to 0.09	21	D	-	13 small, very degraded fragments. Insufficient structure for id

Un-stratified sample	?		1 x alder (*Alnus glutinosa*), r/w, Ø 75mm incl bark	-

Key: r/w = round wood; Ø = diameter

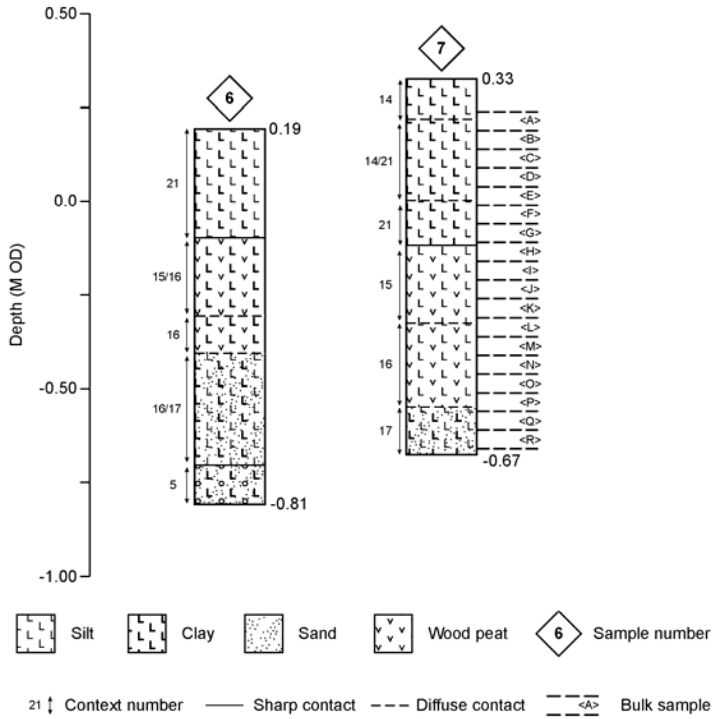


Figure 1: Lithostratigraphic sequence of column samples <6> and <7>, showing position of bulk samples from Trench 1, Bellot Street, Greenwich (GBL05) taken by *ArchaeoScape*, April 2005

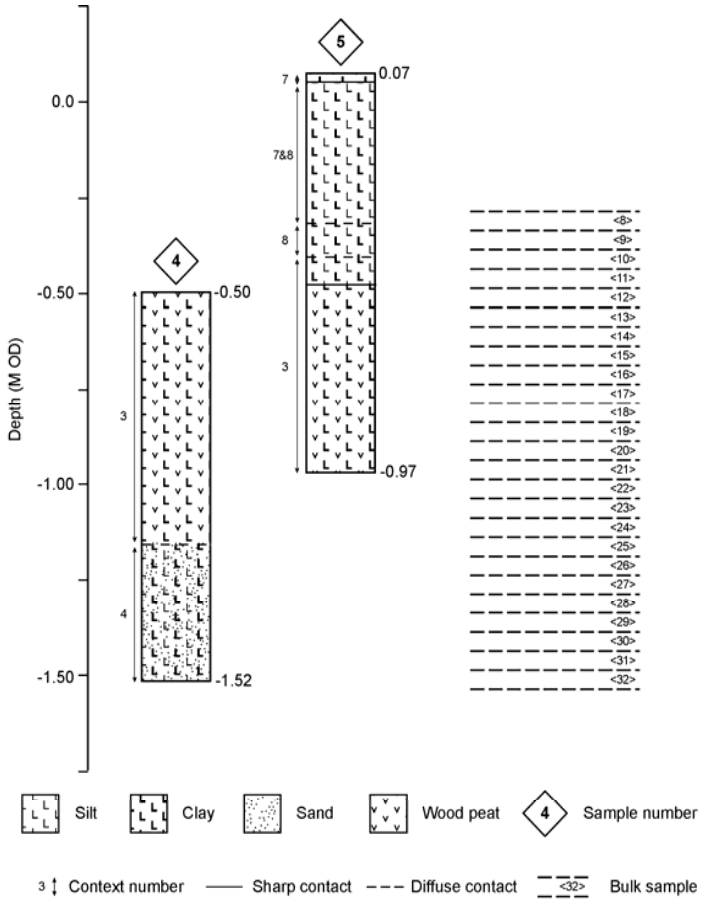


Figure 2: Lithostratigraphic sequence of column samples <4> and <5>, showing position of bulk samples from Trench 2, Bellot Street, Greenwich (GBL05) taken by *ArchaeoScape*, April 2005

APPENDIX 4: WORKED WOOD ASSESSMENT

ASSESSMENT SUMMARY OF THE PREHISTORIC WORKED WOOD FOUND AT BELLOT ST, GREENWICH, LONDON

DM Goodburn Ba Phd AIFA Ancient Woodwork Specialist

BACKGROUND

The current Bellot Road site (GBL 05) lies a short distance to the east of the modern bank of the tidal Thames north-east of the centre of Greenwich. The location is low lying and waterlogged deposits were expected and found. For details readers should refer to the main site assessment by the supervisor N. Hawkins, only an outline of relevance to the woodwork found is provided here. Just to the south of the current site the remains of what may have been a simple track way were partially excavated and recorded in 1993 by B. Philp et al , and it was believed that it might extend into the limits of the proposed development. A set of trenches were planned to test this proposition and find out more about the structure found in 1993. Unfortunately modern services prevented the trenches from being sited exactly where intended but worked wood of prehistoric date was found in trench 1 GBL 05 in any case (structure [11]). This structure was a simple platform of small logs or more properly ‘poles’ (see below).

Structure [11] lay between –0.21 m OD and –0.34 m OD, well within the typical level range for waterlogged shore side and wetland structures from later prehistory in the London area. On many sites on the floodplains of the Thames and its main tributaries prehistoric woodwork has been found. The vast majority of this has been proved to be of mid to late Bronze Age date. The possible track way found just to the south in Trench 1 of the BSG 93 project was found at around –0.5m OD (?? Not very clear in report of 93*). This feature also has a C14 date of c. 1,200 BC. At the site of Swalecliffe in N. Kent woodwork with toolmarks typical of the ‘Late Bronze Age’ (LBA) was securely tree-ring dated to a similar period. Thus, we may consider the BSG 93 structure date within the LBA, indeed two oak tool handles for socketted tools of the LBA found at Heathrow are C14 dated even earlier.

This writer was asked to examine, record and assess the assemblage of worked wood lifted during the GBL 05 evaluation works.

METHODOLOGY

Following the usual planning and in situ recording, a large selection of the cut pole lengths were carefully lifted with much peat adhering, double labelled and double wrapped. The off-site specialist work carried out by this writer required the unwrapping and cleaning of c. 30 bagged items from 9 worked pieces clearly from Structure [11]. The material was all recorded following EH guidelines and Museum of London practice on pro-forma 'timber sheets' with measured sketches etc. The three best preserved items where also drawn to scale in detail on gridded film and one was reserved for detailed photography of the tool marks on one cut end. Nine Sp ID / age samples were taken which could also be used for C14 dating. No material was suitable for tree-ring dating. Additionally 1 bag containing three unlabelled pole sections was discarded after examination.

THE CONDITION OF THE LIFTED WORKED WOOD

There had clearly been some ancient decay of the upper surfaces of the poles, and some abrasion during excavation, but the greatest damaged to the material was caused by post-depositional compression of the peaty deposits in which the material lay. The poles were squashed to strongly oval cross sections, and vertical stake tip [33] was slightly buckled by overburden compression. All the poles were also cracked through at several points, pole section [27] was so fragmentary it could not be reassembled off-site. Due to the staining and crushing of the woodwork it was difficult to visually identify the species concerned, although alder seems the most likely.

KEY FEATURES OF THE WORKED ROUNDWOOD FROM STR. [11]

The poles were laid parallel close to each other in the manner of a rough 'corduroy' surface. Despite the effects of decay and compression it could be seen that the poles were clearly originally of similar diameters c. 80 to 60mm (Now varying ovals up to 100x 70mm in C/S). The ends of the poles showed both abraded broken ends and original axe cut ends and varied from c. 0.45m to 1.38m as shown on plan. Some ends had suffered some post-depositional breaking. The material was very simply worked, simply cut to length with side branches lopped off with a small sharp axe with a very rounded blade. The widest axe stop mark (line mirroring the edge of the tool) was 35mm wide but incomplete and very rounded found on the on the SW end of pole [25]. The axe stop marks found were not complete enough to be broadly dateable on style and size although the crispness rules out the use of stone axes, and the roundness and small size would be rather atypical for Iron Age tools. A Bronze Age date seems fairly certain, with LBA the most likely. The compressed and slightly

decayed small stake tip [33] driven in on the west side of the small platform was made of awhole rod or branch around 40mm in diameter surviving 155mm long, and was cut with a long and surprisingly flat single facet to a chisel point. It is just possible that this stake was later as it had not been driven far into the underlying soft peat.

The chisel or wedge form ends appear to be a function of cross-cutting (bucking) with an axe and the slightly or markedly knotty form of the poles suggests that they were mainly from the upper parts of small trees. Axes cross-cut roundwood most readily used at an angle of c. 40-60 degrees to the long axis of the work. It seems likely that they were leftovers from making another structure from the main stems.

A POSSIBLE FUNCTION FOR STRUCTURE [11]

The small size of the rough platform of cut poles spreading to c. 1.6m E-W and 0.8m N-S would clearly limit its function. However, the reasonably careful parallel arrangement of the pole off cuts and the probable association of stake [33] shows that the structure was deliberately made. The size of trench 1 clearly limits our current interpretations here to only tentative suggestions. Possible purposes may include a platform used in hunting or fowling where the small stake might be the remnants of a wattle hurdle or a support for a brushwood screen which would have hidden a hunter. Small blinds of stacked straw bales set next to a pallet are a possible modern analogue used for fowling in the N Kent marshes today.

THE IMPORTANCE OF THE ASSEMBLAGE AS CLEARLY DOCUMENTED BRONZE AGE ACTIVITY IN THE IMMEDIATE AREA

Earlier archaeological work carried out just to the south of the current site at site BSG 93 did not proceed to systematic recording of the waterlogged wood found (due at least in part to preservation in situ concerns at the time), although later additional photography by G. Boswijk of ARCUS, during the wood Sp. ID study, appears to indicate the presence of a variety of worked material (including cleft timber as well as roundwood) in the assemblage. Additionally the plan copy attached to the Outline Report of 1993 clearly shows one wedge shaped cut end to a log (?) of c. 150mm diameter. However, due to the restricted size of that excavation it is uncertain whether the worked wood was part of some form of platform or a linear feature such as a trackway.

The more systematically recorded assemblage of worked wood from structure [11] at the close by site of GBL 05 clearly shows that there was fairly widespread Bronze Age activity in this wetland area, although the phases of activity may not be exactly contemporary. Any further excavation near by is very likely to uncover more wooden structures, and probably

other artefactual and environmental material that will shed light on why the structures from each site were built.

FURTHER WORK

The examination of the 9 wood Sp ID samples will need completing, and the detailed photography of the best preserved cut pole end (part of [25]) will need to be done. For publication it will be necessary to review other records from the site of BSG 93 and then an up-dated, fully referenced text would need to be produced on the worked wood. The key comparative material would be from selected London wetland excavations (mostly unpublished), the Somerset levels, Swalecliffe , N. Kent and the Severn estuary.

APPENDIX 5: LITHIC ASSESSMENT

LITHIC ASSESSMENT

Barry John Bishop

INTRODUCTION

An Archaeological Evaluation at the above site produced a single struck flint and 257g of burnt flint. The material was recovered from a series of Peat deposits, which are broadly dateable to the middle Holocene

This report quantifies and describes the material, offers some comments on its significance and recommends any further work required. All metrical descriptions follow the methodology of Saville (1980).

QUANTIFICATION AND DESCRIPTION

Context [17] Lower Peat

- Edge trimmed narrow flake made from translucent grey/black flint but stained yellowish grey by the peat. Plain striking platform 8mm wide, pronounced bulb of percussion and a feathered distal termination. Dorsal has three unidirectional flake scars. Its right lateral margin has been blunted with fine abrupt retouch that becomes more invasive towards the distal, possibly accentuated by use wear, and there was some edge-nicking and abrasion to the left lateral margin. Measures 51mm X 28mm X 14mm . Weighs 12.9g.

Context [03] Upper Peat

- Sixteen fragments of burnt flint weighing 220g.

Context [16] Upper Peat

- Four fragments of burnt flint weighing 37g.

DISCUSSION

The flint flake was recovered from the lower peat horizon but, unfortunately, was not by itself closely chronologically diagnostic; its narrowness may suggest a broadly Neolithic date, although the general technological simplicity in its manufacture may be more characteristic of flintworking traditions dateable to the Bronze Age. A Neolithic or Bronze Age date is therefore all that could be suggested. Its edge had been lightly retouched and there was further

evidence that it may have been used for cutting hard material which, given the context of the site, could have included wood-working, although it is evident that the flake was recovered from a much earlier context than the wooden structure identified.

All of the burnt flint originated from the second peat horizon, located immediately beneath the wooden structure. It had all been intensively burnt to the extent that it had shattered and changed colour to a uniform bluish-white. The spread of the material throughout both trenches suggested it may have formed a fairly widespread scatter, indicative of fairly intensive human activity in or around the site prior to or during the construction of the wooden platform. Quantities of burnt flint are often recovered from Holocene alluvial sequences located along the lower Thames margins, and testify to the intensive use of these riverine locations throughout the prehistoric period. The flint had evidently been burnt in a hearth, and although the quantities recovered here may be regarded as moderate, the consistency of its burning and its fairly widespread distribution may tentatively suggest that it originated from more-specialized activity. Numerous burnt mounds, comprising large accumulations of deliberately burnt flint, often in a collapsed form, have been found buried within the alluvium along the lower Thames (eg Bowsher 1991; Ridgeway and Meddens 2001) and appear to be a common feature along many wetland margins (eg Edmonds *et al.* 1999), tentatively suggesting the possibility that the burnt flint here may be a remnant of a much larger accumulation.

RECOMMENDATIONS

Due to its size and lack of chronologically diagnostic artefacts, this report is all that is required of the material for the purposes of the archive and no further analytical work is proposed. Nevertheless, it does contribute to the body of evidence for prehistoric activity in the area and a short description of the assemblage, preferably including an illustrations of the struck flint, should be included in any published account of the fieldwork.

BIBLIOGRAPHY

Bowsher, J.M.C. 1991 A Burnt Mound At Phoenix Wharf, South-East London: A Preliminary Report. In M.A. Hodder and L.H. Barfield (Eds.) *Burnt Mounds and Hot Stone Technology. Papers from the Second International Burnt Mound Conference, Sandwell, 12th - 14th October 1990*, 11 - 19. Sandwell Metropolitan Borough Council. Sandwell.

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APPENDIX 6: OASIS FORM

OASIS ID: preconst1-8929

Project details

Project name	Bellot Street, Greenwich
Short description of the project	Archaeological evaluation at Bellot Street, Maze Hill, London Borough of Greenwich. 2 trenches excavated, 1 revealed natural sand and gravel overlain by peat formations and a Bronze Age wooden structure, sealed by alluvial clay. The other trench encountered a similar sequence and a palaeochannel
Project dates	Start: 16-03-2005 End: 22-03-2005
Previous/future work	No / No
Any associated project reference codes	GBL 05 - Sitecode
Type of project	Field evaluation
Site status	Local Authority Designated Archaeological Area
Current Land use	Vacant Land 2 - Vacant land not previously developed
Monument type	WOODEN STRUCTRUE Middle Bronze Age
Monument type	PALAEOCHANNEL Uncertain
Significant Finds	FLINT RETOUCHED FLAKE Uncertain
Significant Finds	BURNT FLINT Middle Bronze Age

Methods & techniques	'Environmental Sampling','Targeted Trenches'
Development type	Urban residential (e.g. flats, houses, 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 GREENWICH GREENWICH Bellot Street
Postcode	SE10
Study area	420.00 Square metres
National grid reference	TQ 3935 7849 Point
Height OD	Min: -0.70m Max: -1.49m

Project creators

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

Project director/manager	Jon Butler
Project supervisor	Neil Hawkins
Sponsor or funding body	Building Associates Ltd

Project archives

Physical Archive recipient	LAARC
Physical Contents	'Worked stone/lithics'
Physical Archive Exists?	Yes
Digital Archive recipient	LAARC
Digital Media available	'Survey','Text'
Digital Archive Exists?	Yes
Paper Archive recipient	LAARC
Paper Media available	'Context sheet','Correspondence','Diary','Drawing','Matrices','Photograph','Plan','Report','Section','Survey','Unpublished Text'
Paper Archive Exists?	Yes

Project bibliography 1

Publication type	Grey literature (unpublished document/manuscript)
Title	An Archaeological Evaluation at Bellot Street, Maze Hill, London Borough of Greenwich, SE10
Author(s)/Editor(s)	Hawkins, N.
Date	2005
Issuer or publisher	Pre-Construct Archaeology
Place of issue or publication	London

Entered by	Neil Hawkins (nhawkins@pre-construct.com)
Entered on	24 June 2005

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