Results of Archaeological Evaluation

On land at

57 Windsor Avenue
Merton

For

Chancerygate Ltd

Matthew Williams MA

L - P : Archaeology

Results of Archaeological Evaluation

Of land at

57 Windsor Avenue
Merton

Client:	Chancerygate Ltd
Local Authority:	London Borough of Merton
Planning App:	
NGR:	526302 169417
Author:	Matthew Williams
Doc Ref:	LP0404L-AER-v.1.3
Date:	February 06

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Abstract

An archaeological evaluation was carried out at 57 Windsor Avenue, SW19, prior to development. Two trenches were excavated. Trench 1 was positioned north south to see if any remains of the 19th Century calico bleaching ditches could be seen. The section showed that the area had been heavily disturbed presumably prior to the first phase of development in the vicinity between 1933 and 1954, and no evidence for the ditches could be seen in this area.

The second trench was positioned east west to examine the prehistoric alluvial deposits relating to the river Wandle just to the east of the site. A clear sequence of deposits was noted, and eight samples were taken for floatation. Further samples taken from a borehole showed a sequence of gravel, peat and clays, which indicated a woodland environment and movement of the river Wandle.

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1. Introduction and Scope of Study

1.1. This document details the results of an archaeological evaluation at 57 Windsor Avenue, SW19, carried out by L – P : Archaeology on behalf of Chancerygate Ltd. The Local Authority is Merton Borough Council.

1.2. The proposed development consists of approximately 3910m^2 of land bounded by the Saxon Business Centre, a Saab dealership, Thames TV and a vehicle access route, centred on NGR: 526302 169417.

1.3. The site is located in an Archaeological Priority Zone as defined by Merton Borough Council.

1.4. The excavation followed a specification for archaeological work (Williams 2005), which is included as appendix 3. The works consisted of two trenches located across the site (figure 2) and a borehole.

1.5. The project was managed and fieldwork carried out by Matthew Williams of L – P : Archaeology. Environmental samples were taken and analysed by the Museum of London Specialist Services, and the results are included as Appendix 2.

1.6. The resulting archive will be stored at the Museum of London.

2. The Site

2.1. Geology

2.1.1. The natural drift geology is alluvium and river terrace gravels; the bedrock is London clay (www.bgs.ac.uk/geoindex).

2.2. Topography

2.2.1. The site is bounded to the north by the Saxon Business Centre (which fronts onto Windsor Avenue); to the east by a vehicle access route and the River Wandle; to the south by a car dealership; to the west by a vehicle access way and Thames TV building.

2.2.2. The site is level at 15.00 AOD. The standing buildings on the site had been demolished by the time of the evaluation work and the remaining concrete slab was in the process of being removed.

2.3. Historical Background

2.3.1. A detailed description of the historical background of the site can be found in the Archaeological Desk Based Assessment (Williams 2005). A short summary is given here.

2.3.2. Prehistoric alluvial and peat deposits associated with the River Wandle have been found during previous work in the area, and are noted in the boreholes. No clearly provenanced prehistoric finds are known from the vicinity.

2.3.3. Roman Stane Street passes close by to the west of the site and it has been suggested in the Sites and Monuments Record that a Roman *Mansio* may be close to the site (SMR LO10768), though this is based on scant evidence.

2.3.4. The Augustinian Priory at Merton lies 400m north of the study site on the other side of the River Wandle. The site lies in the old Priory estate (and as such falls within the designated Archaeological Priority Zone) though there is no evidence that any Priory buildings stood on or near the site.

2.3.5. In the 18th, 19th and 20th Centuries various industrial mills and factories were built along the River Wandle. These were concentrated to the north of the site on the site of the Priory and to the east of the site on the other side of the river.

2.3.6. The only previous development visible on old maps is the southern half of an outhouse of Bickler House clothing factory shown on the 1954 map, and those light industrial buildings demolished just prior to this work.

3. Method

3.1. The method of excavation for archaeological evaluation was agreed by English Heritage and L - P : Archaeology and is detailed in the specification for archaeological works (see Appendix 3). Due to site conditions the method was adjusted slightly to allow the maximum recovery of samples. Heavy groundwater above the alluvium meant that the trenches filled quickly with water and it was too dangerous to take manually take monolith samples from the required depth c.4.00m below the ground level.

3.2. Trench 1

3.2.1. Trench 1 was 20m long and positioned north south as in figure 2. The trench was moved 33m to the east and 17m to the north as the original trench position was directly over the site access and underneath concrete slab. The new position crossed the east-west calico bleaching trench in the north of the site.

3.2.2. The trench was excavated using a tracked excavator with a 1.6m wide bucket to a depth of c.2.00m, with the southern end excavated to a depth of 2.70m. The trench rapidly filled with water and was very unstable. It was backfilled with the excavated material.

3.2.3. The trench section was recorded and photographed. The trench was not planned as the base was constantly covered in water.

3.3. Trench 2

3.3.1. Trench 2 was moved 2m to the north to avoid the old building footprint should the trench be stepped out.

3.3.2. It was excavated to a length of c.13m and to a depth of c.4.00m. The trench edges were graded to a depth of 2.40m with a step at 3.20m. The trench was therefore a rectangle measuring 13m east west and 8.50m north south in total. The first 4m were dug to a depth of c.3.00m then a small bank left and the next section dug to natural gravel deposits. Excavated material was also pushed up against the bank occasionally to prevent collapse. Despite the steps, the lower sections through the clay deposits collapsed frequently, and the trench was deemed by all present to be too dangerous to approach and certainly to enter.

3.3.3. Due to the conditions described above, samples were taken out from the base of the trench by machine in spits. Eight spits were taken and deposited a safe distance from the trench. Here they were examined by the archaeologist and environmental specialist, described and assigned context numbers ((12) at the top to (19) at the base) and samples taken. Bulk samples were taken from the uppermost seven spits, and one C14 sample taken from (18).

3.3.4. The water was bucketed out of the trench into a lorry to allow some visibility of the section, but the base was not visible at any point during the excavation. The trench was backfilled with the excavated material.

3.3.5. Annotated sketch sections were produced by L - P : Archaeology and the environmental sample specialist. Sample and context registers and sheets were completed, and B/W and colour slide photographs taken and registered.

4. Results

4.1. Trench 1

4.1.1. Trench 1 section is shown in Figure 3.

4.1.2. The upper 0.30 - 0.40m consisted of crushed rubble (1) from the recent building demolition. This overlay a deposit of fragmented mid yellow stock brick (3) and a layer of grey crushed rubble and concrete (2) approximately 0.50m thick. At the north end of the trench was a concrete and brick footing running east west across the trench, two bricks wide and two bricks high. It appeared to be a part of the rubble make up rather than an *in situ* structure. The bricks were mid yellow.

4.1.3. It is likely that these rubble layers, especially the footing, represent the demolition of the clothing factory "Bickler House" that stood on the site.

4.1.4. The layers consisted entirely of building material, and no finds were recovered.

4.1.5. The rubble overlay a thick (c1.00m) dark brown grey deposit of clean silt clay (4). To the southern end of the trench this deposit contained moderate building rubble and was recorded as context (7). At the base of (4) was a 1.5m long deposit of pale blue grey clay (5).

4.1.6. These clay layers overlay a rubble layer approximately 0.50m thick consisting of red and yellow stock bricks and cement (6). The water table appeared at this level, presumably because water drained through the loose rubble and collected on the alluvial layers below.

4.1.7. The layer below was only clearly seen in the southern end of the trench where a deeper section was dug, though it was briefly visible in the base of the rest of the trench during excavation. The deposit was a dark blue wet clay silt (20) containing occasional building rubble, including timbers. Inspection on site showed these timbers to be machine cut and the damaged timbers showed fresh splintered yellow wood below the dark brown stained exterior. The deposit gave off a strong hydrocarbon odour when excavated and the spoil deposited had an oily sheen.

4.1.8. This deposit represents the top of the alluvial layers (hence the water collected on its surface) with some rubble pressed into the top.

4.1.9. The surface of (20) did not undulate more than 0.40m and therefore it appears that the calico trench has not survived to any great extent. This is also suggested by the large dumps of redeposited alluvial clay on top of the rubble layer (6), which probably formed part of the levelling process prior to building Bickler House.

Trench 1 looking north west

South end of Trench 1 showing (20)

4.2. Trench 2

4.2.1. The top 2.00 - 2.40m of this trench consisted of similar deposits to those found in trench 1 i.e. 20th C. demolition layers and the upper contaminated alluvial clay. The demolition layers were given one number (10). These layers tipped down sharply from the west to east at the east end of the trench, and although the top of the alluvial clay below was slightly lower at the east end, it did not follow the same steep gradient. This is therefore probably due to the method of levelling the site rather than any underlying topography.

4.2.2. Excavation below the top of the contaminated alluvial deposit showed it to become much cleaner, firmer and a pale blue colour at a depth of c. 3.00m BGL. This was bulk sampled as <1>.

4.2.3. Further excavation revealed darker alluvium with peat and tufa inclusions at a depth of 3.50m - 4.00m BGL. Samples of the peat and tufa were taken as samples <2> and <3> , but later discarded as cleaner and better provenanced samples were taken from the spits. It was at this point that the initial excavation was partially backfilled and excavation resumed further along the line of the trench.

4.2.4. The spits were numbered as follows:

Spit No.	Context No	Sample No.
1	12	<4>
2	13	<5>
3	14	<6>
4	15	<7>
5	16	<8>
6	17	<9>
7	18	<10>
8	19	N/A

4.2.5. (12) was a clean dark grey silt with frequent mollusc shell inclusions. One possible piece of struck flint debutage was found in the deposit.

4.2.6. (13) was a dark brown grey silt, with very occasional flint gravel. The deposits generally became darker lower down the sequence.

4.2.7. (14) was very similar to (13) and was likely to be a part of the same deposit.

4.2.8. (15) was a mid brown grey clay silt. The higher clay content suggests slower water movement during the time of deposition.

4.2.9. (16) was a dark grey silt with a high tufa content, suggesting a hot, dryer climate during deposition.

4.2.10. (17) was a lensed dark/pale grey clay with tufa and gravel inclusions.

4.2.11. (18) was a mid blue grey sand clay with occasional peat inclusions.

4.2.12. (19) was a very wet mid grey sandy clay with frequent pea grit and gravel inclusions. This represented the top of the natural gravel deposits below the alluvium and was not sampled.

4.2.13. The results suggest a slow to moderate flowing watercourse that seasonally dried out, and later became a marsh or wetland area. For a full description and interpretation of these deposits refer to the specialist report included as Appendix 2.

South facing section of trench 2

5. Summary and Conclusions

5.1. This report describes the archaeological and environmental sampling results from an archaeological evaluation carried out at 57 Windsor Avenue, Wimbledon.

5.2. The results from trench 1 indicated that the site had been levelled between 1933 and 1954, prior to Bickler House being built. This involved demolishing industrial buildings in the area and possibly importing rubble, resulting in a lower layer of rubble (6) mixed with large deposits of the alluvial clay (4). The fact that the top of this layer is approximately level with the surrounding land (eg Windsor Avenue to the west and the wooded bank of the river Wandle to the east) suggests that the levelling disturbed the ground to some considerable depth. Following such woks, no evidence for the survival of the calico bleaching ditches was noted in trench 1.

5.3. Trench 2 revealed an alluvium sequence below the rubble dating approximately 9000 to 5000 B.P. The lower deposits contained peat, and above the peat a calcarious deposit called tufa, which forms in clear flowing water in warmer climates. This was overlain by organic clay deposits, indicating slower water and eventual marshland and floodplain. For a full description and considered importance of the environmental results see Appendix 2.

5.4. The only artefact recovered from the site was one possible struck flint flake. This is a low concentration, as all excavated alluvial deposits were closely examined by both the archaeologist and environmental specialist on site. Therefore the likelihood of prehistoric settlement in the vicinity is considered low.

Figures

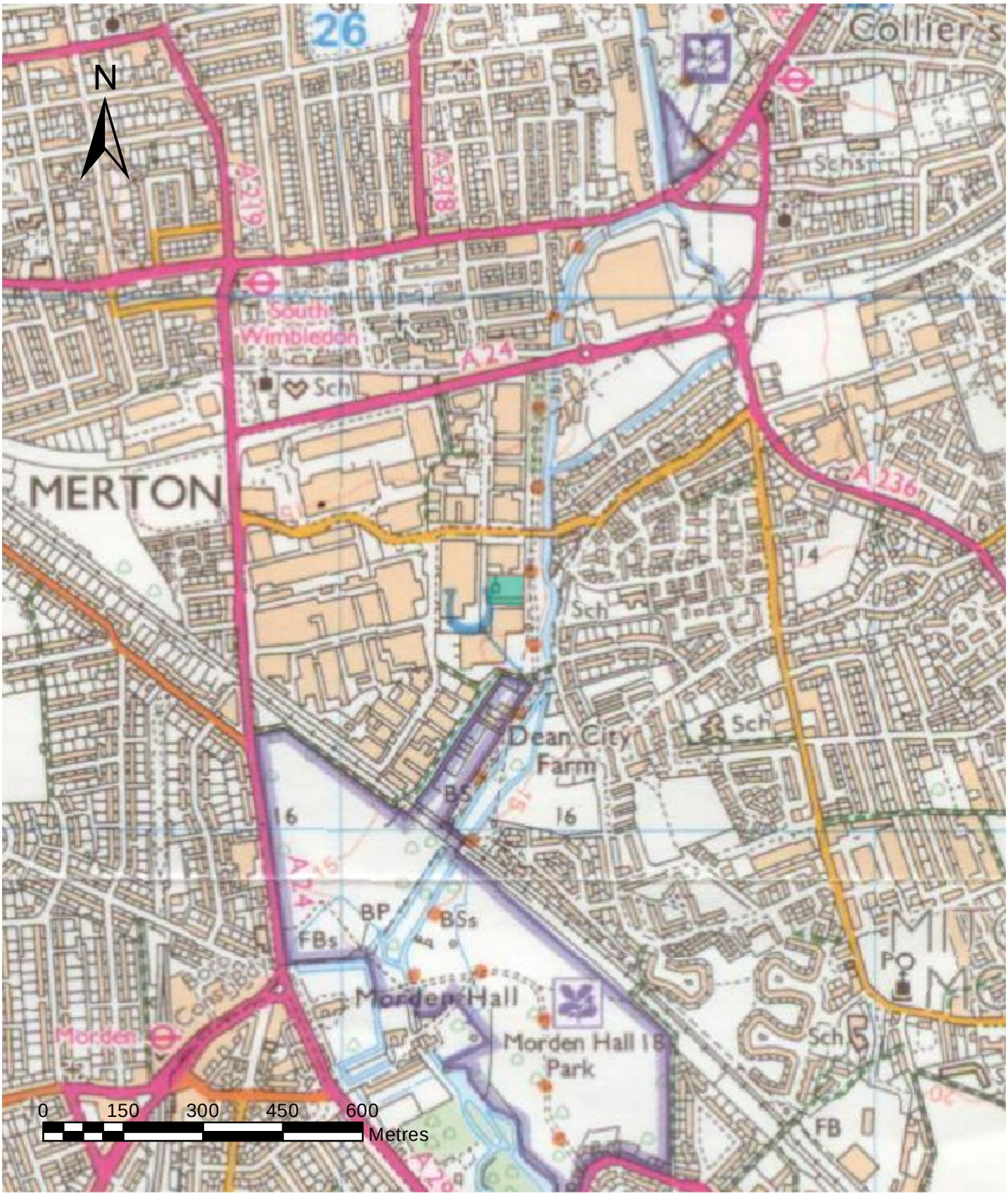

Figure 1 - Site Location

Study Site

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Scale 1:10,000

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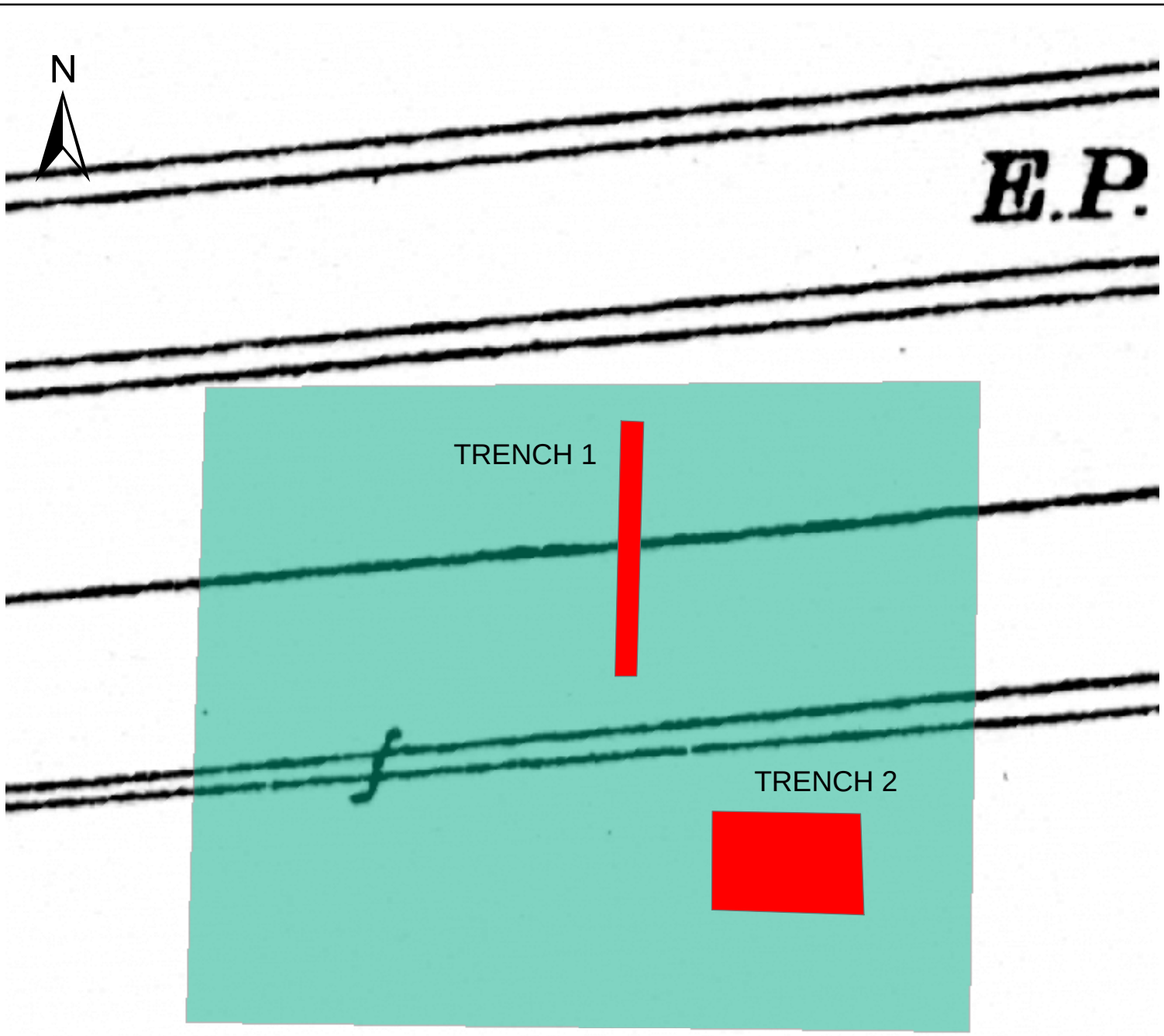

Figure 2 - Trench locations over 1933 OS

Trench Locations

Study Site

Scale - 1:500

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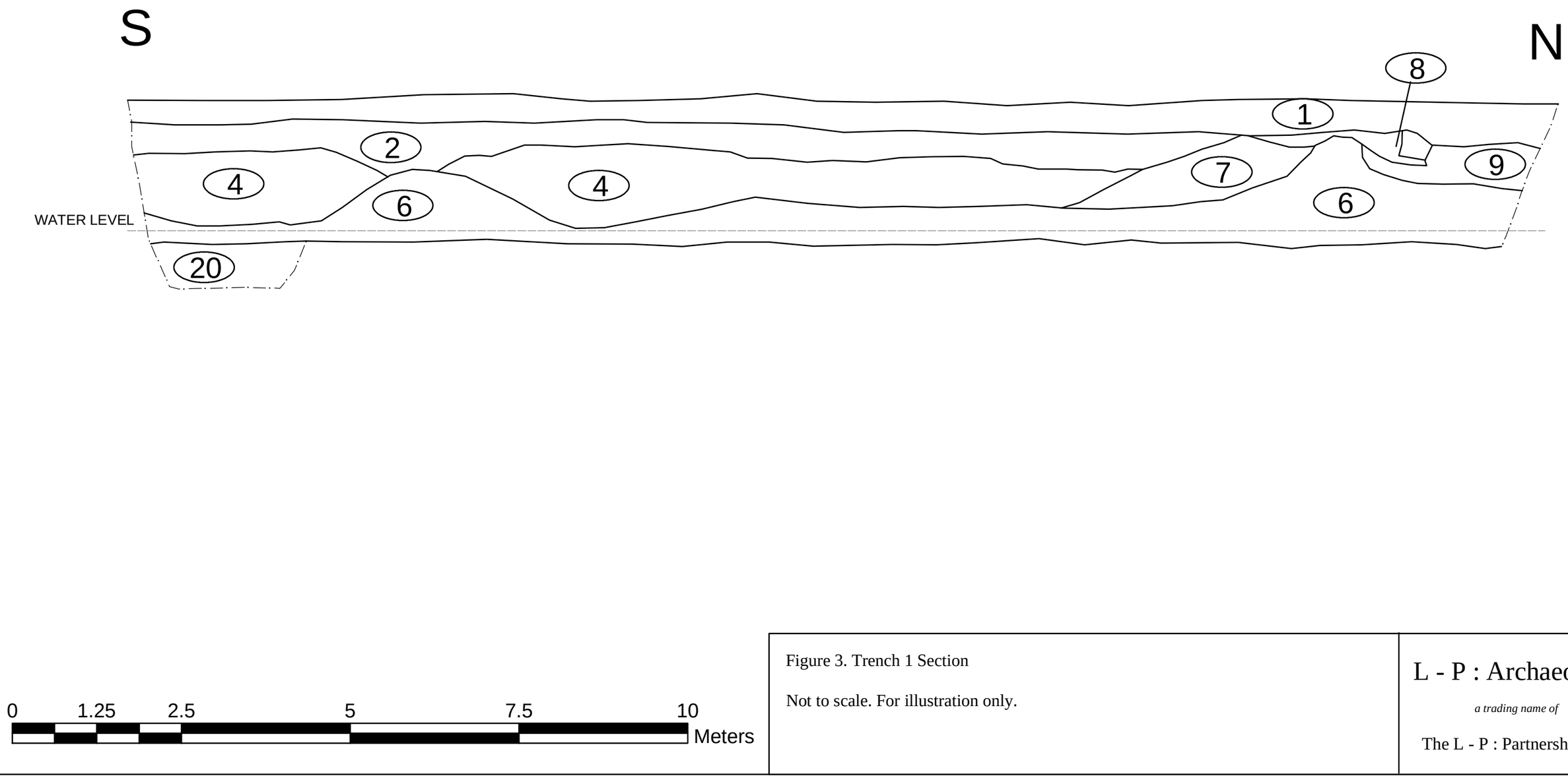

Figure 3. Trench 1 Section

Not to scale. For illustration only.

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Client: Chancerygate Ltd.

Project: LP0404L

Appendix 1

Sources Consulted

Bibliographic

Williams 2005: *Specification for Archaeological Evaluation on land at 57 Windsor Avenue, Merton* L - P : Archaeology unpublished archive report

Williams 2005: *Desk Based Assessment of Land at 57 Windsor Avenue* L – P : Archaeology unpublished archive report

Appendix 2

Environmental Report

57 Windsor Avenue
Merton
SW19

Report on Geoarchaeological Borehole Survey and Trench Monitoring

National Grid Reference: 526302 169417

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MUSEUM OF LONDON

Archaeology Service

Summary (Non-Technical)

This document reports on the results of the geoarchaeological trench monitoring and borehole survey carried out by the Museum of London Archaeology Service (MoLAS) on the site of 57 Windsor Avenue, Merton. The subsequent analysis of the environmental remains was carried out by the Museum of London Specialist Services (MoLSS). The work was commissioned by LP Archaeology on behalf of the client Chancerygate Ltd.

The basal deposit on the site consisted of the Wandle floodplain gravels, deposited under cold climate braided river conditions sometime during the last glacial period, approximately 18,000 to 10,000 BP. The gravels were overlain by sandy clays, suggesting that at least two channels flowed across the site during the early part of the Holocene (i.e. the period defined by the last 10,000 years).

Within the recorded trench and one borehole (BH 2) an isolated pocket of peat was identified. A ^{14}C date was obtained from the peat which produced a date of c. 9,000 BP, which suggested the peat represents the formation of a vegetated, waterlogged soil horizon adjacent to the river channel during the Boreal period. This period is characterised by the thick woodland, which recolonised the open landscape that existed towards the end of the last glacial period (The Devensian). Pollen remains within the peat, suggested that the surrounding landscape was dominated by birch, pine and hazel. During this period early Mesolithic hunter gathers were utilising the river valleys as a means of transportation into the interior to access the woodland resources.

A short episode of channel flow was recorded above the peat and represented by a tufa rich organic peaty clay. Tufa occurs in clear flowing water with the calcareous nodules forming around plant stems by evaporation processes during drier periods. The channel is likely to have been shallow and ephemeral and dates to sometime during the climatic optimum c. 7,000 BP.

As the main river channels migrated away from the site, an organic clay developed which represents the marginal marshy areas adjacent to the channel. The Mollusc remains recovered from within this deposit suggested a moist sheltered landscape with still or sluggishly flowing water occurring. This deposit formed at different times across the site, although the upper most part of the deposit is likely to date to the Neolithic period. Pollen recovered from this deposit suggests a decline of the pine and birch woodland, with grasses beginning to cover the vast majority of the site and the immediate surroundings. The drop in tree pollen may be associated with the intensification of agricultural activity at the start of the Neolithic period and deliberate forest clearance.

The upper most part of the sequence consists of a peaty soil horizon overlain by alluvial clays deposited by gentle overbank flooding. The alluvial clay represents the

formation of a grass meadow, which probably existed during the historic period. In most of the boreholes the made ground had truncated these upper deposits.

Although the deposits did not contain evidence of human occupation, and were also found to have poor organic preservation, the sequence still has significance in understanding the evolution of the Wandle Valley and the landscape changes occurring. The presence of sequences dating to the Early Mesolithic\Neolithic periods suggests that human occupation in the form of flint scatters may survive in other locations in the vicinity. Little palaeoenvironmental work on deposits of this nature in the Wandle Valley has been undertaken, and the importance of these deposits lies in the dissemination of this information to other relevant parties to bring an awareness of the potential of these deposits to contain prehistoric activity, and provide information on early Holocene landscape change.

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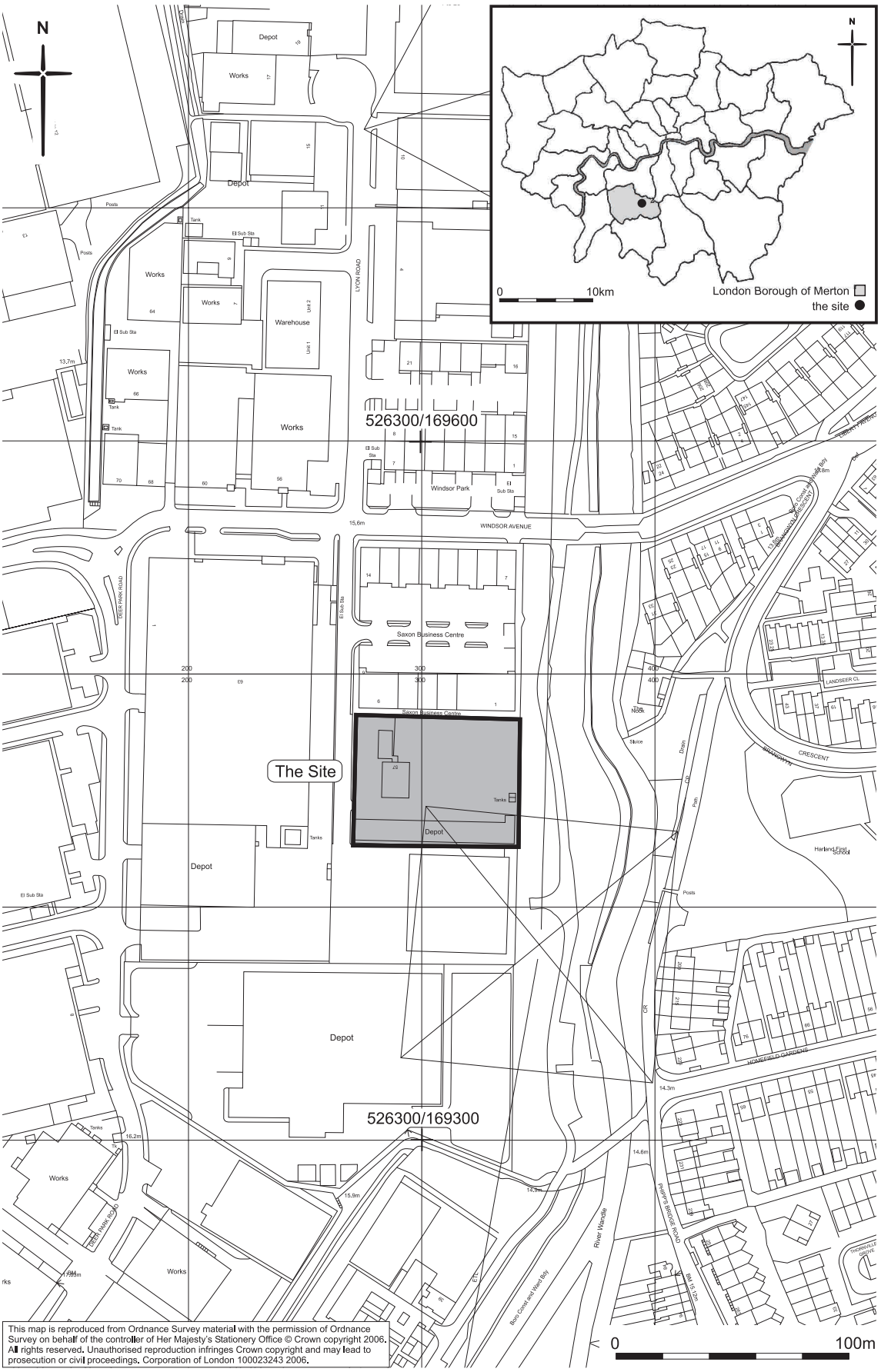

Fig 1 Site location

1 Introduction

1.1 Site Background

This document reports on the results of a geoarchaeological borehole survey, and the geoarchaeological recording of trench 2, carried out by the Museum of London Archaeology Service (MoLAS) on the site of 57 Windsor Avenue, Merton, hereafter called the 'site'. The site consists of approximately 3910m^2 of land bounded by the Saxon Business Centre, A Saab dealership, Thames TV and a vehicle access route. The centre of the site is located on NGR 526302 169417. The work was undertaken between the 8th November and 7th December 2005.

1.2 Origin and scope of the report

This report was commissioned by LP Archaeology on behalf of the client, Chancerygate Group Ltd, and produced by the Museum of London Archaeology Service (MoLAS). The report has been prepared within the terms of the relevant Standard specified by the Institute of Field Archaeologists (IFA, 2001).

The specification for the archaeological evaluation (Williams, 2005) initially consisted of two trenches to be placed across the site to allow for the recording of any exposed archaeological or palaeoenvironmental deposits. Trench 2 was specifically placed to investigate the alluvial deposits relating to the river Wandle to the east, and to investigate the existence of any significant peat deposits. The deposits exposed within this trench were to be recorded and sampled by a MoLAS Geoarchaeologist.

During the machine excavation of the trench it was found that the high water table, and unstable trench edges made safe access into the trench impractical. Therefore adequate sampling and recording of the exposed natural sediments from within the trench was not possible. On the advice of the MoLAS geoarchaeologist, and with subsequent approval from the English Heritage advisor, a mitigation strategy was employed which involved sampling and recording the deposits through the use of a borehole survey.

Geoarchaeological borehole surveys, and the *Geoarchaeological Survey report* which comments on the results of that exercise, are defined in the most recent English Heritage guidelines (English Heritage, 1998) as intended to provide information about the archaeological resource in order to contribute to the:

- formulation of a strategy for the preservation or management of those remains; and/or
- formulation of an appropriate response or mitigation strategy to planning applications or other proposals which may adversely affect such archaeological remains, or enhance them; and/or

- formulation of a proposal for further archaeological investigations within a programme of research

Geoarchaeological borehole surveys are usually undertaken where traditional archaeological evaluations by trial trenches are impracticable (i.e. inaccessible, dangerous or expensive). This might be because of the depth of the archaeological deposits, a high water-table, the nature of the sediments anticipated or the thickness of the ground-slab.

A geoarchaeological borehole survey is unlikely to provide direct evidence for archaeological features or artefacts, it can merely report on strata that are *likely* to contain such remains.

The objectives of a geoarchaeological borehole survey are

- to report in detail on the nature of a sites' stratigraphy and to determine how and when this formed

- to assess the potential of any preserved ecological remains for reconstruction of the changing landscape and environment for specific time frames.

- to identify horizons which might:

(a) provide data on past environments and resource availability
(b) represent events which are likely to have had an impact on local human occupation and activities
(c) have been deposited or transformed as a result of human activities
(d) contain indirect evidence of local human activity.

The information gathered from a geoarchaeological borehole survey is therefore capable of providing relevant data to assess the archaeological resource as defined in the most recent English Heritage guidelines (English Heritage, 1998) and set out above.

1.3 Aims and objectives

The aims of the geoarchaeological recording of trench 2 and the subsequent borehole survey, as determined in the specification (Williams, 2005) were;

- To assess the general nature and quality of the deposits and environmental evidence.
- To gain information on the nature and date of the remains on site likely to be affected by the development.
- To construct a model of the depositional processes and stratigraphic sequence for the site.
- To investigate the alluvial deposits relating to the river Wandle, and to investigate the existence of any significant peat deposits

2 Topographical & Historical Background

The site lies within the floodplain of the river Wandle, a tributary of the Thames. The floodplain consists of a deposit of gravels referred to as the 'Wandle' or 'Mitcham' gravels, dating to the Late Devensian Glacial period. These were deposited sometime during the height of the last glacial maximum around 18,000 BP, and were deposited under cold climate braided river conditions. This stratum overlies the more general Thames floodplain deposits of the Taplow Terrace, and is sealed by later, local alluvial deposits comprising fine, compact clay silts, deposited during subsequent inundation periods. Probable evidence of flooding as late as the 16th century has been noted at Merton Bus Garage.

Evidence of palaeolithic human activity prior to 10000 BC is rare in the Mitcham and Merton area. Several tools have been recovered this century from gravel pits and other works; most have derived from more southerly areas (Mitcham, Beddington Lane). The closest findspot to the site was a Lower Palaeolithic (before 38000 BC) tool of unspecified type derived from Miles Road (Montague 1992). These tools are considered to ante-date the deposition of the Taplow Gravels in which they occurred. The Upper Palaeolithic period (38000 BC - 10000 BC) is represented by a find at Morden (Wymer 1968, GLSMR No 030706), and one at Kingston Road (Wymer 1968, GLSMR No 030602).

In 1991, MoLAS carried out an evaluation at Streatham House (Saxby 1991) some 80m to the north of the present site. There, in close proximity to the course of the Wandle, a peat deposit was radiocarbon dated to 9423 ± 72 BP, sealed by later alluvial clays and silts. The deposit appears to suggest that the Wandle at this date meandered through a broad marshy area at that point. No artifacts of Mesolithic date have yet been recovered in the general vicinity of the site, but it seems plausible to suggest that riverside Mesolithic occupation perhaps not dissimilar to that found on the Colne valley at Uxbridge (Lewis, 1992, Halsey, *in prep*) might remain sealed by later alluvial deposition.

Earlier Neolithic activity has been found at the King's College Sports Ground (Bazely 1989), represented by Ebbsfleet ware pottery and the somewhat later Mortlake ware. None of the few sherds found are considered to have been in primary contexts, but they do represent occupation activity along the Wandle valley. Alluvial flood deposits, such as those noted at Streatham House may also seal occupation activity.

The principal evidence for Bronze Age activity within the general vicinity of the site comes from King's College Sports Ground (Bazely 1989). A number of ditches and a possible *banjo* enclosure were associated with Deverel-Rimbury pottery. At a somewhat greater distance, a small group of stray finds of Bronze Age date including bronze palstaves have been recovered from the Mitcham area since the 1880s (GLSMR 020177; 030632; 020181; 020182; 030770).

The impact of the Roman period upon the site hinges upon the line of Stane Street, the major Roman thoroughfare from London to Chichester. The road is believed to follow

High Street Colliers Wood in a southwesterly direction to the point near to Colliers Wood Tube Station. At this point the alignment was hitherto lost until picked up again at Morden.

Previous findspots of Roman material are also highly suggestive of Roman occupation in proximity to the site. From the Merton priory excavations of 1976-88 just 200m to the southwest have come residual Roman brick, tile, wall plaster, *opus signinum*, one coin, two glass vessel fragments, an iron rake tine and a stone spindle whorl. Gravel-digging in 1922 near Lombard Road revealed about 500 Roman coins (of 1st-4th century date), pottery, Samian ware, and a 1st-century fibula (Surrey Archaeological Collections 42, GLSMR Nos 020656; 021182; 030652; 030653). Excavation in 1965 near Phipps Bridge by Surrey Archaeological Society revealed three inhumations, two ditches, and pottery dating to the late 1st or 2nd century (Montague, 1992).

It therefore seems likely that some form of settlement existed near Stane Street in the vicinity of the river crossing. It may have been a location for trade, an agricultural community, or possibly a *mansio* (a form of posting-station along the Stane Street route).

Evidence for Saxon activity in the vicinity of the site is slender and confused. Edwards (1801) notes that, during building works at the time 'were found several pieces of spears, swords, human bones and other exuviae of a battle'. Montague (*in prep*) places these burials close to the Mill Road/Merton High Street junction, although no such finds were indicated at the MoLAS Mill Road excavation in 1992. The 'battle' reference is dubious: the remains might quite easily be considered to have formed an inhumation cemetery. It should be noted however that a battle of Meretun is known to have taken place between Saxons and Danes, although current wisdom is inclined to place it near Reading and not in Merton (Montague, *in prep*).

Saxon artefacts including chaff-tempered pottery, and a 'concentration' of eight Saxon antler artefacts (combs, needle, pin, offcuts) were, however, found in 12th and 13th century deposits at the Merton priory excavations about 200m to the south-west (Bruce and Sloane 1996).

During this period the first documentary evidence for the area around the site appears. Merton as a place name can be traced as early as the 7th century, supporting the likelihood of settlement here by then (Montague, *in prep*). It is usually translated as 'the farm by the pond' or alternatively as 'Maera's homestead'. In AD 967 the grant by Edgar of lands in Merton and Dulwich to earl Aelfheah (VCH 4 1912, 65) included a recitation of landmarks by which the Merton estate was bounded. The eastern boundary of the Merton estate ran from the 'hop' (?enclosure) by 'Bradenford' (broad ford) southward along the 'Hidebourne' (the ?loud stream) to 'Mitchamingmerke' (the boundary of the people of Mitcham) and then to 'Merke pol' (the boundary pool) (Montague *in prep*, after Goodman, J, 1996 *Merton's Two Anglo-Saxon Charters*, unpub thesis).

The above reference to Mitcham can be considered with the fact that the parochial and borough boundaries between Merton and Mitcham lay, until recent times, along the line of the Pickle. The parish boundary is likely to have remained static for at least the

last 900 years, and thus it may be that in the Saxon period the Pickle formed the principal stream of the Wandle river. The reference to a possible enclosure at the ford indicates that agricultural or possibly occupation features may have existed close to the site.

The dominant factor influencing the site and its environs in the Medieval period was the foundation in 1117 of the Augustinian priory of St Mary Merton on the west bank of the Pickle. The eastern wall of the precinct followed the line of the former course of the Pickle. The site itself once formed part of the Merton Priory Estate, although there is no evidence that buildings associated with the priory stood on the site.

The land outside the precinct wall was almost certainly owned by the priory, and probably formed flood-meadows. The land between the wall and the river was originally called the Merton Pightle, a pightle being an old Surrey name for a small parcel of land. Corrupted, this word probably furnished the Pickle with its name.

Archaeological evidence from King's College Sports Ground, *c* 550m to the east (Bazely 1989), included a possibly medieval masonry field boundary wall, later robbed out. Such features may have been associated with a grange or home farm belonging to the Priory.

A MoLAS evaluation at Merton Bus Garage (Neilsen, 1990) produced a 14th-century ditch cut to a depth of 10.4m OD, sealed by a flood-lain deposit of clayey silts thought to date to before the 17th century. This suggests that land adjacent to the Wandle was occasionally prone to particularly heavy flooding. The flooding (of which there was evidence of only one ingression in the historic period) may be attributed to the dissolution of the Priory in 1538 and attendant collapse of water-management.

Little is known of the site following the Dissolution of Merton Priory in 1538. Merton Bridge certainly existed by 1569, for minutes of the Surrey Sewer Commission of that date ordered Thomas Woode to 'cut vppe and convyghe oute of the ryuer there ij wyllowes growynge in hys meadowe wyche butteth yppone the brydge called Martone Brydge'. It was evidently in bad repair for in 1572 the minutes noted that 'the bridge called Merton bridge is very greatly in decay by whom it ought to be repaired we know not' (Montague, *in prep*).

The Post Medieval period saw a great deal of development around the site, with print works established to the north and a varnish works to the south. In the Late 19th Century calico bleaching trenches were dug east to west across a large area of the former Merton estate. Three such ditches cross the site on early maps of the area (1866 estate map, 1877 OS).

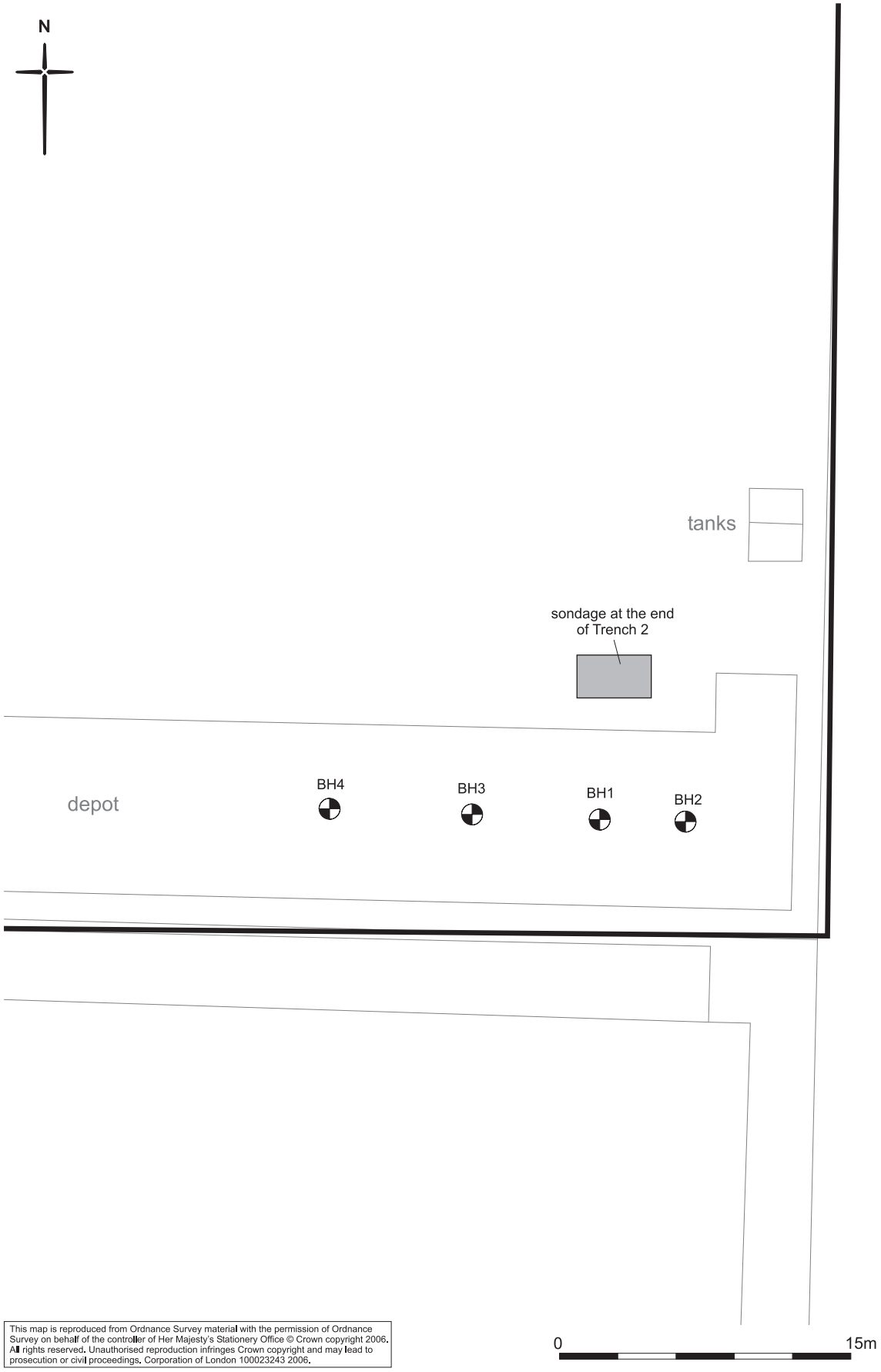

Fig 2 Location of borehole transect and Trench 2 sondage

3 Geoarchaeological monitoring of Trench 2

The section below describes the methodology for the recording and sampling of the exposed section in trench 2. The results from trench 2 are also presented here.

3.1 Trench 2 Recording Methodology

Towards the eastern end of trench 2 a sondage was excavated to reach the basal floodplain gravels. During the machining severe water ingress, and the resulting instability of the trench edges made the trial trench inaccessible. A visual assessment of the exposed deposits revealed four main stratigraphic units, which were assigned unit numbers. It was decided to machine excavate the sediments in a series of controlled spits roughly 0.2 to 0.4m in thickness. The excavated material was retrieved by the machine bucket and placed to the side of the trench where further detailed examination and sampling of the deposits could be safely undertaken.

3.2 Trench 2 results

From the side of the trench the four visible units, going from the base to the top of the sequence, consisted of the floodplain gravels [1] (at c. 4m bgl), a reddish brown fibrous peat [2] (3.6 to 4m bgl), a tufa rich clayey band [3] (3.2 to 3.6m bgl), and a mid brown organic clayey silt [4] (2.4 to 3.2m bgl). The whole sequence was sealed below 2.5m of loose made ground comprised of clinker, redeposited clay and brick rubble. The stratigraphic sequence with the associated spit numbers is presented in Table 1, and illustrated in Fig 3.

Table 1: Deposits recorded within trench 2

Ground surface at approximately 15m OD

Unit number	Deposit description	Depth below ground level (m)	Spit number
1	Pale grey/black, moderately coarse angular, sub-angular and sub-rounded gravel clasts, in a pale grey sandy matrix	4	8
2	Soft reddish brown fibrous peaty clay	3.6 to 4	8, 7
3	Soft, granular tufa clasts in mid brown clayey matrix	3.2 to 3.6	5, 6
4	Soft mid brown organic clay silt	2.4 to 3.2	1, 2, 3, 4

A number of bulk samples were taken from each spit to retrieve mollusc and plant macro remains and are listed below in Table 2. Each spit was also assigned a context number by the on-site archaeologist. One ^{14}C sample was also taken from spit 7, unit 2.

Table 2: Samples taken from trench 2

Spit number	Sampled by;	Context number	Unit number
1	Bulk <4>	[12]	4
2	Bulk <5>	[13]	4
3	Bulk <6>	[14]	4
4	Bulk <7>	[15]	4
5	Bulk <8>	[16]	3
6	Bulk <9>	[17]	3
7	Bulk <10>	[18]	2
8	N/a	N/a	2

3.3 Discussion of Trench 2 stratigraphic sequence

The basal gravels and sands (unit 1) represent the formation of sandy channel and point bars within an active river system. The sandy deposits are likely to have formed relatively dry areas of land adjacent to watercourses once channel migration had occurred. Dips between these high points are likely to have remained fairly waterlogged resulting in the formation of the overlying peaty unit (unit 2).

Within the peat unit the upper 10cm of the deposit contained lenses of a whitish granular tufa. Tufa only forms under warm, clear flowing water conditions. When conditions become dry enough the tufa will precipitate out from the calcareous rich waters to form concretions around plant stems. Such conditions last existed during the climatic optimum (c. 7,000 BP). It is therefore likely that the lenses of tufa within the peat represent dry phases during the summer months when isolated standing pools of water within the peat dried out allowing for the formation of the tufa. The peat itself was 14C dated to 9250 +/- 70 BP, (Beta Analytic sample WAV05-7-3.60, radiocarbon age). This suggests that the peat formed during the Boreal pollen zone, when the climate was rapidly ameliorating, with deciduous forest beginning to replace the colder climate species of the Late Glacial pre-Boreal phase.

Above the peat a thick band of tufa clasts (unit 3) within a clayey unit was noted. This would indicate that the conditions were becoming wetter with a sluggish and intermittent channel flowing across this part of the site.

The sequence was sealed by a fairly thick band of the mid brown organic clay silt (unit 4) which contained reed and plant fragments. As channel flow across the site was gradually reduced the area is likely to have become a backwater marsh area, susceptible to periods of overbank flooding with seasonal pools of standing water.

4 Geoarchaeological Borehole Survey

4.1 Geoarchaeological borehole survey methodology

The geoarchaeological borehole survey was carried out with a windowless sampler terrier rig supplied and operated by CC Ground Investigations Ltd. A transect of four boreholes was drilled adjacent to the original position of trench 2. The positions of the boreholes were located by measuring off known points on an OS map, and levelled from known OD points provided by the site engineers.

The retrieved cores were opened and examined onsite by the MoLAS Geoarchaeologist. All the core samples were cleaned and described, using standard sedimentary criteria, as outlined in Jones *et al* (1999). This attempts to characterise the visible properties of each deposit, in particular relating to its colour, compaction, texture, structure, bedding, inclusions, clast-size and dip.

For each profile, every distinct unit was given a separate number (e.g.: for AH1: 1.1, 1.2 etc from the top down) and the nature of the contacts between adjacent distinct units was noted.

Similar units occurring in several augerholes were allocated to a range of ‘deposits’ - which represent a sequence of different depositional and post-depositional environments. These deposits and the units that characterise them are used as an aid to interpreting and presenting the data and discussing the results. The recorded ‘deposits’ are illustrated in the key to the transects (Fig 3, Fig 4).

4.2 The Results of the Borehole Survey

The tables below present the lithostratigraphy recorded in each borehole.

Table 3: Deposits recorded within borehole 1

Ground surface at c. 15.5m OD

Units	Depth below surface (m)	Characteristics	Interpretation
1.1	0-2.75	Loose light greyish brown gritty silty clay with frequent brick and concrete fragments, occasional moderately sized angular and sub-angular gravel clasts	Modern made ground
12.75m OD			
1.2	2.75-2.79	Very dark grey/black soft fibrous clay with frequent plant stems and roots	Buried topsoil horizon representing a dry vegetated surface.
12.71m OD			
1.3	2.79-3.06	Soft mid brown clay silt with occasional reed and plant fragments. Contains moderate quantities of small mollusc shells. Moderate small tufa clasts in lower 0.1m of the deposit.	Marshy channel marginal area, adjacent to active channel course. Possibly with some intermittent channel flow, and seasonal pools of standing water.
1.4	3.06-3.11	Soft mid brown clay silt with occasional reed and plant fragments	
12.39m OD			
1.5	3.11-3.19	Soft white/mid brown peaty clay, with frequent small tufa clast.	Vegetated waterlogged soil horizon with intermittent clear flowing water occurring. Calcareous deposits forming around plant material during drier episodes
12.31m OD			
1.6	3.19-3.44	Moderately firm dark reddish brown fibrous peaty clay with frequent plant remains	Vegetated waterlogged soil horizon, possibly with seasonal pools of standing water.
12.06m OD			
1.7	3.44-3.56	Mixed white/brown peaty clay with gritty small calcareous inclusions, with occasional coarse sand	Holocene floodplain gravels, with vegetated upper surface.
1.8	3.56-3.68	Loose mid grey coarse angular/sub-angular gravel in a coarse sandy matrix with frequent calcareous inclusions.	
1.9	3.68-4.00	Mid greyish brown coarse sandy gravel, with frequent angular, sub-angular and sub-rounded gravel inclusions	

Table 4: Deposits recorded within borehole 2

Ground surface at 15.5m OD

Units	Depth below surface (m)	Characteristics	Interpretation
2.1	0-2.15	Loose light greyish brown gritty silty clay with frequent brick and concrete fragments, occasional moderately sized angular and sub-angular gravel clasts	Modern made ground
13.35m OD			
2.2	2.15-2.30	Firm light tan brown homogenous clay	Alluvial clays deposited through overbank flooding.
13.2m OD			
2.3	2.30-2.45	Mid brown humified organic clay silt. Upper 0.05m part contains a dark band of fibrous plant material.	Buried topsoil horizon representing a dry vegetated surface.
13.05m OD			
2.4	2.45-3.15	Soft mid brown clay silt with occasional reed and plant fragments. Contains moderate quantities of small mollusc shells	Marshy channel marginal area, adjacent to active channel course. Possibly with some intermittent channel flow, and seasonal pools of standing water.
12.35m OD			
2.5	3.15-3.35	Soft mid grey slightly clayey fine sand. Sand component generally appears to fine upwards through the profile.	In-channel sediments, probably representing formation of channel or point bar within active flowing channel
11.8m OD			
2.6	3.35-3.70	Mid brown coarse sandy gravel, with frequent angular, sub-angular and sub-rounded gravel inclusions. Occasional calcareous inclusions present.	Holocene floodplain gravels.

Table 5: Deposits recorded within borehole 3

Ground level at c. 15.5m OD

Units	**Depth below surface (m)**	**Characteristics**	**Interpretation**
3.1	0-2.55	Loose light greyish brown gritty silty clay with frequent brick and concrete fragments, occasional moderately sized angular and sub-angular gravel clasts	Modern made ground
12.95m OD			
3.2	2.55-3.60	Soft mid brown clay silt with occasional reed and plant fragments. Contains moderate quantities of small mollusc shells. Lower 0.2m of the matrix contains fine sand, which generally appears to fine upwards through the profile.	Marshy channel marginal area, adjacent to active channel course. Possibly with some intermittent channel flow, and seasonal pools of standing water. Lower sandier part suggests fluvial influence.
11.9m OD			
3.3	3.60-3.80	Moderately firm mid greenish grey moderately coarse sandy clay. Sands fine upwards through the profile	In-channel sediments, probably representing formation of channel or point bar within active flowing channel
11.7m OD			
3.4	3.80-4.00	Mid brown coarse sandy gravel, with frequent angular, sub-angular and sub-rounded gravel inclusions. Occasional calcareous inclusions present.	Holocene floodplain gravels.

Table 6: Deposits recorded within borehole 4

Ground level at c. 15.5m OD

Units	**Depth below surface (m)**	**Characteristics**	**Interpretation**
4.1	0-2.7	Loose light greyish brown gritty silty clay with frequent brick and concrete fragments, occasional moderately sized angular and sub-angular gravel clasts	Modern made ground
12.8m OD			
4.2	2.7-2.8	Soft mid brown clay silt with occasional reed and plant fragments. Contains moderate quantities of small mollusc shells.	Marshy channel marginal area, adjacent to active channel course. Possibly with some intermittent channel flow, and seasonal pools of standing water
12.7m OD			
4.3	2.8-3.3	Firm light greenish grey clay with occasional fine sand	In-channel sediments, deposited under sluggishly flowing conditions
12.2m OD			
4.4	3.3-3.7	Moderately firm light greenish grey fine clayey sand. Sands fine upwards through the profile	In-channel sediments, probably representing formation of channel or point bar within active flowing channel
11.8m OD			
4.5	3.7-4.00	Mid brown coarse sandy gravel, with frequent angular, sub-angular and sub-rounded gravel inclusions. Occasional calcareous inclusions present.	Holocene floodplain gravels.

4.3 Discussion of Borehole Survey Results

The units recorded within each auger hole are discussed with reference to the assigned 'deposit' number, which represents specific depositional episodes. The deposits that are of archaeological significance on the site are discussed in this section in stratigraphic order, from the oldest to the most recent.

4.3.1 Deposit 1: Flood plain gravels (Devensian/Late Glacial)

The basal deposit consisted of a mid brown/grey coarse sandy gravel, with frequent angular, sub-angular and sub-rounded gravel inclusions (units 1.8, 1.9, 2.6, 3.4, and 4.5). Within all the boreholes (BH) moderate to frequent quantities of small calcareous nodules were present within the upper part of the deposits. This deposit corresponds with unit 1 recorded within trench 2. The gravels occurred at between 11.9 to 11.7m OD, suggesting that the floodplain gravels on this part of the site form a relatively flat surface with few undulations or dips occurring.

The undulations in floodplain gravels often determine the route of later Holocene channels and features, with channels and bodies of standing water preferring to occupy the lower lying areas. The relatively flat nature of the floodplain gravels on this part of the site could result in a high level of fluvial erosion of the alluvial deposits accumulating above the gravels. An early Holocene channel is less likely to have a restricted course across a level landscape, leading to a higher potential for channel migration and erosion.

This lower gravel unit is formerly known as the 'Wandle' gravels, and was probably deposited sometime during the Late Glacial/Early Holocene periods. The gravels are therefore likely to date to between 18,000 to 10,000 BP (Late Devensian glacial period), with the coarse nature of the gravels suggesting deposition in a cold climate braided river environment. The calcareous inclusions visible within the gravels, were probably eroded from the chalk bedrock outcrops which exist further upstream in the Wandle Valley.

4.3.2 Deposit 2: Vegetated Gravel surface. Early Holocene (Early Mesolithic)

Deposit 2 (unit 1.7) was only encountered within BH 1. The deposit consisted of a mixed whitish brown peaty clay with gritty, small calcareous inclusions and occasional to moderate quantities of coarse sand. The unit occurred at 12.06m OD and measured 0.12m in thickness.

This deposit would appear to represent a waterlogged soil horizon developing over the floodplain gravels. The sandy part of the matrix, which generally forms part of a fining up sequence from the underlying coarser floodplain gravels, suggests that a sandy point or channel bar began to develop on this part of the site. This sand bar may have formed a slightly higher point of ground adjacent to a river course once channel migration had occurred. The exposed sand bar then became colonised by vegetation allowing for the formation of the peat. Another peat unit developed above this deposit

(see Deposit 4) suggesting that this part of the site remained vegetated, although partially waterlogged throughout much of the early Holocene period.

4.3.3 Deposit 3: In-Channel sediments. Early Holocene (Early Mesolithic)

Deposit 3 consisted of a moderately firm mid greenish grey clayey sand. The sand appeared to fine upwards through the profile from moderately coarse to fine. This deposit only occurred within BH's 2, 3 and 4 (units 2.5, 3.3, and 4.4). In BH's 2 and 3 the deposit measured 0.2m in thickness, and occurred at 12.35m OD in BH 2 and 11.9m OD in BH 3. In BH 4 the deposit occurred at 12.2 m OD and measured 0.4m in thickness.

These deposits represent in-channel sediments, with the fining up nature of the sand pointing to possible point or channel bar formation, or gradually reduced flow rate conditions depositing finer sediments. The deposit is likely to be time transgressive, suggesting more than one episode of channel flow across the site. In BH 4 the unit is slightly thicker than in the adjacent BH 3. This would suggest that the channel depositing these sediments gradually migrated towards the western part of the site. As this migration occurred the area around BH 3 developed into a marginal channel area, which is represented by unit 3.2 (see Deposit 7).

In BH2 the clayey sand unit 2.5, probably represents another episode of active channel flow, which may not be contemporary with that identified within BH's 3 and 4. It is possible that this channel eroded the softer peaty sediments (units 1.6) visible in BH 1 and represents another channel flowing on the eastern part of the site.

4.3.4 Deposit 4: Boreal peat deposits. Early Holocene (Early Mesolithic)

This deposit only occurred within BH 1 (unit 1.6), and consisted of moderately firm dark reddish brown fibrous peaty clay with frequent plant remains. The deposit occurred at 12.31m OD and measured 0.25m in thickness. This deposit correlates with unit 2 in trench 2, which was ^{14}C dated to the Boreal period (c. 9,000 BP, radiocarbon years).

The deposit is indicative of a vegetated waterlogged soil horizon, possibly with some woodland cover. Isolated standing pools of water probably developed within this deposit during the wetter winter months. The deposit appears to occupy an isolated area within the site, and may have been removed from other areas by later fluvial erosion. Unit 2.5 in BH 2 (Deposit 3) probably represents this later fluvial activity eroding away the peaty material.

Similar deposits to this have been identified within the Colne (Halsey *in prep*) and Lea Valley (Warren, 1934) where they generally occur adjacent to channels, or infill abandoned channels. On the Windsor Avenue site, where the topography appears to be relatively level, the peat deposits appear to have developed in adjacent waterlogged areas rather than within former channel courses.

4.3.5 Deposit 5: Tufa (Early Neolithic)

This deposit only occurred within BH 1 (unit 1.5) above Deposit 4. It consisted of a soft white/mid brown peaty clay, with frequent small tufa clasts. The deposit occurred at 12.39m OD and measured 0.08m in thickness. This deposit correlates with unit 3 observed in trench 2.

This deposit suggests a continuation of the vegetated soil horizon represented by the underlying unit 1.6. However, the appearance of the tufa clasts marks a distinct change to the depositional environment. Tufa only forms in clear flowing water, and precipitates out from solution around plant stems during drier episodes. This requires significantly warmer temperatures than exist today. Such conditions last prevailed during the climatic optimum, which occurred at around 7,000 BP. The thin tufa band therefore suggests that during the early Neolithic period an intermittently flowing channel of shallow depth was activated across this part of the site.

4.3.6 Deposit 6: In- channel clays

This deposit only occurred within BH 4 (unit 4.3) and consisted of a firm light greenish grey clay with occasional fine sand. The unit measured 0.2m in thickness and occurred at 12.7m OD.

This deposit occurs above unit 4.4 (Deposit 3), which represented a moderately fast flowing channel. Unit 4.3 represents a continuation of these in channel sediments, although the flow rate has been significantly reduced resulting in the deposition of finer grained minerogenic deposits. This deposit is likely to represent deposition under sluggishly flowing conditions, possibly as a result of channel migration. As the main axis of channel flow migrated further away from this part of the site, finer clays could have been deposited on the edge of the channel where more tranquil conditions existed. It is also possible that this deposit represents a body of standing water, which was formed when the channel was cut off from the main channel flow.

4.3.7 Deposit 7: Organic clays (channel marginal areas)

Deposit 7 was recorded in all the BH's (units 1.3, 2.4, 3.2 and 4.3) but occurred at its greatest depth and height in BH 2 were it measured 0.7m in thickness at 13.05m OD. The deposit consisted of a soft mid brown clay silt with occasional reed and plant fragments and moderate to frequent quantities of mollusc shell. This deposit correlates with unit 4 recorded within trench 2.

This deposit represents the formation of a marginal channel area adjacent to a watercourse. It is unlikely that this deposit formed at the same time across the site, but rather spread out westerly across the site following the migration of a channel (identified in Deposits 3 and 6). The deposit represents a marshy vegetated environment with pools of standing water, and possibly intermittent channel flow.

4.3.8 Deposit 8: Buried topsoil horizon

Deposit 8 was only recorded within BH's 1 and 2 (units 2.3 and 1.2). In BH 1 it measured 0.04m in thickness and occurred at 12.75m OD. In BH 2 it measured 0.15m in thickness and occurred at 13.2m OD. The deposit consisted of a mid brown humified organic clay with frequent fibrous plant remains.

This deposit probably represents a vegetated buried soil horizon preserved under damp conditions. The deposit suggests that the area was generally becoming drier than the underlying channel marginal deposits represented by deposit 7. This may have been a result of gradual channel migration away from the area of the site. The build up of sediments over time, would also have lead to a lessening of the waterlogged conditions as the ground surface was raised up to a higher and drier elevation. In such conditions stable soil horizons would have begun to develop. It is likely that this deposit existed across much of the site but was removed by the modern truncation.

4.3.9 Deposit 9: Alluvial clays

Deposit 9 was only recorded within BH 2 (unit 2.2) where it measured 0.15m in thickness and occurred at 13.35m OD. It consists of a firm light tan brown oxidised homogenous clay.

This upper clay was probably deposited as a result of seasonal overbank flooding with accretionary soils developing within the deposits. This clay represents an essentially dry deposit forming a grassland area or hay meadow. Alluvial clays of this type would probably have covered the whole of the site but were removed by the modern truncation.

4.3.10 Deposit 10: Modern deposits

The sequence in all the BH's was sealed by 2.15 to 2.75m of made ground comprised of brick\concrete rubble, clinker, gravel and redeposited alluvial clays.

5 Assessment of Mollusc Remains

By Alan Pipe

5.1 Quantification and description

Table 7: Environmental archive general summary

Mollusc shell	estimated maximum of 873 shells, 0.700 kg, in one archive quality 'shoebox'

5.2 The invertebrates

The table below displays the quantity and type of mollusc remains recovered from each sample taken in trench 2.

Table 8:The mollusc shells from WAV05/summary

CONTEXT	SAMPLE	FEATURE	MARINE	FRESHWATER	TERRESTRIAL	NOS.	HABITAT
12	4	clay/silt	nil	unid. taxon 2		1	
12	4	clay/silt	nil	unid. taxon 4		1	
12	4	clay/silt	nil	unid. taxon 3		<5	
12	4	clay/silt	nil	unid. taxon 4		1	
12	4	clay/silt	nil	*Valvata sp.*		<5	still/slow-flowing
12	4	clay/silt	nil		unid. taxon 1	1	
12	4	clay/silt	nil		unid. taxon 2	<40	
12	4	clay/silt	nil		unid. taxon 3	<20	
13	5	clay/silt	nil	unid. taxon 1		<15	
13	5	clay/silt	nil	unid. taxon 4		<25	
13	5	clay/silt	nil	unid. taxon 5		<10	
13	5	clay/silt	nil	unid. taxon 6		1	
13	5	clay/silt	nil		unid. taxon 1	6	
13	5	clay/silt	nil		unid. taxon 2	<75	
13	5	clay/silt	nil		unid. taxon 3	<10	
14	6	clay/silt	nil	unid. taxon 1		<10	
14	6	clay/silt	nil	unid. taxon 2		<10	
14	6	clay/silt	nil		unid. taxon 1	<10	
14	6	clay/silt	nil		unid. taxon 2	>200	
14	6	clay/silt	nil		unid. taxon 3	<5	
15	7	clay/silt	nil	unid. taxon 1		<10	
15	7	clay/silt	nil	unid. taxon 4		<10	
15	7	clay/silt	nil	*Viviparus sp.*		1	still/slow-flowing

CONTEXT	SAMPLE	FEATURE	MARINE	FRESHWATER	TERRESTRIAL	NOS.	HABITAT
15	7	clay/silt	nil		unid. taxon 1	<5	
15	7	clay/silt	nil		unid. taxon 2	<300	
15	7	clay/silt	nil		unid. taxon 3	<25	
16	8	clay	nil	nil	unid. taxon 2	>50	
16	8	clay	nil	nil	unid. taxon 3	<10	
17	9	clay	nil	unid. taxon 3		1	
17	9	clay	nil		unid. taxon 2	<10	
TOTAL			**nil**	**105**	**768**	**873**	

5.3 Introduction/methodology

The wet-sieved/floated mollusc shells from sample groups [12] {4}, [13] {5}, [14] {6}, [15] {7}, [16] {8} and [17] {9} were recorded in terms of estimated shell count for each identified or potentially identifiable taxon. Generally, no attempt was made to identify every taxon to species or genus level, or to produce an accurate shell count for the larger groups. Any identifications were made with reference to the MoLSS Environmental Archaeology Section reference collection, and following Cameron & Redfern 1976; Ellis 1978; and Macan 1977. Ecological interpretation followed Kerney 1999.

5.4 Marine molluscs

No marine molluscs were recovered.

5.5 Terrestrial molluscs

Land snails provided up to an estimated maximum of 768 shells, the bulk of the molluscan assemblage. Preservation was generally good, with the majority of the shells identifiable to species level with further study. Molluscs were recovered from context/sample groups; [12] {4}, [13] {5}, [14] {6}, [15] {7}, [16] {8} and [17] {9}. There were at least five distinct snail species present including rounded/radiated snail *Discus rotundatus*, and four taxa not, as yet, definitely identified to species or genus level. The unidentified snails probably included lipped snail *Cepaea sp.* (unidentified taxon 1), glass snail Zonitidae (unidentified taxon 2), moss snail *Cochlicopa sp.* (unidentified taxon 3) and door snail Clausiliidae (unidentified taxon 4). The majority of the assemblage derived from one unidentified terrestrial snail taxon, possibly glass snail Zonitidae (unidentified taxon 2), which provided up to 675 shells. All these taxa prefer moist, sheltered locations and are common throughout southern England in suitable locations.

5.6 Freshwater molluscs

Freshwater molluscs provided up to an estimated maximum of 105 shells. Preservation was generally good, with the majority of the shells identifiable to species

level with further study. Molluscs were recovered from context/sample groups [11] {1}, [12] {4}, [13] {5}, [14] {6}, [15] {7} and [17] {9}. There were at least eight distinct mollusc species present, including valve snail *Valvata sp.*, river snail *Viviparus sp.* and six taxa not, as yet, definitely identified to species or genus level. The unidentified molluscs probably included pond snail 1 *Lymnaea sp*. (unidentified taxon 1), ramshorn snail 1 Planorbidae (unidentified taxon 2), pond snail 2 *Lymnaea sp.* (unidentified taxon 3), bithynia *Bithynia sp.* (unidentified taxon 4), ram's-horn snail 2 Planorbidae (unidentified taxon 5), and pea shell *Pisidium sp.* (unidentified taxon 6). The taxa were rather evenly spread throughout the assemblage with no obvious bias between samples. Valve snail *Valvata sp.* and river snail *Viviparus sp.* both occur in southern England in still or slow-flowing water, usually with muddy or silty substrates (Kerney 1999, 25-9). The remaining genera and families show considerable *inter-species* variation in terms of their habitat requirements.

5.7 Analysis of potential

The terrestrial and freshwater molluscan assemblages hold limited but definite potential for interpretation of local habitats, particularly in terms of water movement, chemistry and seasonality, substrate and vegetation; and soil chemistry, shading and drainage. Identification of all shells to species level, particularly those of the unidentified taxa, will allow ecological interpretation of the local conditions.

5.8 Significance of the data

The terrestrial and freshwater molluscan groups are of some significance for interpretation of local aquatic and terrestrial habitats.

This assemblage is not of regional, national or international significance.

6 Assessment of Botanical Remains

By John Giorgi

6.1 Introduction/methodology

During excavations at Windsor Avenue, Merton, seven environmental bulk soil samples were collected for the potential recovery of biological remains including botanical material. The aim of the assessment was to establish the level of preservation, the item frequency and species diversity of any plant material and the potential of these remains for providing information on the character of the local environment and how this may have changed over time.

The samples were taken from spits within three stratigraphic units excavated in section through gravels, sands and peat deposits with the sequence provisionally dated to the early to mid Holocene period. No samples were taken from the basal gravels and sands (Unit 1). One sample was taken from a fibrous peat [18] (sample <10>) (Unit 2) overlying these gravels with two samples from a clayey band (contexts [16] sample <8> and [17] (sample <9>) (Unit 2) overlying the peat. Samples <4>, <5>, <6>, <7> from contexts [12], [13], [14] and [15] respectively, were taken from a clay silt deposit (Unit 4) which sealed this clay band.

The size of all the individual samples was twenty litres which were processed in their entirety using a modified Siraf flotation tank with flotation onto a 0.25mm mesh followed by wet-sieving of the residue through a 1mm mesh sieve. All the flots were dried while the residues were also dried and sorted for any botanical remains that had not floated and other artefactual remains. The processing details are shown in Table 1.

All seven samples produced flots, which varied in size from 10ml to 150ml (Table 9). The flots were scanned using a binocular microscope and the item frequency and species diversity of all biological remains from all samples recorded using the following rating system of 1 to 3.

Frequency: 1 = 1-10 items; 2 = 11-50 items; 3 = 50+ items
Diversity: lo = 1-4 species; med = 5-7 species; high = 7+ species

Table 9:Sample and processing details

SAMPLE NUMBER	CONTEXT NUMBER	BULK VOLUME (l)	FLOT VOLUME (ml)	RES VOL (l)	FLOT MESH SIZE (mm)	RES MESH SIZE (mm)	RESIDUE COMMENTS	FLOT COMMENTS
4	12	20.00	100.00	1.00	0.25	1.00	frequent molluscs	>> roots
5	13	20.00	50.00	2.00	0.25	1.00	frequent molluscs	>wl roots
6	14	20.00	20.00	0.01	0.25	1.00	>molluscs	>roots,>molluscs
7	15	20.00	28.00	0.25	0.25	1.00	fw/tr molluscs	>molluscs, >roots
8	16	20.00	10.00	0.01	0.25	1.00	gravel & molluscs	fragmented charcoal, roots, molluscs
9	17	20.00	150.00	0.50	0.25	1.00	occ molluscs	mainly v fragmented wood
10	18	20.00	140.00	1.00	0.25	1.00	nothing in residue	mainly v fragmented wood

6.2 The plant remains

The preservation of the plant remains was both by charring and 'waterlogging'. Flecks and very small fragments of charcoal were present in six of the seven samples albeit in very small amounts with the largest amount of items (50 plus) in clay deposit [16] (sample <8>). The charcoal, however, was too fragmented for identification purposes.

There were small numbers of 'waterlogged' fruits and seeds in five samples representing a small range of wild plants including a few disturbed and waste ground species, elder (*Sambucus nigra*), common hemp-nettle (*Galeopsis tetrahit*), goosefoots (*Chenopodium* spp.), and wetland plants, eg. sedges (*Carex* spp.). Very fragmented wood was also present in two samples from clay deposit [17] and peat [18]. Large amounts of rootlets were noted in sampled clay and clay/silt deposits [13], [14], [15], [16]. [17] and particularly in [12], while there were small amounts of stem fragments in contexts [14], [15] and [17].

6.3 Other biological remains

Other biological remains in the samples consisted mainly of terrestrial molluscs with very large amounts in sampled clay/silt deposits [12], [13], [14], [15] and clay deposit [16] and smaller numbers in samples from clay deposit [17] and peat [18] while there occasional freshwater snails in contexts [12], [13] and [15]. There were a few amphibian bones in the sorted residue from clay/silt deposit [12].

6.4 Other finds in the samples

Other finds in the residues are listed by sample in Table 11. There were occasional fragments of brick/tile in five samples (contexts [12], [13], [14], [15] and [17]), a few small fragments of slag in contexts [12], [13] and [17] and occasional fragments of clay pipe, coal, glass, mortar (plaster) and glass in single samples.

6.5 Summary

The samples from Windsor Avenue only produced very small botanical assemblages consisting mainly of rootlets with small amounts of very fragmented charcoal and occasional 'waterlogged' fruits and seeds. It is very probable that the plant remains (both the charcoal and weed seeds) in these samples are intrusive particularly given the presence of a small amount of artefactual material in the samples and evidence for extensive root action.

Table 10:Biological remains by sample

Sample number	Context number	Process involved	Constituent	Abundance	Diversity	Comments
4	12	residue	bone amphib	1	Lo	
4	12	residue	molsc fw	1	Lo	
4	12	flot	molsc tr	3	med	
4	12	residue	molsc tr	3	Lo	
4	12	flot	wlg seeds	1	Lo	car,ajure
4	12	flot	Wlg roots	1	Lo	
5	13	flot	chd wood	2	lo	flecks, v small frags
5	13	residue	molsc fw	1	lo	
5	13	flot	molsc tr	3	med	
5	13	residue	molsc tr	3	lo	
5	13	Flot	wlg roots	3	lo	
5	13	Flot	wlg seeds	1	lo	sam,car,che
6	14	Flot	chd wood	1	lo	flecks, v small frags
6	14	Flot	molsc tr	3	med	
6	14	residue	molsc tr	3	lo	
6	14	Flot	wlg misc	2	lo	stems
6	14	Flot	wlg roots	3	lo	
7	15	Flot	chd wood	1	lo	v small frags
7	15	residue	molsc fw	1	lo	
7	15	Flot	molsc tr	3	med	
7	15	residue	molsc tr	3	med	
7	15	Flot	wlg misc	2	lo	stems
7	15	Flot	wlg roots	3	lo	
8	16	Flot	chd wood	3	lo	flecks, v small frags
8	16	residue	molsc tr	3	med	molluscs, gravel
8	16	Flot	wlg roots	3	lo	
8	16	Flot	wlg seeds	1	lo	sam
9	17	Flot	chd wood	1	lo	small frags
9	17	Flot	molsc tr	1	lo	
9	17	residue	molsc tr	2	lo	

Sample number	Context number	Process involved	Constituent	Abundance	Diversity	Comments
9	17	Flot	wlg misc	2	lo	stems
9	17	Flot	wlg roots	3	lo	
9	17	Flot	wlg seeds	2	lo	vio,galte
9	17	Flot	wlg wood	3	lo	small frags
10	18	Flot	chd wood	2	lo	small frags
10	18	Flot	molsc tr	2	lo	
10	18	Flot	wlg seeds	1	lo	vio
10	18	Flot	wlg wood	3	lo	small frags

Table 11: Other finds by sample

Sample number	Context number	Process involved	Material	Abundance	Comment
4	12	w	brk/til	1	
4	12	w	clypipe	1	
4	12	w	mortar	1	plaster
4	12	w	slag	1	
5	13	w	brk/til	1	
5	13	w	slag	1	
6	14	w	brk/til	1	
6	14	w	pot	1	
7	15	w	brk/til	1	
7	15	w	coal	1	
7	15	w	glass	1	
9	17	w	brk/til	1	
9	17	w	slag	1	

6.6 Analysis of Potential

The botanical assemblages have virtually no potential in providing information on the nature of the local environment because of the possibility that the few identifiable remains may be intrusive. The large amount of molluscs, however, may provide information on the character of the local environment and how this may have changed over time.

6.7 Significance of the data

The plant remains are of no significance because they are probably intrusive.

7 Pollen Analysis

7.1 Introduction

A pollen assessment was carried out on a sequence of deposits augered at Winchester Avenue, Merton (WAV05). The subsamples were taken from windowless samples (1metre long plastic tubes of sediment), which sampled the stratigraphic sequence found immediately over the gravels.

The aim of the pollen assessment is to investigate to what extent and state of preservation pollen is preserved, the nature of the pollen and the environments it represents, and whether there is any potential for further pollen analytical work.

7.2 Methods

The samples were prepared using standard pollen extraction techniques by Elaine Burton of Royal Holloway College, London. The samples were then deflocculated overnight and passed through sieves of 180 µm and 10µm. The larger sieve is designed to remove coarser plant debris and the smaller sieve allows clay-sized particles to pass through but retains the pollen-sized fraction.

The samples were then mixed with a non-toxic heavy liquid, Sodium polytungstate, made up to a specific gravity of 2.0. At this specific gravity, the organic component, including pollen, floats and the majority of the mineral component sinks, enabling physical separation. This procedure reduces degradation of pollen grains during extraction from mineral sediments and represents a significant and safer advance on the former use of Hydrofluoric acid to digest the mineral fraction. Following separation, the samples were subjected to standard acetolysis procedures to remove cellulose (Erdtman, 1960), then mounted on slides using glycerine jelly.

The slides were scanned at 400x magnification and pollen recorded. Pollen identifications were made using Moore, Webb and Collinson (1991).

7.3 Results & Discussion

The results of the diatom assessment are summarised in Table 12.

Table 12: Summary of the pollen assessment results for WAV05

Sample	Sample Depth (m) OD	*Main Pollen Taxa & Spores*	Concentration	Quality of preservation
P4	12.65	Lactuceae; Polypodium vulgare; Pinus; Caryophyllaceae; Poaceae.	Medium	Poor
P3	12.44	Lactuceae; Poaceae; Pinus.	Low	Poor
P2	12.36	Poaceae; Pinus; Corylus; Lactuceae;	Medium	Medium
P1	12.2	Betula; Pinus; Poaceae; Corylus.	Low	Poor

The pollen retrieved from samples taken at WAV05 – although generally poor to medium in concentration and preservation quality – does provide a picture of the environment local to the site. Two local pollen zones have been recognised in the 0.45m sequence analysed. These zones are characterised as follows:

Zone 1: 12.2m OD to 12.5m OD. Poaceae– Pinus – Betula

This zone is dominated by *Poaceae* (grasses; peak to 40% at 12.65m OD) and *Pinus* (pine; to 35% at 12.36m OD). Percentages of *Betula* (birch) are high in the basal level (42%), but remain generally small throughout the profile.

Zone2: 12.5m OD to 12.65m OD. Lactuceae – Caryophyllaceae – Pinus

This zone is dominated by *Lactuceae* (dandelions; peaking at 58%), *Caryophyllaceae* (the pink/campion family; at 11%), *Polypodium* (ferns; at 15%). *Pinus* and *Poaceae* drop to their lowest percentages in the whole profile (8% and 7%, respectively).

7.4 Interpretation

The dominance of pine with birch and hazel in Zone 1 is diagnostic of the migration into, and expansion of these primary taxa into the country from their glacial refugia. The presence of all these taxa attest to their role as early pioneers/colonisers taking advantage of rapid migration and open habitats. The importance of locally dominant pine woodland is clear in Zone 1 and is comparable with a standard Boreal (Flandrian chronozone 1b) date (at *ca*. 9,000 BP) for this region of the country (Bennett 1984). Such pine dominance has been evidenced at this period from a number of sites in Central and East London (Scaife in Sidell *et al.* 2000). Notably, this was the environment in which Mesolithic human communities have been found to subsist, for example, at Broxbourne in Hertfordshire (Warren *et al.* 1934).

Grass values increase throughout Zone 1 competing with the pine results. This could be more indicative of the area local to the site being more of an open grassland with the pine forest dominating the woodland away from the river. This becomes more apparent in Zone 2 at the top of the profile when *Lactuceae* (dandelions), *Caryophyllaceae* (the pink/campion family) and *Polypodium* (ferns) dominate. Notably, the rise up profile of *Lactuceae* along with the occasional presence of

Caryophyllaceae, both of which indicate open or disturbed ground, possibly points toward anthropogenic disturbance. *Polypodium* is tolerant of dry shade and probably existed in the forest area.

7.5 Conclusion

Overall therefore, the picture that emerges from the pollen preserved at Winchester Avenue is probably one of open grassland near the river surrounded by forest on the higher, drier, ground. The forest is pine dominated with birch/hazel scrub. The dominance of grasses indicates open ground in the immediate vicinity of the site. The development of weed species emerging up profile coupled with the lessening of the forest species could indicate anthropogenic clearance activity locally.

These results, however, have to be seen against the background of poor pollen survival in the sediments although their representation overall is considered to be sound. This is, however, an important early Holocene site and would repay additional work. If required this should comprise sampling and analysis at a closer stratigraphical interval; greater pollen numbers identified and counted and more detailed radiocarbon dating of selected horizons.

8 The Dating

A 14C sample was submitted for radiometric dating to Beta Analytic. The sample was taken from unit 2 in trench 2 at approximately 11.4m OD. The results of the dating are presented below.

MoLAS ref.	Lab no.	Uncalibrated date	Calibrated date
<WAV05-7-3.60 >	Beta – 211012	9250+/- 50BP	Cal BC 8630 to 8280(Cal BP 10580 to 10230)

9 Synthesis of results & conclusion

This section combines the results of the geoarchaeological recording with the plant, pollen and mollusc analysis to reconstruct the landscape characteristics of the site. The results are discussed in terms of the deposits identified with reference to the biological remains they contain.

The basal deposits (Deposit 1) consist of the floodplain gravels, formerly known as the Wandle gravels. These are likely to date to the Late Glacial\Early Holocene period and were deposited under high energy fluvial conditions in a cold climate braided river environment. These gravels formed a fairly flat and level topography, which influenced later sedimentation during the latter stages of the Holocene.

During the early part of the Holocene, an active channel still flowed across the site under moderately active fluvial conditions (Deposit 3) depositing sandy clays. Adjacent to the channel, slightly higher areas of gravels became colonised by vegetation under waterlogged conditions (Deposit 2) giving rise to the formation of soil horizons. The channel appears to have migrated gradually towards the western part of the site, and where the channel formerly flowed marshy channel marginal deposits (Deposit 7) began to develop over these sediments.

Over the higher areas of gravel further away from the channel margins, the soil horizon continued to develop forming the Boreal peat deposits (Deposit 4). The pollen identified from this horizon (zone 1) suggested a surrounding landscape dominated by pine, birch and hazel. A ^{14}C date of c.9000 BP was also produced from this deposit, which is consistent with the Boreal period. During this period, the majority of the landscape surrounding river valleys would have been thickly forested, following the woodland recolonisation of the open tundral landscape at the end of the Devensian glaciation.

Early Mesolithic hunter-gatherers exploited the resources of the Boreal forest, utilising the river valleys as a means of transportation into the thickly wooded interior. Mesolithic sites on the margins of river valleys have been identified in the Colne (Lewis, 1992, Halsey *in prep*) and Lea Valleys (Warren, 1934) where they are usually identified by the presence of flint scatters on former riverbank deposits. The flint

scatters can consist of a variety of flint tools such as microliths, utilised as points and barbs for projectiles, and scrapers and serrates used for the butchering of animal carcasses and the preparation of hides.

The Boreal peat deposits may have extended towards the eastern part of the site, but the level topography of the landscape resulted in the migration of a channel towards the eastern edge (Deposit 3, in BH 2) possibly eroding these deposits. It is possible that the sandy clay deposits above the gravels represent two contemporary channels on different parts of the site.

Above the Boreal peats a thin band of tufa indicates that an ephemeral clear flowing channel flowed across this part of the site during the climatic optimum period (c. 7 000 BP). This channel may have been an overspill from the main route of the channel identified by Deposit 3 and 6. When the channel ceased to flow, the carbonate rich waters evaporated leaving calcareous clasts to develop around the plant stems and roots.

As the channel continued to migrate away from the site, the marshy marginal channel deposits blanketed the area (Deposit 7). The mollusc remains identified within this deposit suggest an environment moist and sheltered but with still or some sluggishly flowing water. The pollen remains (zone 2) suggest a landscape predominately dominated by wetland grasses, with a drop in the pine, hazel and birch pollen. The plant remains although poorly preserved, did indicate the presence of wetland species including sedges. A general picture emerges of a marshy vegetated area with seasonal pools of standing water developing across the landscape during the wetter winter months. The drop in tree species pollen suggests some woodland clearance has occurred on the higher ground adjacent to the river valley, and this may be a result of agricultural activity at the start of the Neolithic period.

As sedimentation across the site continued with alluvial flood deposits depositing clays within the marshy environment, the ground level gradually increased giving rise to a slightly dryer environment allowing a peaty soil horizon to develop (Deposit 8). Above this accretionary soils developed within gentle overbank flood deposits (Deposit 9), with the landscape dominated with grass and hay meadows. It is likely these upper most deposits date to the medieval or post-med period.

The recorded sequence at Windsor Avenue is very similar to that recorded at Streatham House (Saxby, 1991) where deposits similar to Deposits 4, 5, 7 and 8 were recorded over the floodplain gravels. However, the peat sequence at Streatham House extended across the entire the site, rather than occurring in an isolated pocket. This would suggest that the Windsor Avenue site occupies a more fluvially active area than Streatham House, and indicates that the main course of the Wandle once flowed across this area.

10 Archaeological Potential

The recorded lithology at Windsor Avenue has the potential to understand the sedimentation regime, and the evolution of the Wandle Valley during the early part of the Holocene. This can inform on the former course of the Wandle river and how and when the river course changed and migrated.

The analysis of the plant remains demonstrated poor preservation, and therefore a low potential for understanding the on-site conditions that the peat deposits represent. However, the mollusc and pollen remains did survive in sufficient quantities to allow the on-site conditions and the landscape characteristics in the immediate vicinity to be assessed.

Although no human occupation was identified within the deposits, the deposits are contemporary with the Mesolithic period, with the upper most deposits probably dating to the Neolithic period. Therefore the deposits do have potential in understanding and recreating the landscape contemporary with human occupation in these periods, and what impact human activity had on that environment.

11 Significance

The deposits and palaeoenvironmental remains are significant on a local and regional level for understanding the Wandle Valley during the early to middle part of the Holocene period (i.e. Mesolithic to Neolithic periods). Although the palaeoenvironmental remains were poorly preserved on the site, it is possible that other areas of the floodplain in the vicinity of the site may contain better levels of preservation.

The presence of sequences dating to these periods within the Wandle Valley, suggests that human occupation in the form of flint scatters may also survive in other locations. Little palaeoenvironmetal work on deposits of this nature in the Wandle Valley has been undertaken, and the importance of the site lies in the dissemination of this information to other relevant parties to bring an awareness of the potential of the deposits to contain prehistoric activity, and provide information on early Holocene landscape change.

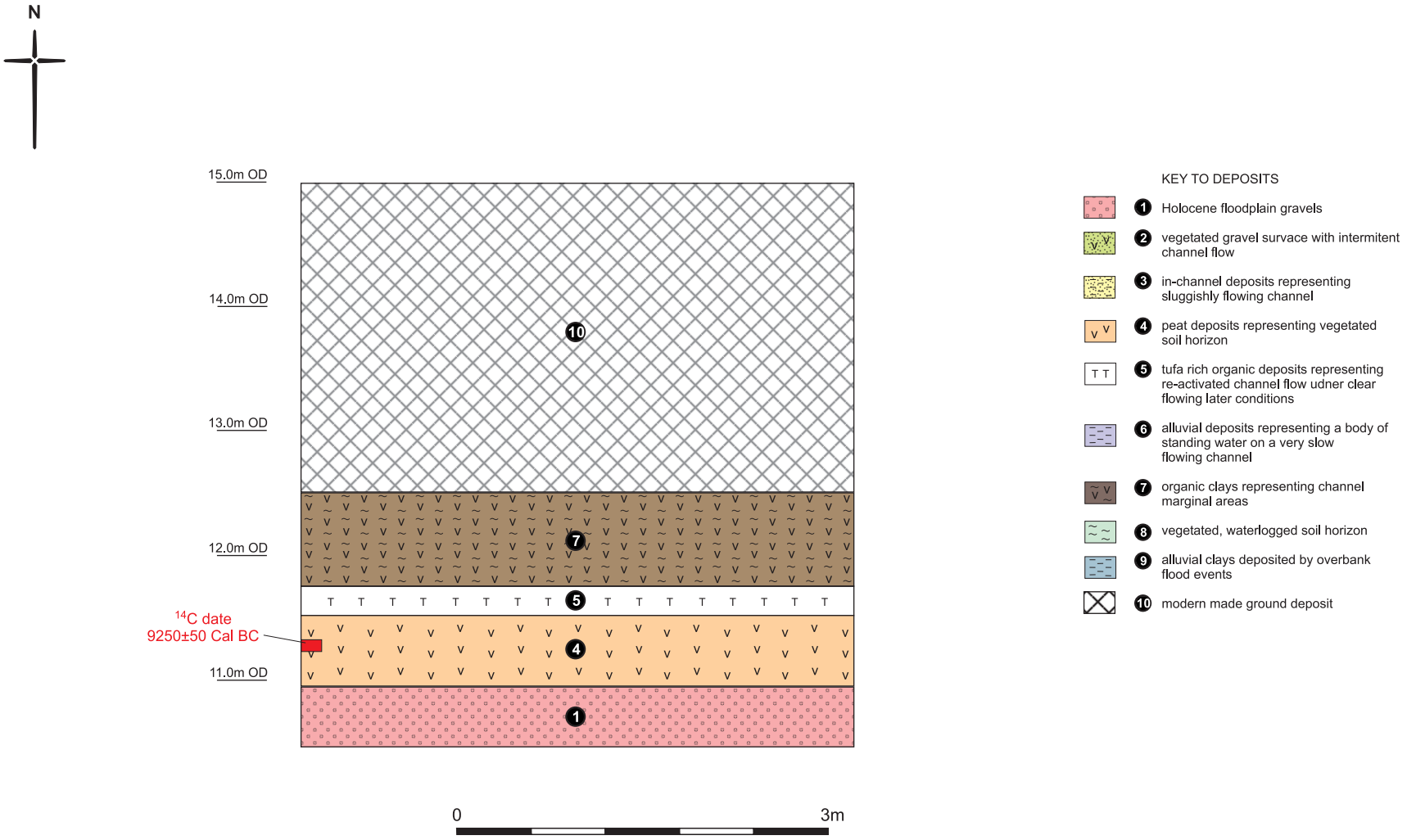

Fig 3 Section through Trench 2

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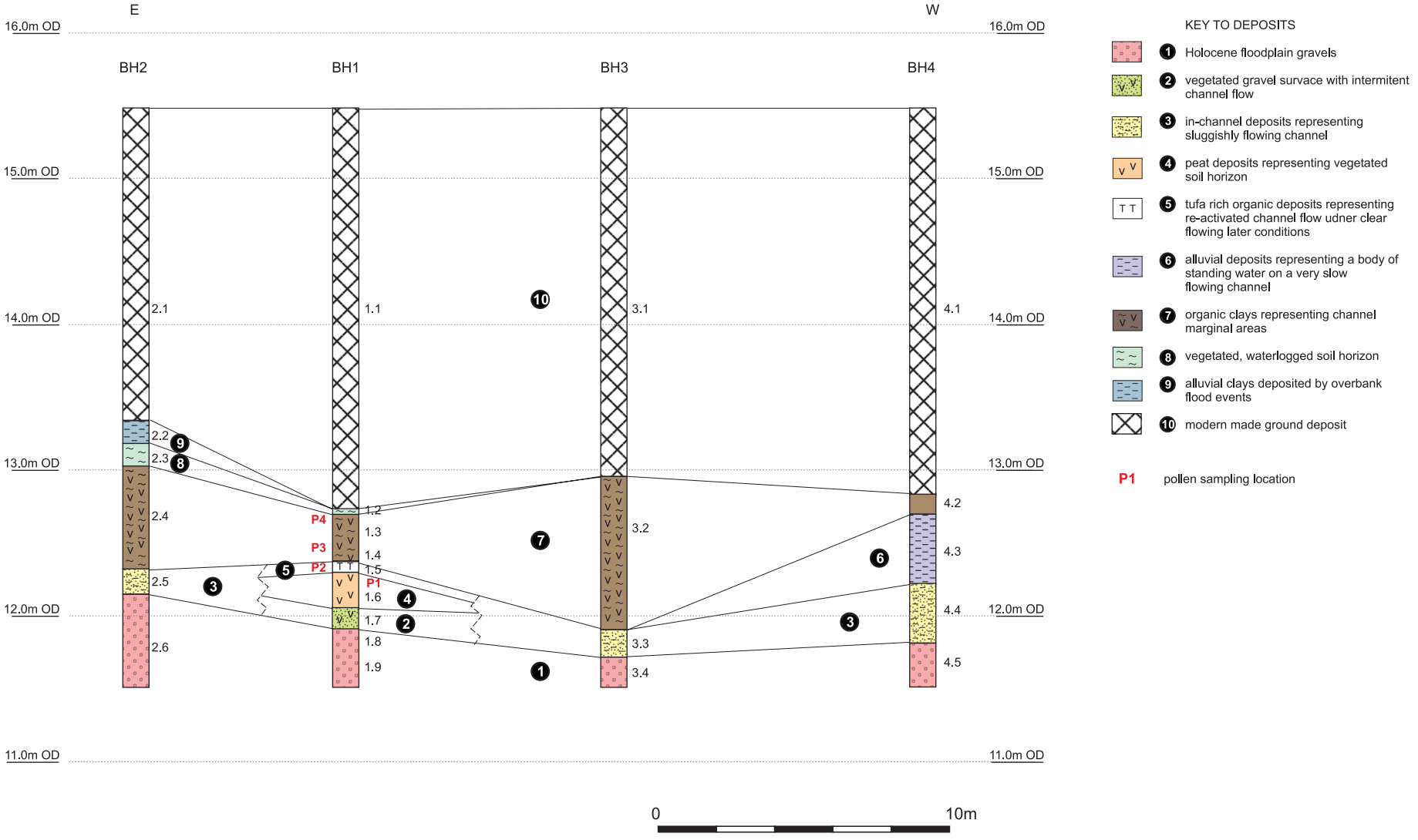

Fig 4 Borehole transect

R:\Project\MoLSS\WAV05\fig04

12 Acknowledgements

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Appendix 3

Specification for Archaeological Evaluation

Specification for Archaeological Evaluation

on land at

57 Windsor Avenue
Merton

for

Chancerygate Group Ltd

By

Matt Williams MA

L - P : Archaeology

Specification for Archaeological Evaluation

on land at

57 Windsor Avenue Merton

Client:	Chancerygate Group Ltd
Authority:	Merton Borough Council
Planning App:	Na
Grid Ref:	526302 169417
Doc Ref:	LP0404L-SAE-v.1.1.doc
Author:	Matt Williams

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Figures

1. Introduction and Scope of Study

1.1. This specification for archaeological evaluation has been prepared by Matt Williams of L - P : Archaeology on behalf of Chancerygate Group Ltd.

1.2. The specification concerns land at 57 Windsor Avenue, Merton, London SW19. The local authority is Merton Borough Council. The proposed development consists of approximately 3910m^2 of land bounded by the Saxon Business Centre, a Saab dealership, Thames TV and a vehicle access route.

1.3. The site is centred at National Grid Reference 526302 169417.

1.4. This specification follows a desk based assessment of the site (Williams 2005), which indicated that there is potential for environmental evidence from peat and alluvial deposits, and evidence for previous Post Medieval industrial land use.

1.5. The evaluation will consist of two trenches located across the site (figure 2).

1.6. The project will be managed and fieldwork carried out by Matthew Williams of L – P : Archaeology. Environmental samples will be taken and analysed by a suitable archaeological specialist service.

2. Historical Background and Archaeological Potential

2.1. There have been various archaeological investigations in the area, which have provided information on the archaeological potential of the site. This information is detailed in the Desk Based Assessment (Williams 2005) and summarised below.

2.2. The river Wardle runs north south approximately 100m east of the site, and alluvial deposits relating to the river are present on the site (Environs 2005). The deposition of these layers will give a profile of the river valley and floodplain. These deposits may also contain paleoloecological information.

2.3. A thick layer of peat, probably Prehistoric in origin, was noted below the alluvial deposits at a site c.80m north of the study site. This deposit, if present on the study site, can yield paleoecological information and fixed dates using Carbon 14 dating techniques.

2.4. There is low potential for further Prehistoric archaeology.

2.5. There have been some Roman finds on the east side of the river Wardle, and it is thought that Roman Stane Street may run north south to the west of the study site

2.6. The site was once a part of the Merton Priory Estate, and as such falls within an Archaeological Priority Zone (APZ). However, there is no evidence that any buildings associated with the priory stood on or near the study site, and the land was probably arable or pasture.

2.7. The Post Medieval period saw a great deal of development around the study site, including print works to the north and a varnish works to the south. In the late 19th Century calico bleaching trenches were dug east west across a large area of the former Merton Priory estate as a part of this general development. Three such ditches cross the site on early maps of the area (1866 estate map, 1877 OS. The southern most ditch is not shown on the later 1933 OS map. It is possible that the profiles of these ditches remain in the site deposits.

3. Objectives of Archaeological Evaluation

3.1. The key objective of the archaeological evaluation will be to investigate the archaeological deposits within the study site area. In this case the two key areas of investigation are the Prehistoric deposits relating to the river Wardle and the survival of the industrial calico trenches. The evaluation trenches will therefore be targeted to address these areas.

3.2. General aims of evaluation are thus:

3.2.1. To identify the levels at which archaeological remains survive on site.

3.2.2. To characterise the nature of archaeological activity on site.

3.2.3. To assess the general nature and quality of deposits, artefact assemblages and environmental evidence.

3.2.4. To gain information on the nature and date of the remains on the site likely to be affected by the development.

3.2.5. Special effort should be made to construct a model of the depositional process and stratigraphic sequence for the site.

3.3. The specific aims of the evaluation trenches are as follows:

3.3.1. Trench 1 is positioned north south in the eastern area of the site to investigate the calico trench.

3.3.2. Trench 2 is positioned east west in the southern area of the site to investigate the alluvial deposits relating to the river Wardle to the east, and to investigate the existence of any significant peat deposits.

4. Methodology

4.1. The evaluation consists of machine excavated trenches. The general methods to be employed are as follows:

4.1.1. The modern slab and made-up surface can be broken out using a breaker.

4.1.2. Modern layers and make up deposits may be removed by machine under archaeological supervision.

4.1.3. Hand excavation by context is required where walls, floors or other features are encountered. For example these may include:

i. Ditch or linear feature termini and inter-sections

ii. Clusters of cuts and re-cut features

iii. Post holes

iv. Any structural evidence

v. Areas of organic potential

4.1.4. A minimum number of features, within each significant archaeological horizon, will be hand excavated to meet the research requirements of the evaluation:

i. Pits and postholes will normally be sampled by half-sectioning.

ii. Linear features will be sectioned as appropriate.

iii. Excavated material will be examined in order to retrieve artefacts to assist in the analysis of the spatial distribution of artefacts.

4.1.5. Examination and cleaning of all archaeological deposits will be by hand using appropriate hand tools. Any archaeological deposits will be examined and recorded both in plan and section. The objective will be to define remains rather than totally remove them.

4.1.6. Should significant archaeological deposits be encountered that are worthy of preservation *in situ*, excavation will cease. A site meeting will be held between L – P : Archaeology and English Heritage to assess the significance of the deposits and to decide on a strategy for sampling them to provide sufficient data for a useful assessment or subsequent mitigation strategy.

4.1.7. All finds, artefacts, industrial remains and faunal remains will be collected.

4.1.8. All finds which constitute Treasure under the 1996 Treasure Act for England and Wales will be reported to the coroner by the finder within 14 days of discovery.

4.1.9. Any human remains will also be left in situ, covered and protected. If removal is essential it can only take place under appropriate Home Office and environmental health regulations. Such removal will be in compliance with the Disused Burial Grounds Amendment Act 1981 and in accordance with Excavation and post Excavation Treatment of Cremated and Inhumed Human Remains (IFA technical paper 13).

4.2. Specific methods to be employed regarding each trench are as follows:

4.2.1. Trench one is positioned to examine the calico bleaching ditch. The trench can be machine excavated until the ditch is visible in plan. It will then be planned and recorded. The trench can then be further machine excavated until the ditch is visible in section. The trench section will then then be drawn and recorded.

4.2.2. Trench two is positioned to examine the alluvial deposits. This trench will be machine excavated to reveal the alluvial deposits running east west towards the river Wardle. The trench will be excavated to natural drift gravel deposits in at least one area, depending on the depth of these deposits. Borehole data suggests that the gravel is c. 4.00m below ground surface.

4.2.3. Samples in trench two will be taken by a suitably qualified specialist. Depending on the quality and significance of the deposits, the following samples may be taken:

i. A monolith through the alluvial deposits to examine the deposition pattern

ii. C14 samples from the top and base of the peat deposits to give a fixed chronology for the event

iii. Bulk samples from significant alluvial and peat deposits for species identification and environmental evidence

4.2.4. Should the trench become too deep to enter safely, it will be stepped out or graded to allow access for samples to be taken.

4.2.5. All machine excavated material will be thoroughly examined for finds and artefacts.

5. Access and Safety

5.1. Reasonable access to the site will be arranged for representatives of the Local Planning Authority and English Heritage who may wish to make site inspections to ensure that the archaeological investigations are progressing satisfactorily.

5.2. The Local Planning Authority and English Heritage should be given at least five working days notice of the commencement date.

5.3. Before any site work commences, a full Risk Assessment Document will be produced setting out the site specific health and safety policies that will be enforced in order to reduce to an absolute minimum and risks to health and safety. In addition to this risk assessment, the following considerations will also be made.

5.4. All relevant health and safety regulations will be followed. Barriers, hoardings and warning notices will be installed as appropriate. Safety helmets and visibility jackets will be used by all personnel as necessary.

5.5. No personnel will work in deep unsupported excavations. Where the installation of temporary support work and other attendance are required, these will be provided as required.

5.6. The possible presence of groundwater within the pits will be taken into account.

5.7. All archaeological sections will be backfilled upon completion for safety reasons unless the applicant or developer has given written instructions to the contrary. English Heritage will be notified prior to works and their agreement will be obtained.

5.8. Excavation will be in accordance with the relevant Health and Safety Guidelines.

6. Recording System

6.1. A site code will be allocated and used to label (using appropriate materials not adhesive labels) all sheets, plans and other drawings; all context and recording sheets; all photographs (but not negatives); all other elements of the documentary archive.

6.2. The recording system used will follow the Museum of London Archaeological Site Manual (edited by Chris Spence, 3rd Edition 1994).

6.3. Context sheets will include all relevant stratigraphic relationships and for complex stratigraphy a separate matrix diagram will be employed. This matrix will be fully checked during the course of the excavation. If there is any doubt over recording techniques, the Museum of London Archaeological Site Manual will be used as a guide.

6.4. The site archive will be so organised as to be compatible with current requirements of the Museum of London. Individual descriptions of all archaeological strata and features excavated or exposed will be entered onto prepared pro-forma recording sheets, sample registers, finds recording sheets, access catalogues, and photo record cards will also be used. This requirement for archival compatibility extends to the use of a computerised database.

6.5. A site location plan will be prepared (OS 1:1250) showing investigation area and development site in relation to surrounding locality and street pattern.

6.6. This will be supplemented by a plan at 1:200 (or 1:100), which will show the location of the areas investigated in relation to the investigation area, OS grid. The locations of the OS bench marks used and site TBM will also be indicated.

6.7. Burials will be drawn at 1:10. Other detailed plans will be drawn at an appropriate scale, usually 1:10 or 1:20.

6.8. The extent of any visible archaeological deposits will be recorded in plan. Long sections showing layers and any cut features will be drawn at 1:50. Short sections will be drawn at 1:20.

6.9. Sections containing significant deposits, including half sections, will be drawn at an appropriate scale, usually 1:10 or 1:20. All sections will be related to the Ordnance Datum using spot heights and registers of sections and plans will be kept.

6.10. Upon completion of each significant feature at least one sample section will be drawn, including a profile of the top of natural deposits (extrapolated from cut features etc. if it has not been fully excavated). The stratigraphy will be recorded, even if no archaeological deposits have been identified.

6.11. An adequate photographic record will be made of any significant archaeological remains in both plan and section. This will include black and white prints and colour transparencies (on 35mm film), illustrating in both detail and general context the principal features and finds discovered. The photographic record will also include working shots to illustrate more generally the nature of the archaeological operation mounted.

6.12. A register of all photographs taken will be kept on standardised forms.

6.13. A Harris Matrix stratification diagram will be compiled and fully checked during the course of the excavations.

7. Finds and Samples

7.1. All identified finds, artefacts, industrial and faunal remains will be collected and retained. Certain classes of building material can sometimes be discarded after recording if an appropriate sample is retained. No finds will, however, be discarded without the prior approval of the nominated representative of the local authority.

7.2. Unstratified material recovered from the spoil is to be recovered and included with the finds assemblage.

7.3. Material dating to the 19th century shall be retained and included with the finds assemblage.

7.4. The finds assemblage will be retained for deposition with the site archive in the Museum of London Archaeological Archive and Research Centre.

7.5. Marking of finds will include the Museum Accession Number, Finds Number and Context Number. Bulk finds will be bagged in clear self-sealing plastic bags marked with the same Accession Number, Finds and Context Number.

7.6. Documentary material including the paper archive, photographic negatives and prints will be stored in boxes to the same standard as above.

7.7. Photographic negatives will be stored in archival quality polypropylene sleeves with strip divisions, three ring holes, centres 107mm apart and dimensions no greater than, 255mm (from the punched side to the opposite edge) by 300mm. The sleeve should have a white writing strip.

7.8. Packaging of all organic finds and metalwork will follow the UKIC/Rescue guidelines, 'First Aid for Finds'. 3rd edition 1998. Any necessary, conservation and treatment of metalwork will be arranged in conjunction with specialist conservators.

7.9. All finds and samples will be treated in a proper manner. They will be exposed, lifted, cleaned, conserved, marked, bagged and boxed in accordance with the guidelines set out in the United Kingdom Institute for Conservation "Conservation Guideline No. 2" and English Heritage guidelines. Appropriate guidance set out in the Museums and Galleries Commissions "Standards in the Museum Care of Archaeological Collections (1991)" will also be followed and the current IFA guidelines.

7.10. Minimum levels of data acquisition will be defined according to the "information recovery levels" summarised by Carver (1987). The default data acquisition will be defined according to the "information recovery levels" summarised by Carver (1987). The default data acquisition level for all pre-modern assemblages is level D. Close attention will be given to sampling for date, structure and environment.

7.11. Environmental samples will be collected from relevant deposits as described in Sections 3 and 4.

7.12. A site meeting will be arranged for L – P : Archaeology, the English Heritage environmental advisor and the relevant sub-contractor. Samples will be taken by a specialist in accordance with *A guide to sampling archaeological deposits for environmental analysis* (Murphy, P. and Wiltshire, P. 1994). These deposits will be subject to the following treatment;

i. Organic samples will be subject to appropriate specialist analysis. There may be a requirement to submit timbers to dendrochronological analysis and to process some samples to provide C14 dating. Other forms of specialist analysis may also be appropriate.

ii. For carbonised remains, bulk samples a minimum of 10 litres (but up to 30 litres for early Prehistoric features) will be collected.

iii. Bulk samples of 10 - 30 litres will be taken from waterlogged deposits for analysis of macroscopic plant remains

iv. Columns for pollen analysis will be taken where appropriate

v. Mollusc samples will be gathered when required.

vi. Other bulk samples for small animal bones and other small artefacts maybe taken from appropriate deposits depending on the aims of the project.

vii. Environmental samples will be assessed for potential through summary analysis by an environmental specialist.

viii. Residues and any retained samples will be treated as part of the finds assemblage.

ix. If in doubt samples should be taken and disposed of subsequently at the discretion of the specialist and in consultation with English Heritage.

7.13. Ceramic material will be subject to spot-dating on site and where necessary, subsequent analysis will be undertaken.

7.14. At the beginning of the project the client and the Local Authority will be contacted regarding the preparation, deposition and ownership of finds. The archive will be deposited at the Museum of London Archaeological Archive and Research Centre.

8. Report

8.1. A formal report on the results of the archaeological works will be prepared and will include:-

i. Perceived archaeological potential of the site and vicinity from documentary sources - historic, cartographic, archaeological, SMR, geographical, topographic and environmental.

ii. The aims and methods adopted in the course of the excavation.

iii. Illustrative material including maps, plans, sections, drawings and photographs as necessary.

iv. The nature, extent, date, condition and significance of the archaeological finds with specialist opinions and parallels from other sites if required.

v. The anticipated degree of survival of archaeological deposits across the site, as affected by its present state and recent past (eg. extent of known basements, quarrying).

vi. The likely effect of development (nature and extent of proposed groundworks).

vii. Summary of archaeological impact, comparing (iv), (v) and (vi).

viii. Recommendations for further action, identifying any areas suitable for either preservation in situ or excavation in advance of development.

8.2. Copies of the evaluation report will be sent to the client and English Heritage.

9. Archive and Published Reports

9.1. The Accession number will be used to mark all plans, drawings, context and recording sheets, photographs and other site material during excavation.

9.2. The integrity of the site archive will be maintained. All finds and records will properly be curated by the Museum of London and be available for public consumption. Appropriate guidance set out in the MGC "Standards in the Museum Care of Archaeological Collections" (1992), and the SMA's draft "Selection, Retention and Disposal of Archaeological Collections" (1992) will be followed in all circumstances.

9.3. The minimum acceptable standard for the archival report is defined in the "Management of Archaeological Projects" 5.4 and Appendix 3. It will include all materials recovered (or the comprehensive record of such materials) and all written, drawn and photographic records relating directly to the investigations undertaken. It will be quantified, ordered, indexed and internally consistent. It will also contain a site matrix, a site summary and brief written observations on the artefactual and environmental data.

9.4. United Kingdom Institute for Conservation guidelines for the preparation of excavation archives for long-term storage (1990) will be followed. Arrangements for the curation of the site archive will be agreed with the appropriate Museum.

9.5. Pursuant to these agreements the archive will be presented to the Museum of London within 6 months of the completion of the fieldwork (unless alternative arrangements have been agreed in writing with the Local Planning Authority or English Heritage). In addition, written confirmation from the client will be provided for the transfer of ownership.

9.6. A short summary of the results of the work, even if negative, will be submitted to the GLSMR (using the appropriate archaeological report forms). This will include details of the archive deposition, date of deposition, and recipient museum.

9.7. If the results so merit, a short summary statement will be prepared for publication in the appropriate academic Journal. Such summary publication will meet the minimum requirements set out in Appendix 7 of the Management of Archaeological Projects 1991, and derive from a Phase 2 review as defined in the same document.

9.8. The review process may indicate that significant archaeological remains uncovered in the course of an excavation require full academic publication in an appropriate monograph or journal. It is possible that the review process will conclude that such publication will include descriptions and interpretations of the remains uncovered, as well as specialist reports on the finds and samples recovered.

9.9. Contingency arrangements to provide for this possible element of work will be made before fieldwork commences.

9.10. Site works will not commence until the Local Planning Authority has expressed itself satisfied that suitable arrangements have been made.

10.Agreement

10.1.This recommended format attempts to define best practice but cannot fully anticipate conditions encountered as the excavation progresses. Material changes are however only to be made with the prior written approval of the Senior Archaeology and English Heritage.

10.2.L – P : Archaeology and their contractors undertake to adhere to the English Heritage guidelines (1998) for archaeological excavations as outlined in all guidance papers.

Figures

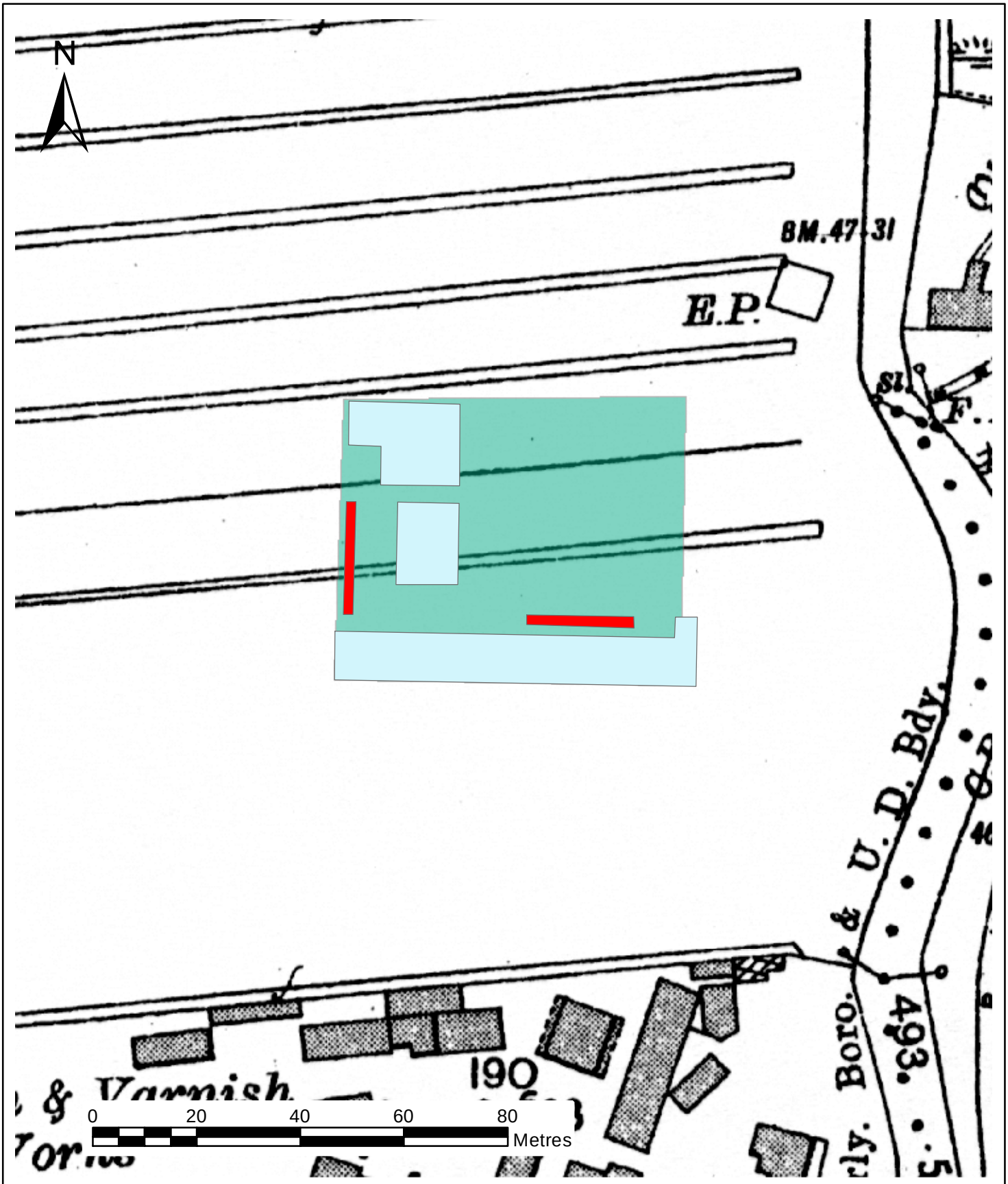

Figure 2 - Trench locations over 1933 OS

Trench Locations
Study Site
Existing_Buildings

Scale - 1:1000

L - P : Archaeology

a trading name of

The L - P : Partnership Ltd.

Sources Consulted

Bibliographic

Environs 2005 *Additional Phase II site investigations, 57 Windsor Avenue, Wimbledon* Environs unpublished Archive Report

Williams 2005: *Desk Based Assessment of Land at 57 Windsor Avenue* L – P : Archaeology unpublished archive report