

# Archaeological Services & Consultancy Ltd

## **ARCHAEOLOGICAL EVALUATION: CASTLE WHARF BRIDGE STREET, BERKHAMSTED HERTFORDSHIRE**

*on behalf of Fourth Avenue Estates Ltd*



**Jonathan R Hunn BA PhD MIFA**

**November 2004**

**ASC: 598/BCW/03**

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## Site Data

<i>County:</i>	Hertfordshire		
<i>District:</i>	Dacorum		
<i>Village/Town:</i>	Berkhamsted		
<i>Parish:</i>	Berkhamsted CP		
<i>NGR:</i>	SP 9959 0794		
<i>Extent of site:</i>	0.07ha approx.		
<i>Present land use:</i>	Former canal hire & maintenance depot		
<i>Planning proposal:</i>	Residential development		
<i>Extent of development:</i>	0.07ha approx.		
<i>Planning application ref/date:</i>	n/a		
<i>Client:</i>	Fourth Avenue Estates Ltd Jansel House Stopsley Green Hitchin Road Luton LU2 7XN		
<i>Contact name:</i>	Colin Bridge		
<i>Telephone</i>		<i>Fax:</i>	

## Internal Quality Check

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<i>Edited/Checked By:</i>		<i>Date:</i>	
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# CONTENTS

Summary .....	4
1. Introduction .....	4
2. Aims & Methods .....	7
3. Results. ....	8
4. Conclusions .....	12
5. Acknowledgements .....	13
6. Archive .....	13
7. References .....	14

## Appendices:

1. Trench Summary Tables.....	15
2. Specialist Reports .....	16
3. SMR Summary Sheet .....	19

## Figures:

1. General location .....	3
2. Site plan .....	6
3. Trench plan.....	9
4. Stratigraphical sequence within the trench.....	10

## Plates:

Cover: View WNW across evaluation trench

1. Start of machining operation .....	11
2. Detail of sample trench looking south .....	11
3. Detail of the upper horizons of the trench.....	11
4. Detail of alluvium and peat looking west.....	11
5. Detail of peat/alluvium interface .....	11
6. Environmental sampling underway .....	11



Figure 1: General location (scale 1:25,000)

## Summary

*In September 2004 an archaeological evaluation was undertaken at Castle Wharf, Bridge Street, Berkhamsted, Hertfordshire, on behalf of Fourth Avenue Estates Ltd. The work was required in advance of proposed residential redevelopment, and followed a desk-based study of the site. Beneath a 2m horizon of made-up ground was a layer of alluvium, sealing what is believed to be an old river channel. Within this 'palaeo-channel' was a thick deposit of peat created between the later part of the early Mesolithic (9700 to 9550 Cal BP) and the Neolithic (4760 to 4640 Cal BP). This represents a time span between the late Boreal period, when pine woodland was being replaced by deciduous trees, and the Atlantic period, when there was predominance of lime woodland. This 4000-year period covers the time when mankind first had an impact on the landscape, and when humans first settled in, or adjacent to, the Bulbourne valley.*

## 1 Introduction

1.1 During September 2004 *Archaeological Services and Consultancy Ltd (ASC)* carried out an evaluation on a site at Castle Wharf, Bridge Street, Berkhamsted, Hertfordshire (NGR SP 9959 0794: Fig. 1). The project was commissioned by Colin Bridge of *Fourth Avenue Estates Ltd*, and was carried out according to a brief (Batt 2004) prepared by the Hertfordshire *County Archaeology Office (CAO)*, and a written scheme of investigation prepared by ASC (Zeepvat 2004).

### 1.2 Reason for Work

In response to proposed redevelopment of the site the CAO requested that an archaeological assessment and evaluation of the site should be undertaken before the planning application was determined. This was in line with *PPG16*, which states that archaeology is a material consideration when considering the impact that such a development might have on the archaeological heritage of the country.

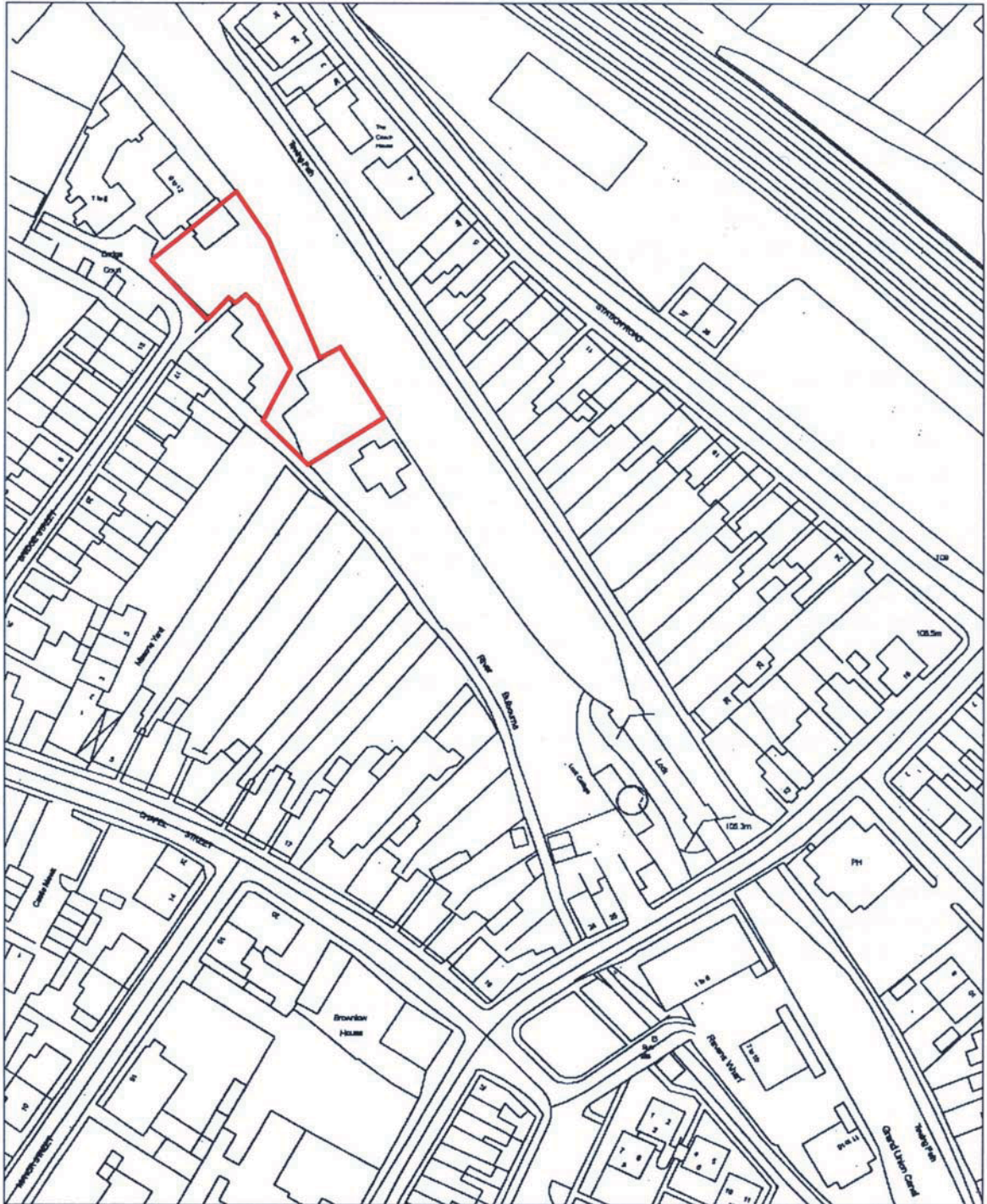
### 1.3 Setting

1.3.1 Castle Wharf is located within the town of Berkhamsted, about 300m south-east of the railway station, at NGR SP 9959 0794 (Fig. 1). The site occupies a C-shaped area of c.0.07 hectares, between the river Bulbourne 15m to the south, and the Grand Union Canal, 5m to the north, at the north end of Bridge Street (Fig. 2). Access is from Bridge Street by land, and by boat from the canal.

1.3.2 As the site is within an urban area soils have not been mapped. The natural soils of the locality would have belonged to the Gade Complex, which are derived from mixed alluvium over chalk. These are described as 'well defined, dark-coloured 'A' horizons containing moderate to high amounts of organic matter. The sub-soils consist of interstratified beds of water-laid flint or chalk gravel, loam and chalky silt, with occasional peaty layers, forming an intricate pattern which is often related to minor differences in level, the gravels forming low terraces or levees raised a few feet above the lowest ground' (Avery 1964, 102). To what extent these conditions apply here is not certain, since the sub-

soil can vary in character with bands of calcareous marl and peat occurring locally (Hodge *et al* 1984, 2002-3).

- 1.3.3 Access is obtained from Bridge Street to the west and there is a large covered service shed for narrowboats at the southern end of the site.
- 1.3.4 The archaeological and historical background to the evaluation is detailed in a desk-based assessment of the site carried out in August 2004 (Griffiths & Hunn 2004).
- 1.3.5 The salient elements of the assessment are that, in the Roman period, a range of occupation sites and activities are to be found dispersed along the Bulbourne valley corridor. In the medieval period the assessment site lay outside the town, or perhaps 'village' would be a more accurate description. The location of the site adjacent to a chalk-stream, albeit one that has been modified by human activity, is one of the principal factors in determining the land use of the site through history. It seems that the area was used principally for the grazing of stock. This situation changed with the construction of the Grand Junction Canal in 1798 (Faulkner 1993), and the construction of the London to Birmingham line in 1836-7 (Cockman 1983, 9). These events led to the expansion of Berkhamsted, and the development of the site as a canal wharf.



**Figure 2:** Site plan (scale 1:1250)

## 2 Aims & Methods

### 2.1 Aims

As described in the brief (Section 3), the aims of the evaluation were:

- To record a profile through the underlying peat deposits for the purposes of obtaining environmental information in the form of pollen and a radiocarbon (C14) date
- To consider the location, extent, date, character, condition, significance and quality of any surviving archaeological remains which are liable to be threatened by the development
- To produce an accurate and full record of any archaeological remains present, such that a permanent record will be made and the results presented in such a way that they may be re-examined and interpreted in the future.

### 2.2 Methods

The work was carried out according to the brief (Section 4), which required:

- a desk-based assessment of the site and its environs (Griffiths & Hunn 2004)
- a field evaluation, comprising a single trial trench (5m x 1.5m).
- An environmental sample to be taken in the form of either a column sample (monolith) or, depending on the practicalities of the trench, two samples (each 35ml) from top and bottom of the peat.
- Radiocarbon (C14) dating of the above samples

### 2.3 Standards

The work conformed to the requirements of the *brief*, to the relevant sections of the Institute of Field Archaeologists' *Standard & Guidance Notes* (IFA 2001) and *Code of Conduct* (IFA 2000a), to the Association of Local Government Archaeological Officers East of England Region *Standards for Field Archaeology in the East of England* (ALGAO 2003), and to the relevant sections of ASC's own *Operations Manual*.



### 3 Results

- 3.1 A single trench was excavated in the middle of the site, almost immediately adjacent to the western boundary of the site (Fig. 3). The upper area of the trench was almost 2m wide but, due to the nature of the overburden, which comprised loose rubble containing large lumps of concrete, it was decided that it would be necessary to reduce the width to 1m (Plate 1).
- 3.2 As predicted, there was a thick deposit of made-up ground covering the area of the site. Five stratigraphic horizons were recognised, of which two were man made, while the lower three were the product of natural agency (Plates 2-5). The stratigraphy (Fig. 4) was as follows:

<i>No.</i>	<i>Depth (bgl)</i>	<i>Description</i>	<i>Colour ref.</i>
1	0.0 - 0.9m	dark brown, rubbly make-up containing lumps of broken concrete, brick fragments, slate, iron, glass, capped by flag stones.	-
2	0.9 - 1.9m	Re-deposited chalk and flints.	-
3	1.9 - 2.6m	Grey alluvium containing occasional oyster shells.	Mun 10 YR 5/1
4	2.6 - 3.42m	Black organic peat	Mun 10YR 2/1
5	Below 3.42m	Pale brown gravelly chalk silt, containing many small flints	Mun 10YR 6/3

The trench was taken down to a depth of 3.65m at its SE end. Water slowly percolated through [5] and after one hour appeared to stabilise at around 3.4m depth.

A 2kg sample was taken from the top of the peat layer [4] together with a small pollen sample which was obtained by pressing a 35mm film tube into the peat (Plate 6). A second sample was taken from the bottom of the peat layer by machine bucket and the same process repeated as above. The results of the analysis are described in Appendix 2 and their significance discussed in Section 5, below.

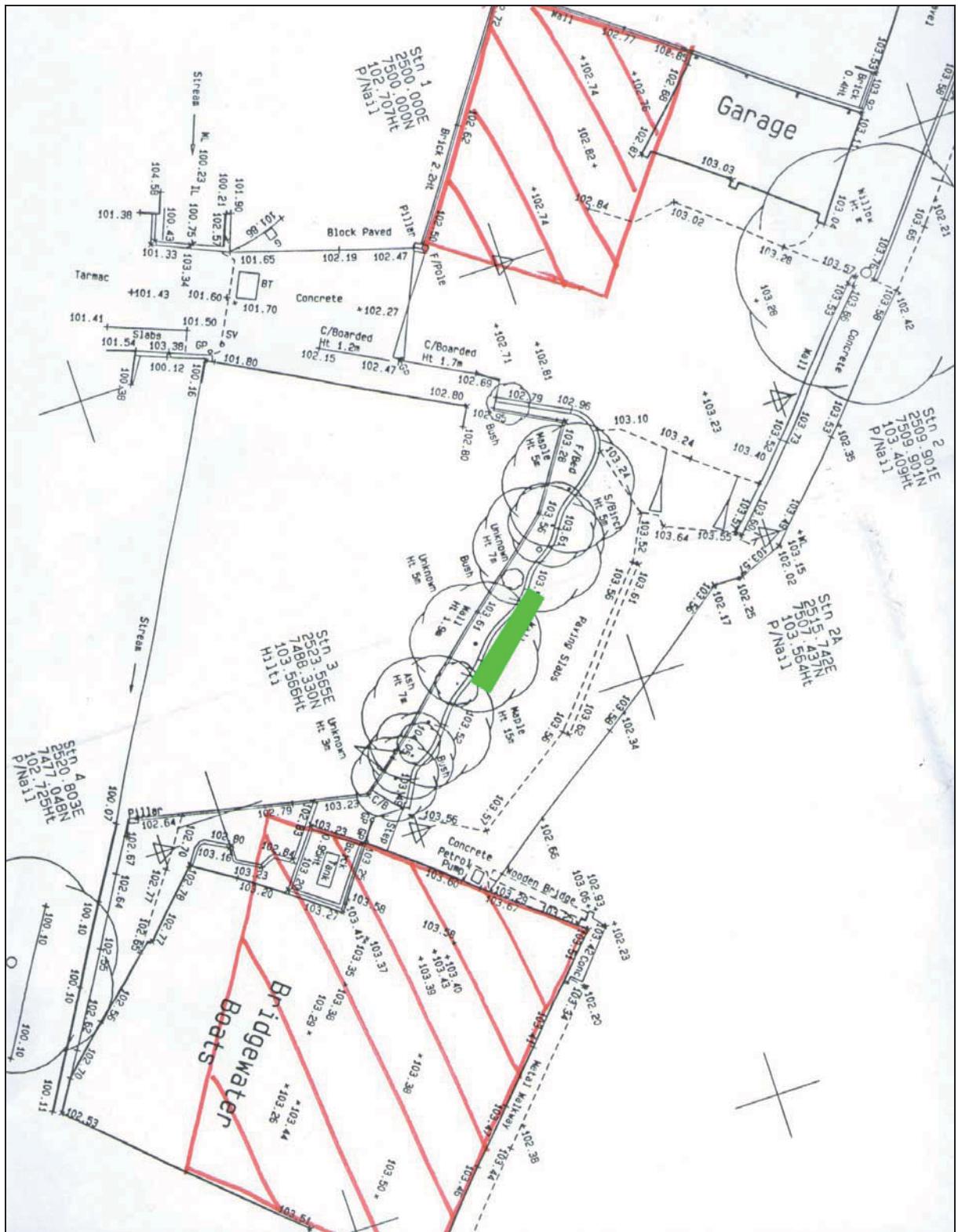
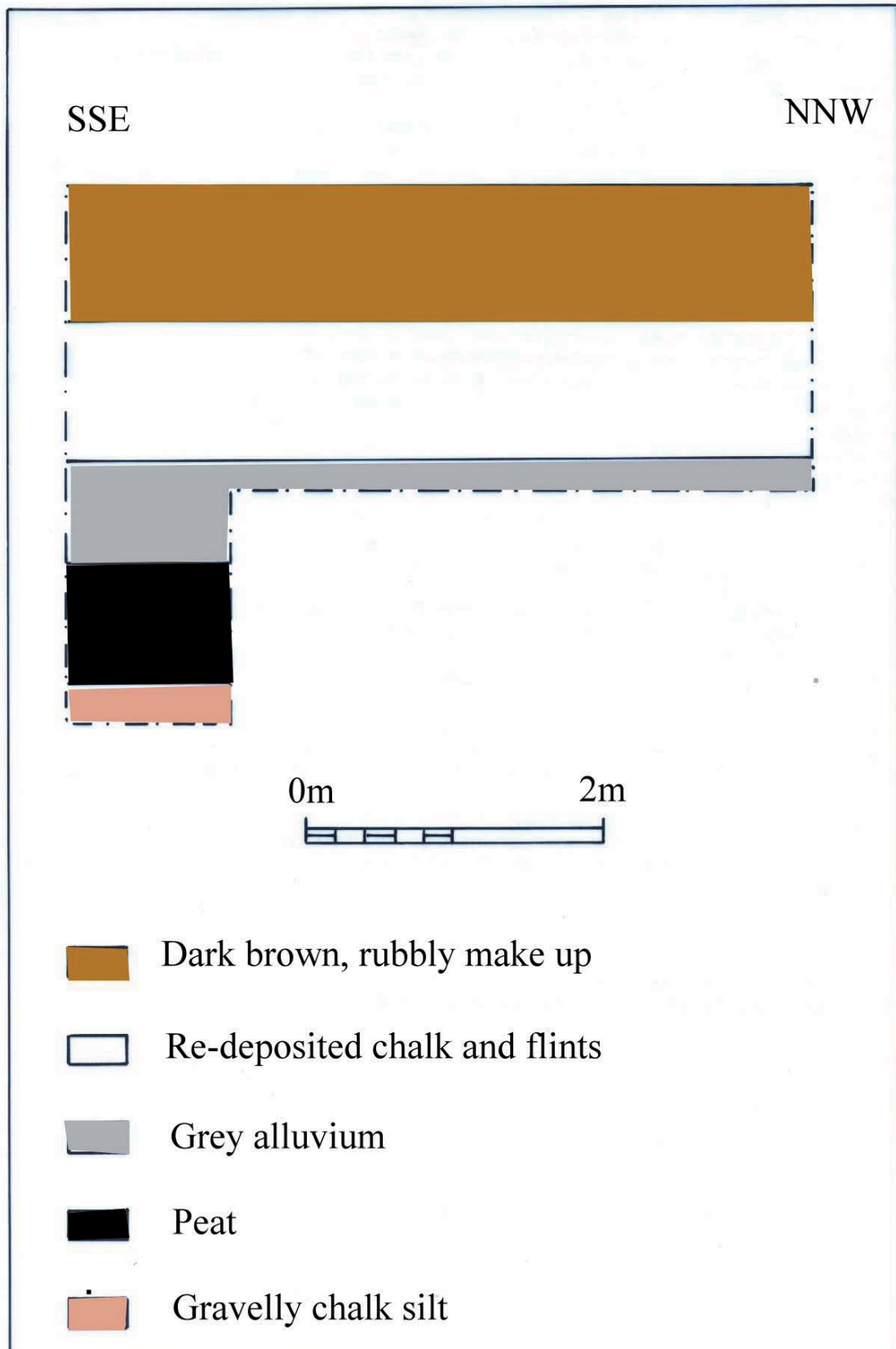


Figure 3: Trench location plan (scale 1:200)



**Figure 4:** Stratigraphical sequence within the trench



**Plate 1:** Start of the machining operation



**Plate 2:** Detail of sample trench looking south



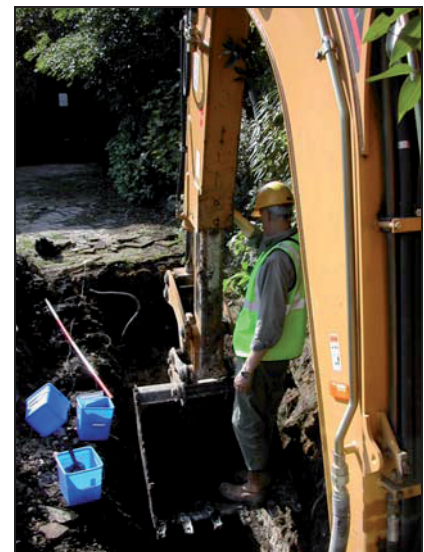
**Plate 3:** Detail of upper horizons of the trench



**Plate 4:** Detail of alluvium and peat looking west



**Plate 5:** Detail of peat/alluvium interface



**Plate 6:** Environmental sampling underway

## 4. Conclusions

- 4.1 The results of the evaluation show that the ground level was artificially raised by 1.9m in the late 18<sup>th</sup> to early 19<sup>th</sup> century. This is almost certainly associated with the construction of the Grand Junction Canal. Below this level there was no evidence for direct human settlement. However, the evaluation trench located what is believed to be a palaeo-channel of the river Bulbourne. This channel, which was probably an ox-bow (*i.e.* cut-off river channel) went out of use shortly before the first build up of peat at around 9780 to 9530 BP (late to mid 8<sup>th</sup> millennium BC) when pine and hazel predominated with some birch, elm and alder. Some 4000 years elapsed between the lowest peat sample and the upper peat sample in 4870 to 4540 BP (late to mid 3<sup>rd</sup> millennium BC), when mainly lime/linden predominated with some oak, elm and alder. The peat was then sealed beneath by a deposit of alluvium, which continued to grow over a period of another 4000 years, only ceasing to develop after the canal was built.
- 4.2 Samples taken from the lower peat deposits in the Gade valley at the Grove, some 12km (7.5 miles) downstream from Castle Wharf provide an interesting comparison with the Castle Wharf samples. These date from 10731-10294 BP (middle of the 9<sup>th</sup> millennium BC) and show that pine and birch woodland was established by that date (Druce *et al* 2002). By 9241-8785 BP (the late 8<sup>th</sup> to early 7<sup>th</sup> millennium BC) the birch and pine woodland had given way to a predominantly hazel woodland (*ibid.*). The uppermost samples dated to between 5307-4870 BP (the 4<sup>th</sup> and 3<sup>rd</sup> millennia BC) show a marked expansion of lime and alder. However, this last date was considered to be problematic due to presence of high concentrations of carbonate (*ibid.*).
- 4.3 The Grove monolith samples span a period from the early to mid-Holocene (11<sup>th</sup> to 7<sup>th</sup> millennium BP). The samples from Castle Wharf also span the early to mid Holocene. However, the dates are later (mid to late 10<sup>th</sup> millennium to late 5<sup>th</sup> / early 6<sup>th</sup> millennium BP). There appears to be a continuous sequence of peat 0.82m thick covering a period of some 4000 years. The existence of any hiatuses in this sequence could only be established by a more detailed study of the deposits. In addition, it is possible pollen may survive in the later alluvium horizon which seals the peat.
- 4.4 The results of the evaluation show that the site contains significant information on the early prehistoric landscape of the Bulbourne valley, a time marked by the transition from temporary to permanent settlement. Their depth makes it less likely that they would be damaged by most conventional types of construction. However, any significant deep excavations or service trenches, other than pile foundations, may require steps to mitigate such development.

## 5. Acknowledgements

The writer is grateful to Colin Bridge of Fourth Avenue Estates Ltd for commissioning this project. Thanks are also due to Kate Batt (who also monitored the work) and Alison Tinniswood of the County Archaeology Office for their advice and pragmatic approach. Advice on and processing of the environmental samples was undertaken by James Rackham (The Environmental Cunsultancy). The writer is also grateful to Chris Higenbottam of Tempietto, to John Rowsell, (Herts and Beds tExcavations Ltd), and to Charles LeQuesne for providing information on The Grove.

The evaluation was carried out for ASC by the writer. This report was edited and checked by Bob Zeepvat BA MIFA.

## 6. Archive

6.1 The project archive will comprise:

1. Brief
2. Project Design
3. Desk-based assessment
4. Evaluation Report
5. Client's site plans
6. Site records
7. Sample records
8. Site record drawings
9. List of photographs/slides
10. Colour slides
11. B/W prints & negatives
12. Original specialist reports and supporting information
13. CDROM with copies of all digital files.

6.2 The archive will be deposited with the Dacorum Heritage Trust.

## 7. Bibliography

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- IFA 2000a Institute of Field Archaeologists' *Code of Conduct*.
- IFA 2001 Institute of Field Archaeologists' *Standard & Guidance documents (Desk-Based Assessments, Watching Briefs, Evaluations, Excavations, Investigation and Recording of Standing Buildings, Finds)*.
- Soil Survey 1983 *1:250,000 Soil Map of England and Wales, and accompanying legend* (Harpenden).
- Zeepvat B 2004: *Castle Wharf, Bridge Street, Berkhamsted, Hertfordshire: Project Design for Archaeological Assessment & Evaluation on behalf of Fourth Avenue Estates Ltd*. ASC document ref. ASC:598/BCW/01.

# Appendix 1: Trench Record Sheet



## TRENCH RECORD SHEET

Project: <i>Castle Wharf</i>		Project code: <i>598/13CW</i>	
Trench number: <i>1</i>		Co-ordinates:	
Length (m): <i>5m</i>		Width (m): <i>1m</i>	
Depth (m):		Area (sq. m.):	
Orientation: <i>N-S approx.</i>			
Plan Nos		Photographic Nos	
Contexts			
<b>Description:</b> The trench was initially 1.8m wide but due to instability was narrowed to 1m. There were 5 principal horizons ① Dark brown, rubble make up containing broken concrete, brick frags, slate, metal, glass, flint stones on top. - 0.9m thick ② Re-deposited chalk and flints. - 1m approx thick ③ Grey alluvium (max 10ya 5/1) - 0.7m thick ④ Black organic peat - 0.82m (max 10ya 2/1) ⑤ pale brown (max 10ya 6/3) gravelly chalk silt (max 5mth) (hit)			
<b>Sketch Plan/Section:</b> 			
Recorded By: <i>J.R.H</i>		Date: <i>3/9/04</i>	

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## Appendix 2: Specialist Reports

### A preliminary pollen analysis of the palaeochannel peat sequence.

*Rob Scaife and James Rackham*

#### 1.) Introduction

Samples taken from the well humified peats of a possible palaeochannel lying on the floodplain of the River Bulbourne have been examined for their sub-fossil pollen and spore content, and radiocarbon dates have been obtained from the base and top of this peat sequence. The deposits comprised 0.82m of black organic peat overlying pale brown chalky silt with many small flints. The organic deposits were overlain by grey alluvium. The depth and character of the deposits suggests that the organic sediment is infilling an old channel of the River Bulbourne. If pollen is present a more detailed examination could provide useful information on the past vegetation and environment of the site and nearby region. This might also include information on human impact in the region. Furthermore, such information for this region is poor and any data relating to these aspects might be regarded as important. Pollen samples from the top and bottom of this 0.82m sequence have been examined and a bulk sample of sediments at the top and bottom were also submitted for radiocarbon dating. Pollen and spores have been recovered and this short report details our preliminary findings and the results of the radiocarbon dates.

#### 2.) Radiocarbon dates

Approximately half a kilogram of sediment from the samples collected from the top and base of the organic sequence in the trench was submitted to Beta Analytic Inc, Florida, for radiocarbon dating. The results of the analysis are detailed in Table 1 and the calibration curves are presented at the end of this report.

**Table 1.** Results of the radiocarbon dating of the two peat samples

Sample Data	Measured Radiocarbon Age	13C/12C Ratio	Conventional Radiocarbon Age(*)
Beta - 196794	8730 +/- 60 BP	-28.6 o/oo	8670 +/- 60 BP
SAMPLE : BCW04, T1, BASE of PEAT			
ANALYSIS : Radiometric (bulk low carbon analysis on sediment)			
MATERIAL/PRETREATMENT : (organic sediment): acid washes			
2 SIGMA CALIBRATION : Cal BC 7910 to 7900 (Cal BP 9860 to 9860) AND Cal BC 7830 to 7580 (Cal BP 9780 to 9530)			
Beta - 196795	4260 +/- 70 BP	-27.8 o/oo	4220 +/- 70 BP
SAMPLE : BCW04, T1, TOP of PEAT			
ANALYSIS : Radiometric (bulk low carbon analysis on sediment)			
MATERIAL/PRETREATMENT : (organic sediment): acid washes			
2 SIGMA CALIBRATION : Cal BC 2920 to 2590 (Cal BP 4870 to 4540)			

### 3.) Pollen Method

Two pollen sub-samples of 2ml volume were processed using standard techniques for the extraction of the sub-fossil pollen and spores (Moore and Webb 1978; Moore *et al.* 1992). Micromesh sieving (10 $\mu$ ) was also used to aid with removal of the small clay fraction in these sediments. The concentrated sub-fossil pollen and spores were identified and counted using an Olympus biological research microscope fitted with Leitz optics. Taxonomy used, in general, follows that of Moore and Webb (1978) modified according to Bennett *et al.* (1994) for pollen types and Stace (1992) for plant descriptions. These procedures were carried out in the Palaeoecology Laboratory of the Department of Geography, University of Southampton.

### 4.) The Pollen Data

Pollen is abundant enough to allow standard statistically valid pollen counts to be made and a pollen diagram could be constructed. Preservation of the microfossils is also good. The two samples are described as follows.

**Sample 1:** The top of the peat: Trees and shrubs are dominant in this sample. The former comprises largely *Tilia cordata* (lime/linden) with some *Quercus* (oak), *Ulmus* (elm) and *Alnus glutinosa* (alder). There are also sporadic *Pinus* (pine) grains. Shrubs comprise *Corylus avellana* type (hazel and possibly sweet gale) and *Hedera helix* (ivy). The only herbs noted are *Poaceae* (grasses). Spores of ferns include *Equisetum* (horsetail) and *Pteridium aquilinum* (bracken).

**Sample 2:** The base of the peat: Trees and shrubs are dominant but with some herbs also present. The former are dominated by *Pinus* (pine) and *Corylus avellana* type (hazel). Other trees include small numbers of *Betula* (birch), *Ulmus* (elm) and *Alnus glutinosa* (alder). Herbs comprise a range of wetland taxa including *Cyperaceae* (sedges), *Typha latifolia* (greater reed-mace) and *Filipendula ulmaria* (meadow-sweet). Other herbs noted are *Ranunculus* type (buttercups), *Centaurea scabiosa* type (knapweeds), *Plantago major* type (greater plantain) and *Poaceae* (grasses). Spores of ferns include *Pteridium aquilinum* (bracken) and *Equisetum* (horsetail).

### 5.) Discussion

The pollen data obtained are in full accord with the radiocarbon dates produced from the bulk samples and with the generally recognised development of the prehistoric vegetation. Sample 2, the basal peat is the oldest and radiocarbon dated to the late Boreal period (Flandrian chronozone Ib-c). This is the late part of the early Mesolithic. The pollen suggests a vegetation of pine woodland which was being replaced by deciduous trees including oak, elm and hazel. This is diagnostic of the successional vegetation changes which took place during the early Holocene and culminating in the establishment of climax woodland during the middle Holocene (Flandrian chronozone II) after c. 7,000 BP. The on-site vegetation was probably grass-sedge dominated fen.

The uppermost sample 2 is dated to the Neolithic period and just post-dating the 'primary elm decline', that is after c. 5,500 to 5,000 BP. The pollen spectra are in accord with this showing that the Neolithic vegetation contained substantial woodland elements dominated by lime after elm had become wasted from the environment. The quantities of lime pollen (*Tilia cordata*) suggest this was the dominant tree. This is especially as its pollen is severely under represented in pollen spectra due to entomophily and flowering during the summer when trees are in leaf, which further inhibits its pollen dispersion (Andersen 1970, 1973). Alder is noted and was probably growing on the floodplain.

### **6.) Potential for further work**

Pollen is well preserved and it would be possible to construct a pollen diagram and provide a vegetation and environmental history for the site. This could be especially because it appears that the peat sequence may span the late Boreal period and transition into the middle Holocene Atlantic period (Flandrian II) and the transition into the sub-Boreal (Flandrian III), Neolithic period. Thus, this profile may show the whole of the middle Holocene, late-Mesolithic environment and the transition into the Neolithic, including the primary elm decline and any subsequent and local 'Landnam' (temporary) clearances and the first introductions of agriculture.

Clearly the single samples discussed above, whilst providing some insight into the vegetation at the time of their accumulation, cannot show detailed temporal changes in the environment. The dating has shown that a significant, and fairly long, period of early prehistory is likely to be represented within these peat sediments. They therefore afford the opportunity to study the local vegetational sequence and identify the impact of Mesolithic and Neolithic populations upon it. Radiocarbon dating of specific 'pollen' events in the sequence would afford a chronology for the early utilisation of the Bulbourne Valley by people and the possible onset of Neolithic agriculture in the area. Further pollen and dating work on this sequence is recommended and would require a core or monolith profiles. These should be sampled at standard 4cm intervals or closer if appropriate and statistically significant pollen counts made from each sample. The latter may be 500 grains or more where preservation permits. This would allow construction of a pollen diagram from which interpretation about the Mesolithic and Neolithic habitats could be made. Although two radiocarbon dates have already been obtained, it is probable that additional dates will be required for any significant changes which become apparent in the fuller pollen analysis, for example, the 'elm decline' or evidence for Neolithic agriculture.

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### Appendix 3: SMR Summary Sheet

Site name and address: Castle Wharf Bridge Street Berkhamsted		
County: Hertfordshire		District: Dacorum
Village/Town: Berkhamsted		Parish: Berkhamsted CP
Planning application reference: pre-determination		
Client name, address, & tel. no: Fourth Avenue Estates Ltd Jansel House Stopsley Green Hitchin Road Luton LU2 7XN		
Nature of application: Residential development		
Present land use: Boatyard		
Size of application area: 0.07 ha		Size of area investigated: 5m x 1.8m
NGR (to 8 figures): SP 9959-0794		Site code: 598/BCW
Site director/Organization: J.R. Hunn ASC		
Type of work: Evaluation		
Date of work:	Start: 3/9/04	Finish: 3/9/04
Curating museum: Dacorum Heritage Trust		
Related SMR nos:		Periods represented: Mesolithic to late Neolithic
Relevant previous summaries/reports: ASC: 598/BCW/02		
<p>Summary of fieldwork results:</p> <p><i>In September 2004 an archaeological evaluation was undertaken at Castle Wharf, Bridge Street, Berkhamsted, Hertfordshire, on behalf of Fourth Avenue Estates Ltd. The work was required in advance of proposed residential redevelopment, and followed a desk-based study of the site. Beneath a 2m horizon of made-up ground was a layer of alluvium, sealing what is believed to be an old river channel. Within this 'palaeo-channel' was a thick deposit of peat created between the later part of the early Mesolithic (9700 to 9550 Cal BP) and the Neolithic (4760 to 4640 Cal BP). This represents a time span between the late Boreal period, when pine woodland was being replaced by deciduous trees, and the Atlantic period, when there was predominance of lime woodland. This 4000-year period covers the time when mankind first had an impact on the landscape, and when humans first settled n, or adjacent to, the Bulbourne valley.</i></p>		
Author: J. R. Hunn		Date: 10/11/04