Landscape Evolution in the Middle Thames Valley

Heathrow Terminal 5 Excavations Volume 1, Perry Oaks

by Framework Archaeology

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The Freeviewer CD-Rom

The volume is accompanied by a CD-Rom containing the Framework Archaeology Freeviewer. This GIS viewing software has been developed to enable readers to have access to more data than would be possible in a traditional publication. The monograph and Freeviewer are designed to be used together so that if more data is required in order to view the evidence supporting a particular argument presented in the text, it will be possible to consult the particular dataset via the Freeviewer. Filters can be applied to show different distributions of finds material by date, and at the start of Chapters 1–4 in this volume there are there Freeviewer boxes referencing particular queries that are available within the Freeviewer (eg 'Bronze Age waterholes' or 'Roman buildings'). Please note that much of the data within the Freeviewer is essentially primary data, in that it represents material and ideas generated on-site, without additional post-excavation analysis. Because of this there may be the occasional discrepancy with the data as presented within this volume. In addition to the Freeviewer, the CD-Rom also contains the full set of finds and environmental reports in PDF form as listed below:

1 Prehistoric pottery *by Rachel Every and Lorraine Mepham*
2 Romano-British pottery *by Kayt Brown*
3 Flint *by Kate Cramp*
4 Bronze Age metalwork *by Andrew J Lawson*
5 Stone axe *by Fiona Roe*
6 Wooden finds *by Steve Allen*
7 Roman lead tank *by David Petts*
8 Human bone *by Jacqueline I. McKinley*
9 Waterlogged plant remains *by Wendy J. Carruthers*
10 Wood charcoal and charred plant remains *by Dana Challinor*
11 Palynological analysis *by Pat Wiltshire*
12 Insects *by Mark Robinson*
13 Soil micromorphology *by Helen A Lewis*
14 Sediments *by Martin R Bates*

Instructions for installing the Freeviewer are presented below:

1. Insert the CD-Rom in your CD Drive
2. If Autoplay is enabled then the Framework Archaeology Installer will start. Otherwise double-click on the CD-Rom Drive letter in My Computer or select Autoplay from the right click pop-up menu.
3. Once the Framework Archaeology Installer has started, you should install the Framework Archaeology Freeviewer (menu option 1). Click the button to start the installation.
4. This starts a standard install program for the Framework Freeviewer. Follow the instructions of this installer. At the end of this process, you will then need to install the data.
5. Use the menu option 2 to start the installation of the data for the Perry Oaks excavations and follow the instructions. You may need to be patient as this can take some time to complete. During the installation you will be prompted to either accept the default location on your computer for the data or you can specify a location of your choice.
6. Once you have installed the data you can then exit the Framework Archaeology Installer by clicking the exit button.
7. Now you can start to explore the data using the Framework Archaeology Freeviewer. You will find a short-cut on the desktop to start the program. The Programs section of the Start Menu will also contain a folder called Framework Archaeology which contains short cuts to start the program and a link to the Help File. Help can be accessed within the program by pressing the F1 key or by using the Help option on the pull-down menu.

System requirements

The program requires 12MB of disk space to install and once installed will take up 3.5MB of disk space. The data (varying by project) may require approximately 1.1GB of free disk space and will use approximately 500MB of disk space once installed for the largest Framework Archaeology project. You will require as a minimum a 500 Mhz processor or better. The program is a Windows®-based application designed to run on Windows 2000® and Windows XP® operating systems. It will also run on Windows 98® but with limitations. Running on Windows 2000® and Windows XP® you will typically require 256MB of memory. The program will run with less memory but with a performance impact. Since the program includes a Geographic Information System, you will find that using the program is more comfortable at higher screen resolutions. The program is designed to run on a minimum screen resolution of 800 by 600 pixels but a screen resolution of 1024 by 768 or higher will greatly improve your experience of the Framework Freeviewer.

Data formats

The data is presented using the following data formats:
Database attribute data is in Microsoft Access 2000® format (.mdb) and stored in the AttributeData folder under the project folder, Perry Oaks. The mapping data is stored in ESRI® shapefile format (.shp) and stored in the SpatialData folder under the project folder, Perry Oaks. Supporting images such as sections and digital photographs are in .jpg format and stored under Sections and Photos folders under the project folder, Perry Oaks. The data can be directly accessed using your preferred Geographic Information Software if required.

Foreword

Almost 9000 years ago humans who lived by hunting and gathering dug a series of small pits on land overlooking a small river valley in what is now West London; today that site is covered by part of the newly constructed Terminal 5 at Heathrow Airport. These two events form part of a continuous human history of this area linking the people of early prehistoric times to those of the present day. This volume seeks to illuminate that history in some detail. That we are able to do so is because of a substantial programme of archaeological excavations undertaken as part of the Terminal 5 development.

Archaeological excavation is now a normal and accepted part of many development projects. Terminal 5, however, has not been a normal development; it has been one of the biggest construction projects in the world and this has presented particular challenges. From the outset, BAA was determined to ensure that Terminal 5 set new standards and benchmarks for UK construction. Building on its pioneering approach to partnering and taking further inspiration from the 1998 Egan report, Rethinking Construction, BAA created a bespoke commercial partnering agreement with contractors and suppliers called the T5 Agreement. This was a contract based on relationships and behaviours, designed to expose and manage risk rather than transfer that risk to other parties. Open communication, collaboration and an ethos of continuous improvement in the interests of achieving excellence were expected as standard on the project. These principles were applied across the whole range of construction-related activities, be it the delivery of aircraft pavements, baggage handling systems or, indeed, archaeology.

The archaeological project required a particular blend of field skills, academic expertise and liaison with the client. Much of the success of the project has been due to the appointment of a strong archaeological team of contractor and consultants, and to the excellent working relationship which the team has established with BAA. It was considered that the size of the excavation would stretch the resources of any one archaeological contractor and BAA was instrumental in setting up Framework Archaeology, a joint venture of Oxford Archaeology and Wessex Archaeology, the first occasion such an arrangement had been employed in a development context. From the beginning it was seen that a commitment to excellence would involve academic guidance and Professor John Barrett of Sheffield University has acted as academic advisor and played an important part throughout.

The archaeological team's challenge was to put in place a programme which would result in the greatest possible contribution to knowledge in as cost-efficient a manner as possible. Development-led archaeology is sometimes criticised as being simply an exercise in recording the remains on a site, with insufficient thought being given to what the value of the results might be. The Terminal 5 research design lies at the heart of the archaeological programme and its focus has been the history of human lives, rather than the recording of material remains; it has been about people, not things. Our desire has been to make this history available to the widest possible audience. A key objective of the archaeological work was the production of a narrative of the human history of the site which would be both accessible and updated as work progressed. This strategy proved very successful during excavation and stimulated interest in and support for the archaeological programme across the entire construction project and also within the local community.

Managing research - a process of asking questions about the past and seeking answers from the archaeological evidence contained in the ground - on the scale demanded by the Terminal 5 programme was a major challenge. BAA provided development funding to enable the archaeological team to review established working practices and re-design the archaeological process. Above all, what was sought was the active engagement of every member of the archaeological team in writing the history of the site. By demanding that each excavator move beyond the simple requirements of recording to the challenge of understanding the historical conditions in which people had lived, the programme not only required more of the excavation team but reaped the benefits in high levels of motivation. The feedback from members of Framework Archaeology who worked on the site has been extremely positive.

The style of this volume has tried to capture something of the immediacy and freshness of the developing on-site narrative, an approach which has been made possible by the digital presentation of detailed data on disc. The archaeological project is still very much "work in progress"; in accordance with spirit of the Terminal 5 programme it is hoped that the approach will be developed in the future and will stimulate discussion and debate within the archaeological profession.

The successful implementation of the archaeological programme on a development the size and complexity of Terminal 5 has been a considerable achievement and the archaeological discoveries made have amply repaid the efforts expended by all concerned. The excavations described in this and the forthcoming volume have recovered remarkable detail about past lives and made a major contribution to our understanding of the past.

Gill Andrews
Archaeological Consultant to BAA plc

Summary

Between 1996 and 2000 Framework Archaeology undertook extensive excavations of an important prehistoric and Roman landscape at Perry Oaks sludge works, Heathrow, Middlesex. This volume presents the results of these excavations. Further archaeological work in advance of a fifth passenger terminal ('T5') at Heathrow Airport took place from 2002 onwards, and the results of those excavations will be integrated with the data contained in this volume, to be presented in Volume 2 of this series.

The earliest evidence of human habitation at Perry Oaks comprised a handful of pits which were dug in the 7th millennium BC at a location on the edge of the Colne floodplain. In the late 4th millennium BC, the landscape was transformed by the construction of the C1 Stanwell Cursus, one of the great monuments of Neolithic Britain. This event was followed by the construction of a second cursus (the C2 Cursus) and a small horseshoe shaped enclosure. In the space of a few centuries or less, people had transformed the landscape from one defined by memories of ancient locations to one defined by the architecture of earthen banks and ditches. However, by 1700 BC further changes led to the replacement of a system that apportioned land and resources through ceremony to one of physical demarcation: the first land tenure and field divisions. Settlements became archaeologically visible and landholdings developed into a landscape of small and large fields traversed by ditched trackways. This landscape supported a mixed arable / pastoral agricultural economy, supplemented by resources from the innumerable hedgerows which divided the fields. People maintained links with the past through ceremonies resulting in particular artefacts being deposited in the base of waterholes.

From the late 2nd millennium BC the pattern of small settlements scattered across the landscape changed to one of fewer and larger settlements. Little specific evidence was recovered for early Iron Age activity, but major elements of the Bronze Age agricultural landscape appear to have persisted well into this period. Waterholes appear to have retained their status as places of offering for generations of farmers during the late Bronze Age/early Iron Age whilst hedgerows were maintained and ancient trackways respected. Over this period, the Perry Oaks landscape came under the control of new cultural and economic influences and designs, culminating in a gradual transformation which saw the emergence in the middle Iron Age of a nucleated settlement of roundhouses. This in turn became a focal point for continuing occupation and ceremony through into the Roman period. However, the Perry Oaks landscape of the later Roman period largely overwrote the previous land divisions, focussing outwards and away from the ancient local community. Some fossilisation of this late Roman landscape can be traced in the medieval ridge and furrow and the alignment of a post-medieval trackway, although by this time the site appears to have reverted to localised rural inhabitation and agricultural regime.

Acknowledgements

The various phases of the Perry Oaks project have involved contributions from many people.

BAA

We are grateful to the Managing Director of the Terminal 5 Project, Eryl Smith, and Terminal 5 Construction Director, Norman Haste, for their interest and support.

The Framework Joint Venture was fostered on behalf of BAA by Andrew Gibson to whom we owe a great deal of thanks. The conduct of the excavations themselves was managed for BAA by Tony Power and David Harwood together with Ashley Hollington of EC Harris.

The staff of Laing O'Rourke provided essential advice and guidance, particularly Andy Anderson, Nick Harris and David Lloyd. Lorne Ireland and Jim Hodgekiss managed the plant, equipment and attendances with consummate professionalism.

BAA Consultancy and Advice

Many thanks are due to BAA's archaeological consultant, Gill Andrews, and academic advisor, John Barrett, who have provided constant support, advice and feedback through all stages of the project.

The principal contributions from Framework Archaeology staff

The Project was managed and directed by John Lewis and Ken Welsh. The planning of the project was aided by numerous contributors including Andy Crockett, Gill Hey, Sue Davies, George Lambrick, David Jennings and Jonathon Nowell. Linda Coleman undertook the topographic and truncation modelling. The difficult task of supervising the machine stripping and survey of the site under extremely bad weather conditions was undertaken by Nicholas Cooke. He and Jeff Muir were the principal Project Officers who oversaw the main excavations. The site supervisors were Angela Batt, Fraser Brown, Nicholas Mitchel (who also recorded the waterlogged wooden remains), Rob Johns, Jenny Morrison, Rod Brook, Richard Conolly, Jo Best and Simon Mortimer. Simon Mortimer also directed the excavations at Northern Taxiway (GAI99) and Grass Area 21 (GAA00), and was assisted at the latter by Phil Jefferson. Lorraine Mepham together with Leigh Allen managed the processing, recording and on-site analysis of the artefact assemblage which was undertaken by Rachel Every. Andy Bates recorded and reported

on the animal bone assemblage. Dana Challinor was responsible for environmental sampling and processing. Kirsten Miller and Rosemary Wheeler scanned and digitised the plans and sections and oversaw the entry of data onto the database. Paul Miles provided computing support and advice. Anthony Beck developed the Framework database system and was responsible for surveying and all on-site computing. The scale of this achievement cannot be underestimated. Keith Westcott developed the stratigraphy-ranking algorithm. Niall Donald replaced Anthony Beck at the end of the fieldwork and has made a similarly important contribution. He has managed the data as well as stabilising and refining the database and GIS system. In particular, Niall has created the concept of entities as analytical tools and this has proved an important advance in the Framework Archaeology analytical process. The Framework Freeviewer software was also developed by Niall Donald.

Site archaeologists

The most important contribution to the project was from the site archaeologists in the form of the excavation, recording and on-site interpretation, without which there would be no report. However, the site staff not only shaped the nature of the excavation and the archive, but also the ethos of Framework Archaeology. The archaeologists involved were:

J Alcock, C Appleton, R Barrett, C Barton, A Bates, S Bates-Lacy, A Beaucock, C Bloor, K Blythe, P Breach, G Campbell, M Campbell, S Clelland, K Colls, R Court, S Craig, J Crisp, C Cropper, N Dagless, N Dale, M Davis, S Dennis, L Dicicilia, A Dicker, J Dilcock, P Durnford, J Eaton, F Edwards, S Exelby, T Fairclough, P Gajos, T Gent, F Gibson, J Gidlow, E Glass, R Golding, S Hamblett, D Harris, S Harris, J Helmsley, E Hemming, B Hennessy, R Hoyle, R Johns, C Jones, N Lambert, C Lawson-O'Brien, S Leech, B Lewis, C Lowe, G Mabbott, D Maricevic, L Martin, T Mellor, B Middleton, D Miller, S Morris, P McNulty, P Noble, E Noyce, M Orna-Ornstein, P Owen, A Page, A Paul, J Pearce, M Pearce, N Plunkett, P Poucher, A Prior, A Rackley, R Radford, N Redvers-Higgins, D Rodgers, J Rolfe, A Smallcross, J Stedman, D Stevens, M Stewart, D Sykes, E Taylor, S Thomas, M Thompson, S Thompson, R Villa, M Walter and R Woodgate.

The 1996 Museum of London Archaeology Service excavation at Perry Oaks (site code POK96) was managed by Simon Mason and directed in the field by Stuart Hoad.

Specialist support both on site and during post-excavation analysis

S Allen, M R Bates, K Brown, W J Carruthers, D Challinor, K Cramp, R Every, A J Lawson, H A Lewis, J I McKinley, L Mepham, D Petts, M Robinson, F Roe and P Wiltshire.

The post excavation analysis and publication programme also involved many staff in addition to many of those mentioned above. Fraser Brown, Angela Batt and Nicholas Cooke undertook the analysis and produced the first drafts of the main chapters. This was a particularly difficult task, since the format, style and content of the report was far from clear to anybody at the time. In addition, until Niall Donald developed the Framework Freeviewer software, the mechanism for distributing the digital data in a coherent form was absent. These chapters were subsequently reviewed and additional analysis and content provided by John Lewis with John Barrett, Alex Smith and Lisa Brown. Alex Smith edited the volume. The artefacts were drawn by Elizabeth James. The reconstruction work was done by Tom Goskar and Karen Nichols. Karen Nichols produced the final publication figures, typeset and designed the layout of the monograph.

Curatorial Advice

We would like to thank Greater London Archaeological Advisory Service (GLAAS) officers Robert Whytehead and Jez Reeve for advice throughout the project, and Jon Finney (Principal Architect / Planner, London Borough of Hillingdon) and Harvey Sheldon who monitored the fieldwork programme on behalf of the London Borough of Hillingdon. We are particularly grateful to Jonathan Cotton of the Museum of London who has provided much valuable advice, knowledge and encouragement over many years.

Framework Joint Venture Board and Management Team

The joint venture was agreed and overseen by the then chief executives of Wessex and Oxford Archaeology, Andrew Lawson and David Miles, together with Peter Dawes and Simon Palmer. This role has continued under the present Chief Executives, David Jennings and Sue Davies together with Clive Burrows who replaced Peter Dawes. The Framework Management team is composed of John Dillon and Bob Williams who provide guidance and advice.