

C21st challenges in archaeology



Historic England

The creation of Historic England in April 2015 was arguably the biggest organisational change in the statutory arrangements for managing England's historic environment since its predecessor English Heritage was created in 1984. This has afforded our organisation an opportunity to re-examine a number of areas of its activity in the light of wider governmental, economic and societal changes. This has

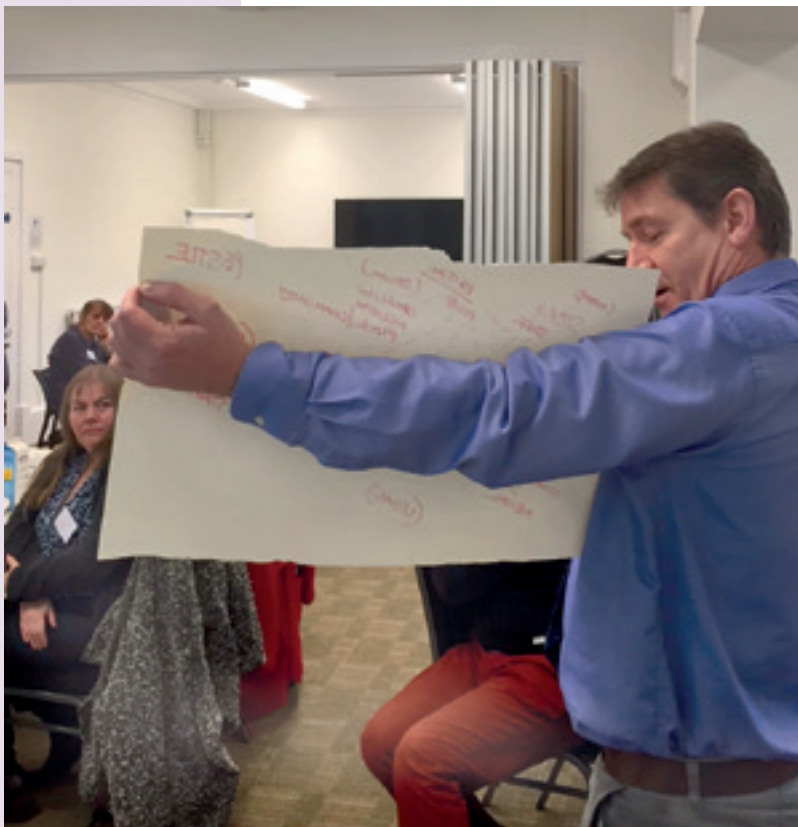
included a detailed review of our relationship with key aspects of archaeological practice: something we have not done for a number of years. Critically, this process has taken place against the backdrop of a halving of Historic England's funding over the last decade, a result of the wider reductions in public expenditure which followed the financial crisis of 2007–8.

One pillar of our review process was a rolling programme of topic papers discussed with our statutory Historic England Advisory Committee during 2016 and 2017. The second pillar was the exploration of a number of key topics with the wider archaeological sector through a series of '21st Century Challenges in Archaeology' workshops in 2017, which we were delighted to sponsor jointly with the Chartered Institute for Archaeologists.

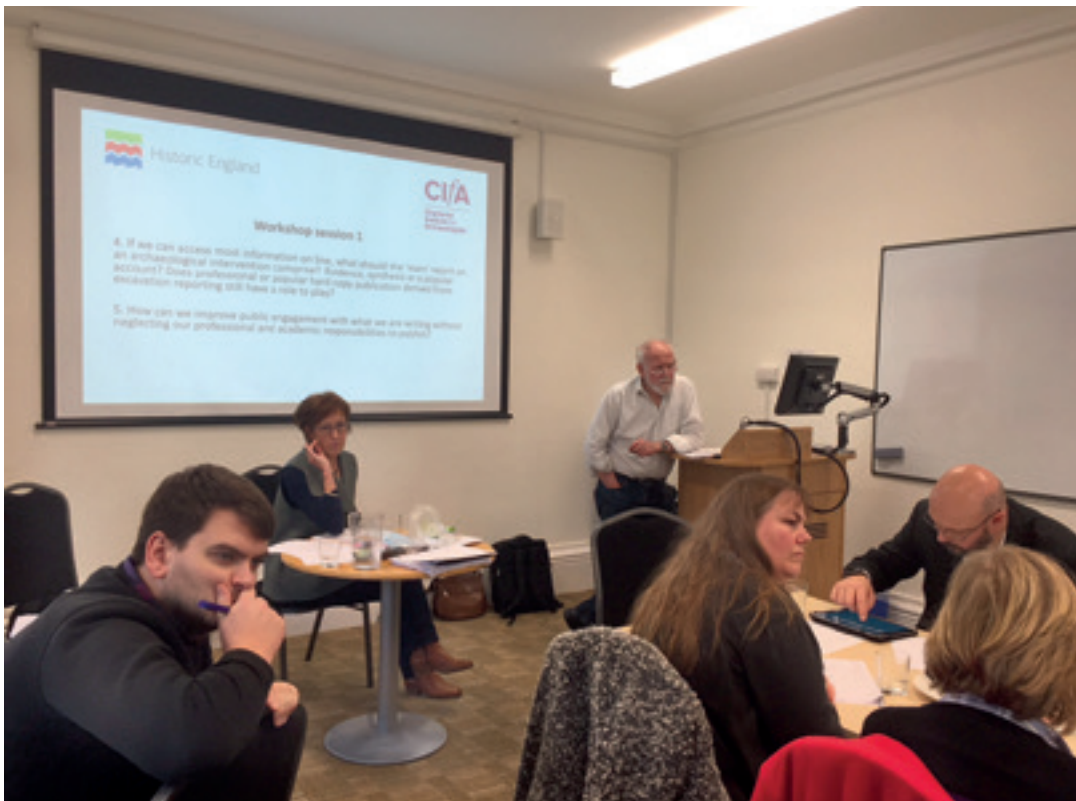
In scoping these workshops, we were aware that others were also considering the strategic future of the discipline from different vantage points. Of particular note was the decision by the British Academy to address archaeology in the second of its Reflections on Disciplines exercises (see: www.britac.ac.uk/reflections-disciplines) and, simultaneously, a lively debate amongst European archaeologists about the merits of practice models with differing degrees of state control and commercial freedom (see: www.ff.uni-lj.si/sites/default/files/Dokumenti/Knjige/e-books/recent.pdf and http://old.european-archaeological-council.org/files/amersfoort_agenda_english.pdf).

With no immediate prospect of new English heritage legislation on the horizon and the UK's political and economic future in transition, Historic England's review process has been deliberately focused on addressing current practical challenges and 'art of the possible' responses. Our ambition has been to identify pragmatic solutions that can be delivered within the current statutory framework and financial discipline, rather than on longer-term and more aspirational change.

The six workshops hosted by ClfA during 2017 examined the following themes:



Workshop participants engaged in discussion at one of the events: participants represented a wide range of professional backgrounds and organisations.



Workshop participants engaged in discussion at one of the events: draft recommendations were captured and will inform future action.

- Professional standards and guidance: who sets them and what are they for?
- New models for local curatorial services: potential future roles for local authority archaeology services and Historic England
- Designation and management of the archaeological resource in the context of a changing planning system
- New models for archive creation, deposition, storage, access and research
- Synthesis of information from developer-funded investigation to create new historical narratives
- Challenges of archaeological publication in a digital age: who are we writing this stuff for anyway?

Around 150 individuals attended the workshops, with over 90 people contributing to preceding online discussions, and a follow-up session, *Pulling together: collaboration, synthesis, innovation*, was held at ClfA's 2018 conference in Brighton. The notes for each workshop and the conference session, together with an overall summary report, can be seen on the ClfA website at www.archaeologists.net/21st-century-challenges-archaeology.

The workshops have identified a range of detailed practical actions to follow up. We anticipate these will form a work programme for Historic England, ClfA and other stakeholders

over the next few years. Some of these actions are already in hand, particularly those relating to archaeological archives, which have been prioritised in order to take advantage of the momentum created by *'The Mendoza Review: an independent review of museums in England'*.

In addition to these practical actions, it is also important to note that several key themes have also been highlighted by the C21st Challenges initiative, which will be a focus for continuing discussion: not least the need for the discipline to focus on demonstrating its value to the public in terms of participation, engagement and new historical narratives; the need for stronger and clearer, but still plural, sector leadership; and the vital importance of a confident and influential professional institute for archaeologists operating in the UK, in what will probably continue to be the most deregulated system for archaeological practice in Europe.

**Steve Trow, Director of Research,
Historic England (to March 2018)**

**Barney Sloane, Director of Research,
Historic England (from April 2018)**

Scotland's archaeology strategy



Scotland's Archaeology Strategy was launched by Fiona Hyslop MSP, Scotland's Cabinet Secretary for Culture, Europe and External Affairs, at the European Association of Archaeologists' Annual Conference in Glasgow in September 2015. It aims to create a Scotland where archaeology is for everyone – a place where the study of the past offers opportunities for us now and in the future to discover, care for, promote and enjoy our rich and diverse heritage, contributing to our wellbeing and knowledge and helping to tell Scotland's stories in their global context.

Key to the delivery of the strategy is partnership. Various individuals and organisations are collaborating to deliver on shared aims and objectives, all intended to make archaeology matter and ensure public benefit from our activities. Different organisations lead on each of the key aims, with numerous other partners identified. The five aims are as follows:

- Delivering Archaeology – led by Historic Environment Scotland
- Enhancing Understanding – led by the Society of Antiquaries of Scotland, who lead on the Scottish Archaeological Research Framework (ScARF)
- Caring and Protecting – led by ALGAO Scotland and the National Museums Scotland
- Encouraging Greater Engagement – led by Archaeology Scotland
- Innovation and Skills – led by the Chartered Institute for Archaeologists.

In addition to the lead partners, the strategy actively encourages participation from across the heritage sector: amateur, student and professional. The delivery of the strategy is now on its journey, and activities range from strategic information gathering, intended to underpin future delivery, through to projects directly promoting innovation, best practice, and improving how we undertake, present and disseminate the results of archaeological research.

The Society of Antiquaries of Scotland is, with local partners, leading on regional research frameworks across Scotland (known as ScARF). ScARF aims to promote and support research while ensuring that all archaeological investigations are underpinned by research objectives, to develop the pool of knowledge that is relevant to local communities, and address the questions they may have regarding the history of their area. It also has a student



Training excavations at Castle Law, Forgardenny in 2014 (Photo: Glasgow University)

network, which is intended to encourage students to collaborate and share their research, which will ultimately keep the framework relevant and up to date, while providing students with a level of practical experience regarding publicity and presentation. The network can also be seen as ensuring the sustainability of ScARF as a continually updated archaeological resource, as it will be used and trusted by future archaeological experts from the beginnings of their academic and working lives.

Archaeology Scotland has established an Archaeology and Learning Working Group with membership from across the sector, to help drive forward greater engagement and opportunities for learning for all ages. It has recently established the Heritage Hero Awards to offer a framework and reward system for all ages through creative, collaborative working. Groups and individuals can be inspired to investigate and engage with Scotland's past in a variety of different ways. The awards are now a recognised youth award, which can also be combined with other award schemes to give them a heritage steer, including the Duke of Edinburgh's Award, John Muir Award or SCQF accredited Dynamic Youth Award.

Historic Environment Scotland has aligned its Archaeology Programme grants scheme to deliver on the aims and objectives of the strategy, including numerous field projects. In 2017, which was a Scottish Government themed *Year of History, Heritage and Archaeology*, some 20 field projects were funded, from Black Loch of Myrton in Dumfries and Galloway to the Bay of Ireland in Orkney. 2017 also saw the completion of the excavation phase of the Strathearn Environs and Royal Forteviot project, run by the University of Glasgow, a research and field school exploring the evolution of the rich landscape of Forteviot in Strathearn featuring sites from the first farmers in the area through to a Pictish royal power centre. Post-excavation work is ongoing, with more exciting ways to tell the story of this significant landscape still to come. But over a decade, some 400 students and 250 volunteers have been trained in archaeological field techniques, with many of the alumni now working as professionals in the heritage sector.

Work on delivering the vision for the Strategy is ongoing, with further information available on the Strategy website: <http://archaeologystategy.scot/> and on social media: #ScotArchStrat.



Young Heritage Heroes at work (Photo: Archaeology Scotland)



Dr Rebecca Jones BA PhD FSA FSA Scot MCIfA is Head of Archaeology and World Heritage at Historic Environment Scotland.

Young Heritage Heroes receiving their awards (Photo: Archaeology Scotland)

Professor Stephen Driscoll BA MSc PhD FSA FSA Scot is Chair of the Scottish Strategic Archaeology Committee, which oversees and drives forward the work on the strategy, and Professor of Historical Archaeology at the University of Glasgow.

The way forward for archaeology in Northern Ireland



*The Way Forward for Archaeology in Northern Ireland Steering Group
Caroline Nolan,
Gabriel Cooney,
Rhonda Robinson,
Lianne Heaney,
Colin Dunlop,
Iain Greenway and
John O’Keeffe
(Photo: Historic Environment Division)*

The heritage sector in Northern Ireland has warmly welcomed the recent initiative to work collaboratively to develop a Way Forward for Archaeology in the region. A symposium, convened by Historic Environment Division (HED) (Department for Communities) provided the catalyst for this project and sparked a wide-ranging discussion amongst the main sections of the profession – commercial, academic, professional bodies, government and voluntary/community. What emerged was an acknowledgement that relations between the sectors have drifted and a recognition that for the value of archaeology to be fully realised there needs to be a common voice and a strategic direction.

Feedback from the symposium identified four main themes, around which task groups have been established. Each group, with representation from across the sector, will formulate an action plan to take forward key issues. The chairs of each of the task groups are from across the sector, and deliberately external to government. The chairs and HED representatives regularly meet in a steering group to provide co-ordination and maintain momentum. The four task groups are focusing on:

Skills and training

This group is identifying particular areas where there is a current or emerging deficit, for example the small number of conservators and artefact specialists and the short supply of experienced field archaeologists which is causing problems in securing sufficient staff to deliver within tight timeframes. Greater collaboration between the commercial, academic and other partners is exploring the development of a range of pathways into archaeology, which may encourage more people to consider it as a career and help to address the skills deficit. Accreditation is another element which is being explored.

Legislation, policy, procedures and standards

These are clearly some of the critical factors in influencing how archaeology can deliver more effectively. The Historic Monuments and Archaeological Objects (NI) Order 1995 is over 20 years old and no longer reflects much of the operational environment in NI. Likewise, Planning Policy Statement 6, Planning, Archaeology and the Built Heritage, also needs to be replaced. Excavation licencing is one of the key strengths

of the order, and this needs to be built upon with an updated suite of guidance documents and associated standards and procedures. The task group offers an opportunity to identify and address the key issues as seen from the full range of archaeological practitioners.

Communication and engagement

There is a clear need to ensure that the value of heritage is articulated effectively, understood and embedded in both the Programme for Government and in our communities. To achieve this, archaeology needs to be seen as bringing benefits, and this needs to be demonstrated to those who manage the historic environment, from the landowners to local councils and developers. This group is identifying key audiences and influencers and considering how best to communicate the message.

A framework for archaeology and archives

There is consensus that the archaeology sector in NI needs to find a better way to collate the information generated by excavations and research, and transform this into knowledge and understanding, which increases valuing, caring and engaging with our historic environment.

This work is particularly important at a time when HED is considering options for addressing the lack of central repository for archives generated through the excavation process in NI. Similarly, there is a need to agree ways of archiving and making the information derived from excavations accessible. Engagement and input from across the sector will be key to delivering this.

Delivery

The ambition of the Way Forward for Archaeology in NI project is to deliver a collaborative and appropriately skilled and resourced profession, supported by strong policies, procedures and standards. Information and archives will be curated and accessible and there will be good communication, both within the sector and with the public, which articulates the value and benefits of archaeology. The action plan for delivery is to be available by early 2019 – watch this space!

Rhonda Robinson is Assistant Director of the Historic Environment Division, Department for Communities



Excavation of Drumclay Crannog, County Fermanagh (Photo: Historic Environment Division)

Working with co-professional bodies

ClfA exists for the public benefit – to ensure the profession of archaeology operates to the highest possible standards – and for the benefit of its members – to ensure they have a successful and rewarding career in or association with archaeology. So, like other professional bodies, members are at the core of what ClfA does. And, ultimately, the public must benefit.

But that is only part of the story. There are many other audiences and stakeholders that ClfA must communicate and engage with in order to maximise benefit for the public and

Crossrail tunnel excavations
(Photo: ICE)



for members. A good example is government. ClfA speaks to government on behalf of the professional of archaeology to ensure policymakers hear its voice.

Co-professionals represent another important audience group. Co-professionals include, amongst others, architects, engineers, ecologists and environmental managers, planners and surveyors. ClfA speaks to co-professionals on behalf of the profession of archaeology so they understand that archaeology adds value to business and to society, that members of ClfA are accredited and that using accredited archaeologists assures quality.

Another professional, such as an architect, may work for the same client and be contributing directly on the same scheme. In some cases, other professionals can influence a client's choice of archaeologist. In both cases it is critical that they understand the key messages mentioned in the previous paragraph.

Working closely with co-professional bodies is an efficient and effective route to individuals in those professions. A good example is the way ClfA is working with the Royal Town Planning Institute, RTPI.

RTPI is the largest planning institute in Europe with over 25,000 members. Like ClfA, RTPI is a membership organisation with a Royal Charter. It is responsible for maintaining professional standards and accrediting planning courses nationally and internationally. It is a registered charity whose charitable purpose is to advance the science and art of planning, including town and country and spatial planning, for the public benefit. RTPI helps raise the profile of the planning profession and to generate awareness of the contribution planners make to sustainable communities and economic wealth.

We work closely with the RTPI to ensure planners hear the voice of the profession of archaeology. We align our strategies wherever possible through our work with the policy team and senior managers at the RTPI head office. This means that clients, government and others are less likely to hear mixed messages. We develop events with RTPI regional co-ordinators to enable members – both local authority planners and planning consultants – up keep up to date. The latest event is a joint ClfA and RTPI seminar in Leeds on 28 June that is part of the RTPI Yorkshire Practice Seminar Series.

The event aims to highlight good practice examples of planners and archaeologists/other

heritage professionals collaborating in order to solve problems and deliver value to clients and society. A panel of experts will discuss a number of case studies to demonstrate such good practice and provide delegates readily applicable and actionable insight.

The seminar aims to highlight good practice examples of planners and archaeologists, together with other heritage professionals, collaborating in order to solve problems, avoid conflict and deliver value to clients and society. The chair will welcome the audience and introduce the panel members, each of whom will have five minutes to outline their view on how archaeologists, planners and other stakeholders can collaborate more effectively. Panel members will be asked to use case studies in the Yorkshire region to illustrate their thoughts, especially infrastructure projects as these provide a good all-round view of co-professional working practices. After all panel members have introduced their viewpoint, the chair will facilitate a panel discussion and bring in questions from the audience.

Speakers include Michelle Smith from Eversheds Sutherland, Mark Turner from Wessex Archaeology, Neil Redfern, Principal Inspector of Ancient Monuments, Yorkshire, Historic England, John Oxley, City Archaeologist, York City Council and Rob Lennox, ClfA Policy Advisor.

The event will be promoted to RTPI and ClfA members via websites, email, newsletters, etc. We will encourage other organisations to promote the event. We will also promote the event to students of archaeology and planning.

Law firm Eversheds Sutherland has kindly offered to host and sponsor the seminar and this means there is no cost to ClfA, other than some staff and contractor time.

Another example of continuing co-professional body collaboration is with the British Property Federation (BPF), the membership organisation for, and the voice of, the UK real estate industry. BPF represents and promotes the interests of all those with a stake in real estate in the UK – property owners, developers, funders of equity and debt, agents and advisers. BPF works with government and regulatory bodies to help the real estate industry grow and thrive, to the benefit of our members and the economy as a whole.

We have established a good working relationship with BPF over a number of years, working together on policy, built environment wide initiatives and on joint projects that create

mutual benefit for members, other stakeholders and the public.

In February this year JLL kindly hosted and sponsored a joint ClfA and BPF seminar in central London – *Future Funding of Archaeology and Heritage in Development*.

In the context of changing times we posed the question, where will funding come from for the investigation and study, preservation and conservation of our built heritage, buried remains and historic landscapes in 2050? Chaired by BPF chief executive, Melanie Leech, the seminar started with presentations from three speakers.

Stewart Bryant, retired Head of Historic Environment at Hertfordshire County Council, spoke about heritage funding from the local authority viewpoint. He ran through a history of PPG16 – its successes and issues. He then moved on to planning reform, the health of relevant local authority services, new technologies and other challenges and opportunities that will influence the future funding of heritage. The second speaker was Dean Clifford, director and co-founder of Great Marlborough Estates, a boutique residential development company delivering design-led high-quality residential developments throughout London. Dean's experience as a developer and commercial funder of archaeology and heritage brought fantastic insight to the seminar. Finally, Peter Hinton, chief executive of ClfA spoke from the perspective of heritage professionals and professional service providers. Peter looked closely at the public benefit that comes from the investigation and study, preservation and conservation of our built heritage, buried remains and historic landscapes, building on Stewart and Dean's comments.

Any organisation's external relations activity strategically manages communications to audiences outside an organisation's immediate sector. It seizes opportunities to enhance the organisation's profile and reputation, increase its impact and influence and improve engagement with external audiences. No organisation, profession or individual can operate in a vacuum. Only by reaching out to others, by collaborating and by building and maintaining close working relationships can we truly reach our potential.

Stephen O'Reilly is Director of Loud Marketing and has worked with ClfA on external promotion and marketing for a several years.

CDTG: collaboration for client sector industries



Roman brick works being excavated ahead of development, Birmingham (Photo: Adam Sandford, Aerial Cam)

Following a sectoral summit on skills, in 2013 the Historic Environment Forum (HEF), an English forum of heritage organisations with an interest in policy, set up a Client Demand Task Group (CDTG). The summit recognised the need to ameliorate emerging shortages and gaps in skills and expertise across the historic environment specialisms – deficiencies which had the potential to compromise the proper care and investigation of the historic environment. Working alongside a task group focusing on the provision of skills and training, our group's efforts have been driven by the recognition that the best way of ensuring the supply of heritage skills is to ensure demand for them.

At the heart of the market for heritage services is a critical relationship between client and heritage practitioner. At ClfA, we are committed to ensuring the best possible outcomes for the public from the work of archaeologists. This requires that clients value the work that archaeologists do and recognise that using accredited archaeologists assures clients that the work will meet their needs and the needs of the public. Professionalism promotes value, recognition and trust.

The CDTG pursues these objectives by seeking to provide information to clients on the value of skills and the value of registers of service providers with accredited heritage skills. Since its formation, the group has

commissioned research and consulted with the historic environment sector on a set of recommendations, and discussed these with the HEF, and agreed to report to the Capacity Building working group of Heritage 2020, which is developing an action plan for sector in this area.

The group now wishes to develop generic guidance on why it is advantageous to use accredited professionals, and the risks of not doing so. This work will be discussed with relevant stakeholders (including Historic England, other UK national heritage agencies, Heritage Lottery Fund, the Edinburgh Group, the HEF working group on standards and advice, and Cathedral Communications (publisher of *The Building Conservation Directory* and the professional registers of the Institute of Historic Buildings Conservation and ClfA). This guidance will be disseminated to appropriate target audiences.

Further opportunities to build on existing registers of accredited professionals may also be explored, and, working with key individuals across client sectors, we will seek to understand why previous initiatives to guide clients to shop for heritage specialists have not gained the profile or purchase that they intended.

From these discussions we may be able to identify new ways to use advice to guide clients to appropriate registers. It may also be that changes to how these registers are managed or structured (for instance, to make the most of customer reviews as a supplementary method of recommendation – preferred by many clients, but a less reliable indicator of competence and trustworthiness than a professional register.

The CDTG will be producing a detailed work programme in the coming months. Progress with it will depend on the level of resources participant organisations and others are able to commit, but for now, the group's priority is to identify and articulate what needs to be done, and what the impact of a successful programme would be.

There is huge scope to work to improve the client relationship across the historic environment sector. Mutual understanding and collaboration are key to this development of the awareness and understanding of heritage sector skills, suppliers, and assets. Specific, targeted interventions are needed. As the Chartered Institute continues to grow, and strengthen its relationships across the client sector, it will continue to promote the value of professionalism

to our clients, the communities they work in and the public we serve.

The CDTG includes

- the Conservation Accreditation Register for Engineers (CARE)
- ClfA
- the Institute of Conservation (Icon)
- the Institute of Historic Building Conservation (IHBC)
- the Register of Architects Accredited in Building Conservation (AABC)
- the Royal Institute of British Architects (RIBA)
- the Royal Institution of Chartered Surveyors (RICS)
- the Royal Town Planning Institute (RTPI)
- the Country Land and Business Association (CLA)
- Historic Houses (formerly HHA)

It is chaired by ClfA and vice-chaired by IHBC. Its work has benefited from support by Historic England.

Peter Hinton, Chief Executive of ClfA and convenor of the HEF Client Demand Task Group



Pipeline project,
Kent (Photo: Adam
Sandford, Aerial Cam)

Archaeology and historic woodland



Historic hornbeam pollards on the coppice bank at Hatfield Forest (© Essex County Council)

Place Services is a multi-disciplinary consultancy providing environmental planning, design and management services. Our purpose is to help public sector organisations to deliver their role in sustainable development. We now work with over 30 local authorities as well as Historic England, conservation charities and other organisations. We have recently undertaken historic environment research in two of the historic Forests of Essex, Hatfield Forest and Hainault Forest, which are notable for their contrasting histories.

Working in partnership with garden and landscape historian Sarah Rutherford and the National Trust, we have helped to prepare a conservation management plan for Hatfield Forest, Essex. The forest is an internationally significant site, both for its historic and natural environment. It is the only remaining intact

Royal Hunting Forest in England, dating from the late 11th century. Oliver Rackham, the botanist and expert on the countryside, stated that '*Hatfield is the only place where one can step back into the Middle Ages to see, with only a small effort of the imagination, what a forest looked like in use.*' It was a compartmented forest, subdivided into areas of coppice and plains, and managed on a rotational system. In addition to its archaeological and historic landscape, the significance of the forest is also drawn from its ecology. The forest is designated as a SSSI and National Nature Reserve. It contains ancient pollarded oaks and hornbeams and is noted for its saproxylic insects.

The preparation of the conservation management plan comprised an assessment of all the available data for the site as well as obtaining new information from

earthwork surveys, a geophysical survey and palaeoenvironmental sampling. One of the unexpected results of this additional study was recovered from the ditch of a scheduled earthwork enclosure at Portingbury Hills, where Quarternary Scientific (QUEST), University of Reading, established that peat deposits in the base of the ditch dated to the Middle Iron Age and the pollen evidence showed that the immediate landscape of the monument was not forest, but instead an open farmed landscape. This was largely pastoral but with some arable and scrub, revealing that the growth of the forest post-dates this occupation period.

In contrast to Hatfield Forest is Hainault Forest, on the Essex/Greater London border, where we are working with Jon Sheaff Associates and the London Borough of Redbridge on a conservation management plan. In 1851 an Act of Parliament led to the almost wholesale destruction of the medieval forest in a period of six months. The scale and speed of the destruction was unprecedented, demonstrating how fast an important historical and natural asset could disappear. The loss of Hainault Forest would prove a catalyst for the birth of the conservation movement in

Britain. When a similar attempt was made on Epping Forest in 1857, it faced widespread public protest, and the forest was eventually saved by the Corporation of the City of London. The groups and individuals that rallied to the cause included the newly formed Commons Preservation Society and the people who would go on to found the National Trust. Rackham has described the saving of Epping Forest as *'the first big victory in Europe of the modern conservation movement'*. Edward North Buxton, a local landowner and campaigner who was encouraged by the success of saving Epping Forest, turned his attention to save the surviving remnant of Hainault. In addition to purchasing the remaining woodland he also undertook what appears to be the earliest example in Britain of a scientifically based programme of reforestation.

The intention of both projects was to develop as full an understanding of the landscape history of the forests in order to inform their management into the future, ensuring their role as significant historical and natural environment landscapes as well as open spaces for public enjoyment.

Maria Medlycott MA MCifA FSA



17th century
pillow-mounds on
The Warren, Hatfield
Forest (© Essex
County Council)

Building Informational Modelling: Digital collaboration and the care of historic buildings

In an age of increased competition for people's time, and greater expectations of consumers, heritage attractions are having to improve facilities, update exhibits, and embrace the digital age. Set against a backdrop of austerity, this has presented a challenging environment in which to compete. However, many owners and curators of our built heritage are enlisting design architects to produce innovative solutions to enhance the visitor experience.

Typically with the management of historic buildings, information from previous works, and ongoing maintenance is held in disparate paper and digital archives. Collaboration between curators and teams of differing specialist contractors involved in repair or enhancement projects is often a difficult and time-consuming role requiring complex project management.

Building Information modelling (BIM) has been used within the construction industry for



*Point cloud data
of the King's Gate,
Caernarfon Castle*



*Point cloud data
of the upper ward,
Caernarfon Castle*

several decades and describes the process for the production and management of structured electronic information relating to a building. Collaborative BIM, or BIM Level 2, is now beginning to be applied to historic buildings, creating an historic asset information model as a cost-effective methodology for better information management and exchange, reducing repetition and increasing efficiency in the long-term care of such structures. 'Heritage BIM' will incorporate quantitative and qualitative information about a monument, which can be linked to external documents and data, and underpinned by a 3-dimensional model, allowing geospatial representation of the data to provide an invaluable decision-making and management tool for an historic monument.

Salford Archaeology is currently involved on innovative enhancement projects at three major medieval castles in England and Wales applying BIM practices, to enable cost-effective collaboration between all parties involved with the design and delivery of each project. Although 3-dimensional data capture and modelling has typically been the domain of specialist survey companies, the ability of the built heritage team to produce this fundamental core of the BIM has proven invaluable in demonstrating heritage-led design, with drawings produced to suitable archaeological standards, and the ability to identify phasing and significance within the 3-dimensional model from its earliest stages. This has been of particular significance at Caernarfon Castle, North Wales, which forms part of the Castles and Town Walls of King Edward in Gwynedd UNESCO World Heritage Site. The proposed pre-fabricated design is reliant on dimensions extracted from the 3-dimensional laser scan model produced by Salford Archaeology, and the associated Level 4 archaeological recording guided the design team in ensuring that not only was the impact minimised on sensitive areas of the monument, but also providing information that could be incorporated into the visitor experience.

The additional point-cloud data from the remainder of the monument is particularly useful for this process, as 'views' can be created to and from other locations within the complex, crucial for allowing designers to analyse the setting and impact of any proposed intervention.

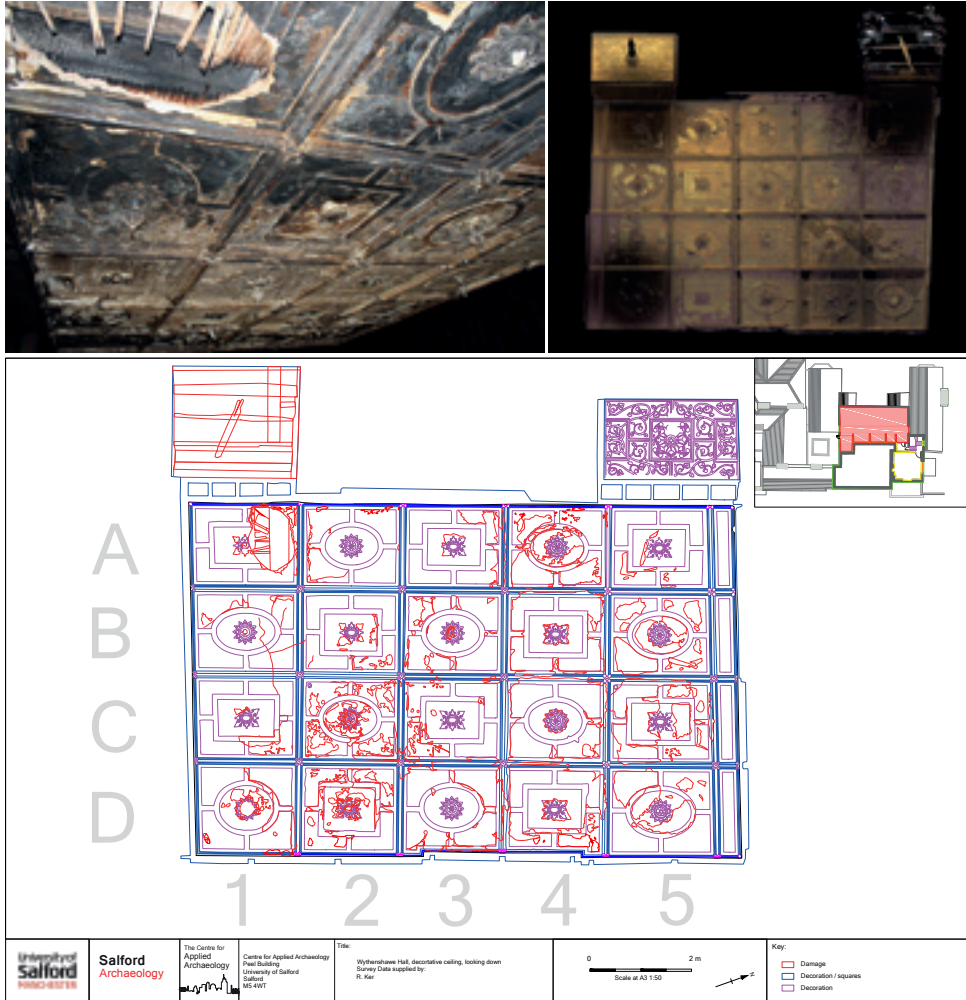
Despite having had a photogrammetric record produced in the 1990s, Salford Archaeology has recently been commissioned to provide a 3-dimensional model to accompany detailed historic building recording at Newark Castle, Notts. Unlike the photogrammetric elevations, which are of sufficient accuracy, the 3-dimensional model will allow the architects and designers to interrogate the internal space in three dimensions, and produce plans and sections wherever required in order to more fully visualise the proposed enhancements. Similar work is also being undertaken by Salford Archaeology at Lancaster Castle.

Point cloud data of the gatehouse at Newark Castle



Laser scanning within the interior of the gatehouse at Newark Castle

Salford Archaeology also helped Manchester City Council in delivering archaeological advice and emergency recording and fabric removal at the site of Wythenshawe Hall following damage sustained during an arson. This entailed detailed and frequent exchange of information, discussion, advice and dissemination with MCC, Historic England, and the Greater Manchester Archaeological Advisory Service. 3-dimensional laser scanning within the hall and its roof space allowed for the rapid generation of ceiling plan of a decorative plaster ceiling, superimposed onto the joist plan above. This enabled specialists with the project team to attach temporary fixings through the waterlogged ceiling onto the timbers above and prevent its collapse. Elevations extracted from the point cloud were also rapidly produced and phased, to provide heritage-based accurate data for the engineers and timber specialists to be



Damaged ceiling, laser scan orthophoto, and final drawing for repair team, Wythenshawe

Laser scanning the chemically-damaged 14th-century timber-framed cottage

able to distinguish early fabric from subsequent repairs, and plan cleaning and retention protocols accordingly. This work was recognised by the 2017 Historic England Angel Awards.

A similar, smaller-scale project has also been recently undertaken by Salford Archaeology within a 14th-century timber framed cottage in Essex that had severe chemical contamination following a mattress fire. The rapid production of a 3-dimensional model to produce archaeologically phased drawings of the timber framing will allow the wider project team to produce cleansing strategies appropriate to the date and importance of each timber within the remodelled structure.

It is vital within the high-technology environment that archaeological contractors now operate that we can not only co-operate with planners, clients and other parties to fulfil the role of mitigating loss of our historic assets, but that we can offer services to integrate our specialist heritage skills into wider project teams, delivering cost-efficient products and services while championing best-practices within industry in their interactions and treatment of this most valuable resource.

Adam Thompson
Salford Archaeology, University of Salford



Neolithic halls and a Bronze Age hoard – collaborating at Carnoustie



The Carnoustie Bronze Age sword and scabbard (© GUARD Archaeology Ltd)

In August 2016, a small evaluation was carried out by GUARD Archaeology Ltd on behalf of Angus Council to address a planning condition prior to the development of two football pitches at Carnoustie. Although there were no known archaeological remains within the development area itself the Aberdeenshire Council Archaeology Service (archaeological advisers to Angus Council) considered there was a potential for unknown archaeology given archaeological finds within the surrounding area. The aim of the archaeological evaluation was therefore to establish the presence or absence of previously unknown archaeological deposits. So far, so normal. From initial trial trenches equating to 5 per cent (1,415 m²) of the development area, which encountered some pits containing prehistoric pottery, the fieldwork progressed over the following six months into the excavation of over 1,000 archaeological features spread over a 1.77 ha area revealing one of the most significant Neolithic and Bronze Age sites in Scotland. Amongst 14 prehistoric structures uncovered were two early Neolithic halls (including the largest ever found in Scotland) and seven roundhouses. A late Bronze Age hoard was also encountered adjacent to three of these roundhouses, containing a gold decorated bronze spearhead wrapped in sheepskin and a bronze sword with a wooden and bronze scabbard wrapped with woollen cloth.

CRITICAL COLLABORATION

Throughout the process the GUARD Archaeology team worked closely with the developer (who was also the planning authority) and the planning authority's archaeological adviser to plan and undertake incremental responses to encountering archaeological remains. Each stage of the work, from the initial evaluation to the excavation and then the subsequent programme of post-excavation analyses, was required to deliver value for money through competitive tendering. This was considered essential for the developer, who as a regional council was keen to be seen doing the right thing *and* provide transparency for the public funding of what was an entirely unexpected financial burden. As a CfA Registered Organisation, we were equally keen not to compromise on best practice, defined principally by the CfA standards and guidelines that we adhere to. Transparency was achieved through making each stage of the project, whether the results of each competitive tendering process or the fieldwork reports, available through the local authority's planning committee reports. This demonstrated that not only were GUARD Archaeology the most competitive bidder at all stages of the process, but that we offered the best quality of service too. Maximising the public benefit of the project was a crucial part of our approach and achieved through collaboration with the local authority.



GUARD Archaeology team excavating one of the Neolithic halls at Carnoustie (© GUARD Archaeology Ltd)

ADDED BENEFITS

From the outset, there was a keen interest in the fieldwork, which GUARD Archaeology was keen to address because it met one of our key principles; communicating the results of our work to as wide an audience as possible. With our client's agreement, we facilitated community involvement during the excavation stage of the project, including site open days, school visits from the adjacent high school as well as formal work placements for two pupils thinking of studying archaeology at university. The excavation also provided employment for a local early career archaeologist from Dundee and we utilised local contractors, accommodation and eateries to ensure that a large proportion of the contract went back into the local economy. We also publicised the Carnoustie hoard throughout 2017, with the story picked up by television, radio newspaper, magazine and online media as far afield as the USA, Canada and Spain.

During the excavation we collaborated with university researchers from Bradford University keen to grasp the opportunity to undertake archaeomagnetic dating of prehistoric features and throughout the post-excavation process, which began before the excavation was complete, we have engaged with local and

national museums to maximise the information we can extract from the finds. During the post-excavation process GUARD Archaeology will also be providing hands-on involvement for the adjacent Carnoustie High School, where the students will get to handle, illustrate and photograph various artefacts from the excavation. A reconstruction model and replica Bronze Age hoard are being produced for the local museum, while we are maintaining a blog throughout the post-excavation process (<http://guard-archaeology.co.uk/carnoustieHoard/>).

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