



# Our vision and strategy for heritage science

 **National Heritage**  
Science Strategy

NHSS VISION & STRATEGY	DATE MARCH 2010
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## VISION

Our vision is that the understanding and preservation of the UK's extraordinarily rich and varied material cultural heritage will be enhanced by better use of science and technology, and that the humanities and the sciences will be developed and enhanced by this collaboration. Heritage science will be a robust, internationally recognised, well co-ordinated, vibrant and sustainable community that contributes to the big questions confronting humanity by understanding and addressing the present needs and future requirements of our cultural heritage.

In order to achieve this vision, the National Heritage Science Strategy (NHSS) has two strategic aims:

- Demonstrate the public benefit of heritage science and increase public engagement and support for it
- Improve partnership within the sector and with others by increasing collaboration to help practice make better use of research, knowledge and innovation and to enhance resources, funding and skills

## Background

Heritage science is a field of endeavour that bridges the divide between the humanities and the sciences. It broadens people's understanding and appreciation of cultural heritage whatever their age, and is one of those rare hybrid subjects that engages people with these disciplines. By using and developing science to understand, manage and communicate the human story expressed through landscape, buildings and artefacts, heritage science encourages the humanities and sciences to collaborate and strengthen each other.

The UK has an extraordinarily rich and diverse material cultural heritage – including museum collections, archives, libraries, historic buildings and archaeological sites – which is valued very highly by the UK population and by visiting tourists. This heritage makes an important economic contribution and a vital contribution to our quality of life, well being, sense of place and understanding of our roots.

Heritage science plays a vital part in understanding and preserving this heritage and, equally importantly, in giving us fuller understanding and appreciation of its significance.

In 2006, the House of Lords Select Committee on Science and Technology drew attention to the importance of heritage science. At the same time it warned that while increasing numbers of visitors and increasing rates of environmental change were adding to rates of decay, declining funding was endangering our ability to look after our heritage properly. Where we had led the world a generation ago, the perception was that we were now lagging behind.



**Figure 1**  
Undertaking an experiment with sand and a bottle at the Science in Trust event at Woolsthorpe Manor, Lincolnshire (NT), home of Sir Isaac Newton. Historically important sites like this are excellent venues for exhibitions focusing both on the scientist and their home but also the scientific work they undertook and its relevance to modern society. ©NTPL/Ian Shaw

The Select Committee drew attention to fragmentation in the sector, and recommended that the sector come together to draw up a national strategy in order to find common purpose and make best use of our skills and resources.

The sector responded to this challenge by setting up a steering group, drawn from the stakeholders involved in this area of activity to develop a shared strategy. Over the past year, intensive research and consultation with stakeholders has produced three reports which provide the evidence base for the strategy.

### Strategy objectives

Informed by the three NHSS reports and consultation with the heritage science community, the steering group has identified the following objectives to deliver the vision and strategic aims. The strategy objectives will be implemented through the proposed National Heritage Science Forum.

**Demonstrate the public benefit of heritage science and increase public engagement and support for it**

#### Increase public benefit

- Heritage science plays a vital part in developing our understanding of heritage and the means of preserving it which underpins public enjoyment and appreciation. We will develop better ways to understand, demonstrate and measure the economic and social benefit of our heritage and of heritage science, to make better use of our resources and a better case for the resources that we need [Report 3].

#### Develop policy

- Heritage science addresses big issues that confront society, such as sustainability, environmental and climate change, through research and understanding of how these are experienced and can be managed in cultural heritage, which will help inform policy in these areas [Report 1]. Aligning heritage science work with wider national priorities will enable the field to enhance opportunities in the wider research world to address the internal gaps in knowledge and practice identified in the three NHSS reports [Report 2].

#### Public engagement and support

- The public already find heritage science fascinating. We have seen their enthusiasm for exhibitions which incorporate heritage science, public access to sites and laboratories, and presentations and publications aimed at a wider audience. We will promote these activities and develop others that will improve public access, enjoyment, understanding and support for heritage science [Report 3].



**Figure 2**  
Heritage scientists from across the sub-sectors came together at our recent stakeholder meeting. Responses from this meeting have been used to refine our vision and strategy.  
Photo Jim Williams.



**Figure 3**  
The 'conservation cart' at the Manchester Museum is used to explain conservation and conservation science to a wide audience.  
Photo courtesy of Manchester museum

Improve partnership within the sector and with others by increasing collaboration to help practice make better use of research, knowledge and innovation and to enhance resources, funding and skills

### Improving understanding

- Heritage science makes a critical contribution to understanding significance, which is fundamental to choosing what to preserve and why [Report 2]. National and international collaborations will be maintained and developed to improve work with the wider heritage and science sectors to develop and apply new and better investigative methods for understanding cultural heritage [Report 3].

### Improving preservation

- The sector has made great strides in understanding materials and the mechanisms of decay as well as developing ways to assess, monitor and record condition. Through the application of heritage science we will continue to improve conservation practice, taking account of society's views by identifying sustainable measures, such as low energy methods of environmental control [Report 1].

### Using resources better

- Through partnerships and collaboration, we will ensure that better value is achieved from existing funding, scientific equipment and facilities, championing the increase of these resources, and that knowledge, skills and experience are developed and shared [Report 3].

### Building future capacity

- We will promote the use of heritage science in school teaching, whether through curricula or schools visits to heritage sites, to help develop the understanding of cultural heritage and inspire future interest in heritage science as a career [Report 3].
- We will develop the skills and experience of future practitioners in this field by promoting opportunities for graduate, post-graduate, doctoral and post-doctoral study in heritage science research, fostering collaboration nationally and internationally between research and funding bodies and stakeholders throughout the sciences and humanities [Report 3].

### Strengthening links with other sectors

- We recognise that there are other sectors such as universities and industry with which heritage science can strengthen relations. Heritage science will support promotional activity in the humanities and sciences at local, national and international levels. We will develop a 'virtuous circle' so that heritage science is recognised for the contribution it makes to knowledge and innovation [Report 3].



**Figure 4**  
Duncan Hook, scientist in the Department of Conservation and Scientific Research at the British Museum examining the Snettisham marriage torc (Iron Age, c.75BC gold alloy torc from Norfolk) using X-ray fluorescence analysis to determine the alloy composition.  
© Trustees of the British Museum



**Figure 5**  
An airport X-ray machine provides real-time images of material prior to conservation, assisting in both the conservation process and the demonstration of heritage science to the public. Image from CSI: Sittingbourne. © Canterbury Archaeological Trust Ltd.

## MEANS OF DELIVERY – A NATIONAL HERITAGE SCIENCE FORUM

Recognising the need to increase communication across a very diverse sector and with major policy-making and funding bodies, we will set up a National Heritage Science Forum to make things happen.

The National Heritage Science Forum will provide the means to deliver the key objectives of the National Heritage Science Strategy. As a next step, we invite major institutions within the sector to come together to support the creation of the Forum.

## SUMMARY OF THE THREE NHSS REPORTS

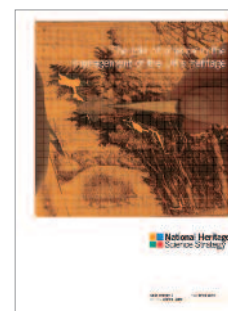
### REPORT 1 THE ROLE OF SCIENCE IN THE MANAGEMENT OF THE UK'S HERITAGE

Defines heritage sub-sectors used in reports; identifies typical materials and contexts within which they are found; summarises principal decay mechanisms, their monitoring and management. Three themes address gaps in knowledge and practice.

#### Themes

- 1 – Understanding material behaviour
  - *Better knowledge of decay rates and mechanisms, particularly for modern materials*
- 2 – Understanding environments
  - *Adapting to and managing environments*
- 3 – Improving practice
  - *Improved assessment and monitoring tools i.e. NDT; past, present and future conservation techniques; access to equipment and information*

**Conclusions** – Currently there is a reasonable understanding of how to manage decay, but a lack of detailed information on rates of deterioration and thresholds at which damage occurs.



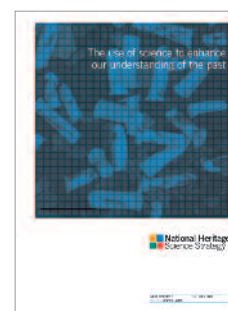
### REPORT 2 THE USE OF SCIENCE TO ENHANCE OUR UNDERSTANDING OF THE PAST

Reviews main drivers for, and types of scientific investigation of cultural heritage. For each sub-sector considers the frequency of use of techniques and areas for improvement. Contains sub-sector specific recommendations which are summarised into three themes covering areas of commonality.

#### Themes

- 4 – Development of tools and access to equipment
  - *Improvements to tools; sharing of purchase and use*
- 5 – Raising awareness of existing techniques and their application
  - *Guidance and advice*
- 6 – Data use and management
  - *Widening access to information; digital storage and sharing*

**Conclusions** – Investigation should be driven by focused research questions not just the presence of available equipment; results do and should further public understanding and engagement with cultural heritage; there is a disparity in the quantity of output both between and within the heritage sub-sectors.



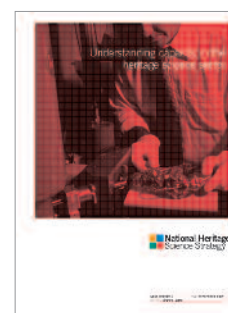
### REPORT 3 UNDERSTANDING CAPACITY IN THE HERITAGE SCIENCE SECTOR

Overview of who heritage scientists are, number of people, where they work across the heritage sub-sectors, and looks at areas where there is lack of people to provide for current needs. Considers training routes into heritage science and current funding.

#### Themes

- 7 – Addressing practitioner capacity and capability
  - *More varied career structure and long-term job opportunities*
- 8 – Accessing information and infrastructure
  - *Transfer of knowledge to practice; coordination of guidance / standards; information sharing*
- 9 – Funding and its public benefit
  - *Disparities in funding; prioritisation of funding, links with industry; public benefit and value of funding heritage science; better engagement with social and economic sciences*

**Conclusions** – Current economic pressures may impact future aspirations and therefore there is a need to consider how to re-focus budgets; sector as a whole needs to improve recording of how money is spent and get better at demonstrating and measuring the benefits that it provides.



## LIST OF NHSS STEERING GROUP MEMBERS

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**Figure 6**  
Exhibitions like this one in the Meads shopping centre in Sittingbourne bring heritage science to the public. Visitors can see conservation in progress and join in by volunteering. © Canterbury Archaeological Trust Ltd.



**Figure 7**  
At the Reveal exhibition in the National Conservation Centre, Liverpool, visitors can watch conservation science investigations being undertaken and talk to those staff carrying out the work. © National Museums Liverpool.

Written by  
National Heritage Science Strategy Steering Group  
2010

This strategy and the three reports are available from [www.heritagesciencesstrategy.org.uk](http://www.heritagesciencesstrategy.org.uk)  
If you would like this document in a different format, please contact [nhss@english-heritage.org.uk](mailto:nhss@english-heritage.org.uk)

Design by Robin King

### Cover image

School child from Sittingbourne examining Anglo-Saxon grave goods undergoing conservation at the CSI: Sittingbourne exhibition in the Meads shopping centre. In this case, CSI stands for Conservation Science Investigations.  
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