

Discovery, Innovation and Science in the Historic Environment

# RESEARCH



Historic England

ISSUE 8 • SPRING 2018

# Welcome...

**...to a new look for the magazine.**

In this issue of *Historic England Research* we offer another exciting range of applied research stories showing the stunning breadth and depth of our historic environment. Lidar technology reveals a Lancashire hillfort that isn't, while thermography uncovers the energy efficiency of historic buildings and detects sources of moisture ingress. We look at a castle 'at risk' on the Welsh borders that, with the commitment of the local community is being rediscovered, repaired and, with research by Historic England, reconnected with its original landscape. We rediscover the parish poorhouse of Framlingham Castle and look at how research is helping develop Local Lists in Nottingham. We review the results of a study we funded on major parish churches and the particular challenges they face, explore the past and possible future of climate change, and reconsider the wreck of HMS *Colossus*, both in the Isles of Scilly. Finally, we explore how through our funding the Cambridge Archaeological Unit published the final volume of the seminal excavations at Mucking, Essex. This volume provides the perfect opportunity to mark the retirement of Steve Trow, a long standing member of Historic England and Director of Research, under whose watch many of these projects happened.

**Barney Sloane**

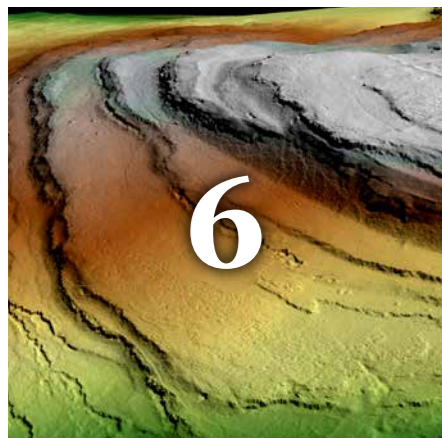
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 England's **historic environment**

We champion **historic places**,  
 helping people **understand**,  
**value** and **care** for them

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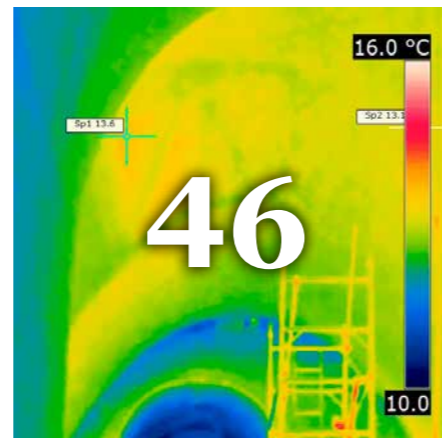
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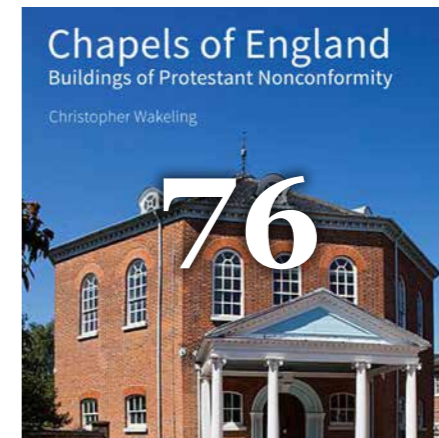
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Designer  
 Vincent Griffin

Managing Editor  
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For any further information and questions please email:  
[Research@HistoricEngland.org.uk](mailto:Research@HistoricEngland.org.uk)

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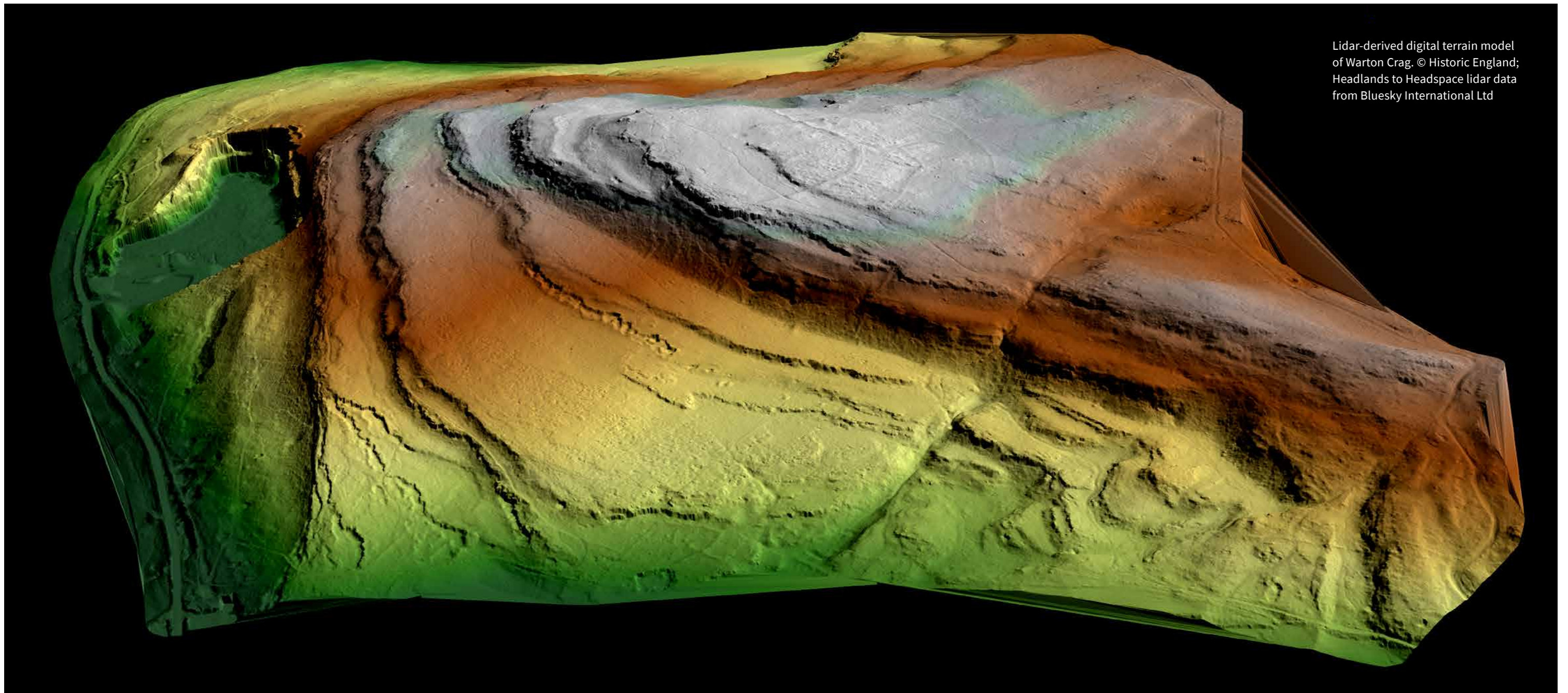
# Lidar and field survey of Warton Crag hilltop enclosure

Shining new light on a scheduled 'hillfort' in Lancashire.

In 2016, Historic England undertook aerial mapping and analytical field survey of the scheduled 'hillfort' that occupies the summit of Warton Crag in north Lancashire. Large parts of the site are heavily overgrown and to date have proved extremely difficult to investigate using traditional air- and ground-based survey techniques.

The recent aerial mapping, however, used specially commissioned lidar imagery. By emitting light pulses from an aeroplane and measuring the time they take to return, lidar accurately records height differences on the ground, and is therefore capable of picking out archaeological earthworks. If carried out at a high enough

resolution, the technique can even 'see' through tree canopies to record the terrain beneath. The mapping of the new data, in combination with ground observation, has resulted in a much more detailed and nuanced understanding of the monument, and thrown in to question its hitherto accepted identification as a hillfort >>

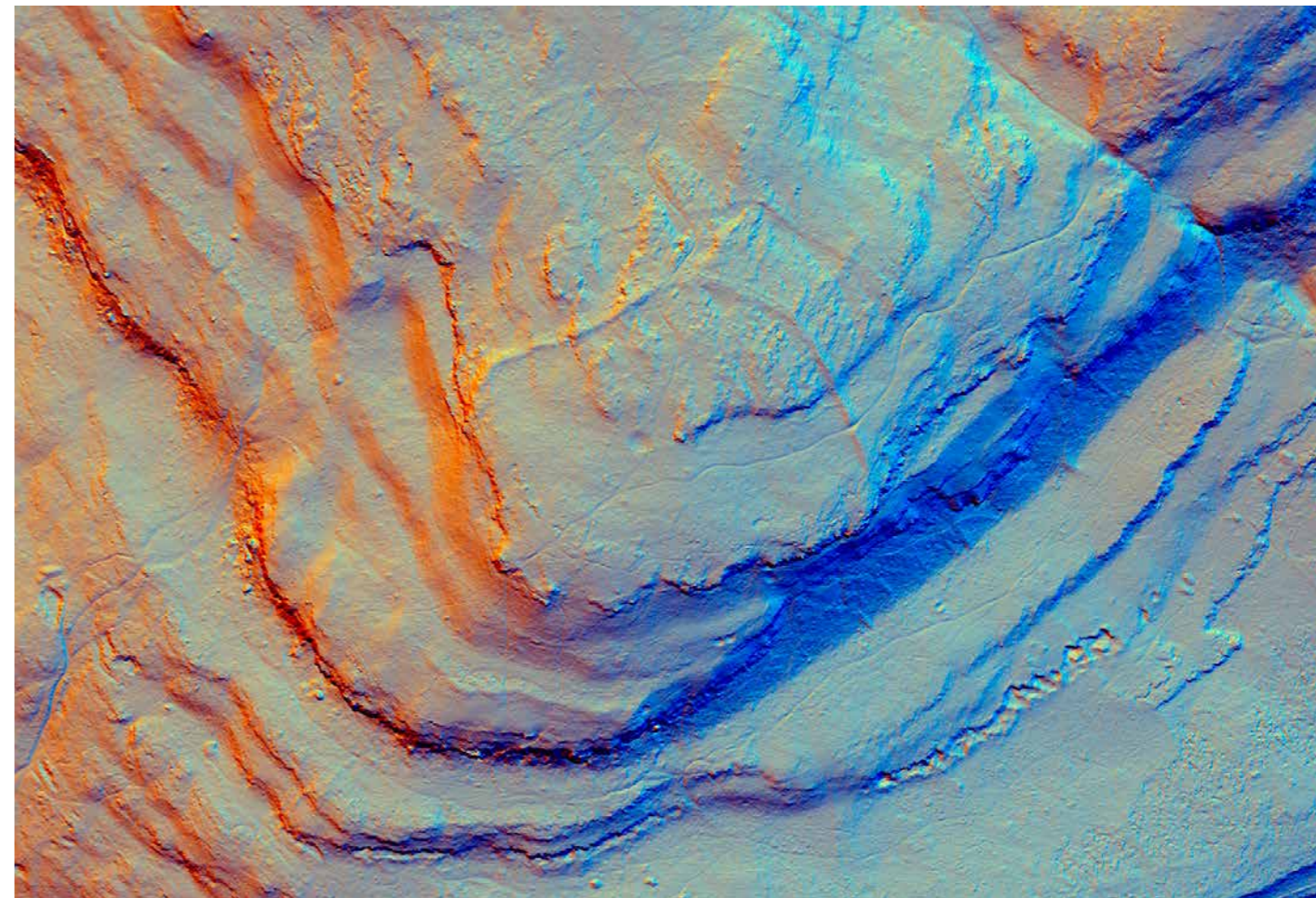


Lidar-derived digital terrain model of Warton Crag. © Historic England; Headlands to Headspace lidar data from Bluesky International Ltd





**Left:** Part of the middle circuit of walls, illustrating the scale of the 'defences' and the nature of the obscuring vegetation. © Historic England, Marcus Jecock



**Right:** Plan view of the circuits of the Warton Crag hilltop enclosure, as revealed by a 16-direction hillshade visualisation of the lidar data. © Historic England; Headlands to Headspace lidar data from Bluesky International Ltd.

Warton Crag is a prominent limestone ridge, located within the Arnsdale and Silverdale Area of Outstanding Natural Beauty (AONB). It overlooks the eastern edge of Morecambe Bay and also has clear sightlines east towards the Yorkshire Dales. Three arcs of ruined stone walling isolate the ridge's uplifted southern scarp-edge from the northern dip slope. The walls have been recognised for over 200 years, and have been scheduled as the ramparts of an Iron Age hillfort for almost half

that time, but have proved difficult to interpret because the thick tree and scrub cover makes planning – and even seeing and following – them on the ground extremely problematic. This vegetation is also a threat to the archaeology, and in consequence the monument was placed on Historic England's Heritage at Risk Register in 2012. The heritage interest of the 'hillfort', however, has to be weighed against competing environmental, geological and wildlife designations:

besides being part of an AONB, the crag is a site of special scientific interest, a local nature reserve, and an area of ancient woodland, as well as being the subject of a Limestone Pavement Protection Order.

In 2016, Historic England and Morecambe Bay Partnership (the latter through the Heritage Lottery Fund-sponsored Headlands to Headspace Landscape Partnership Scheme) jointly commissioned new, high-resolution, lidar imagery of

the crag from Bluesky International Ltd so as to facilitate detailed aerial mapping of the enigmatic monument that lies on the summit. The mapping was followed by detailed observation on the ground to interpret and refine the lidar plot, all as the first step towards drawing up a management plan for the long-term conservation of the site.

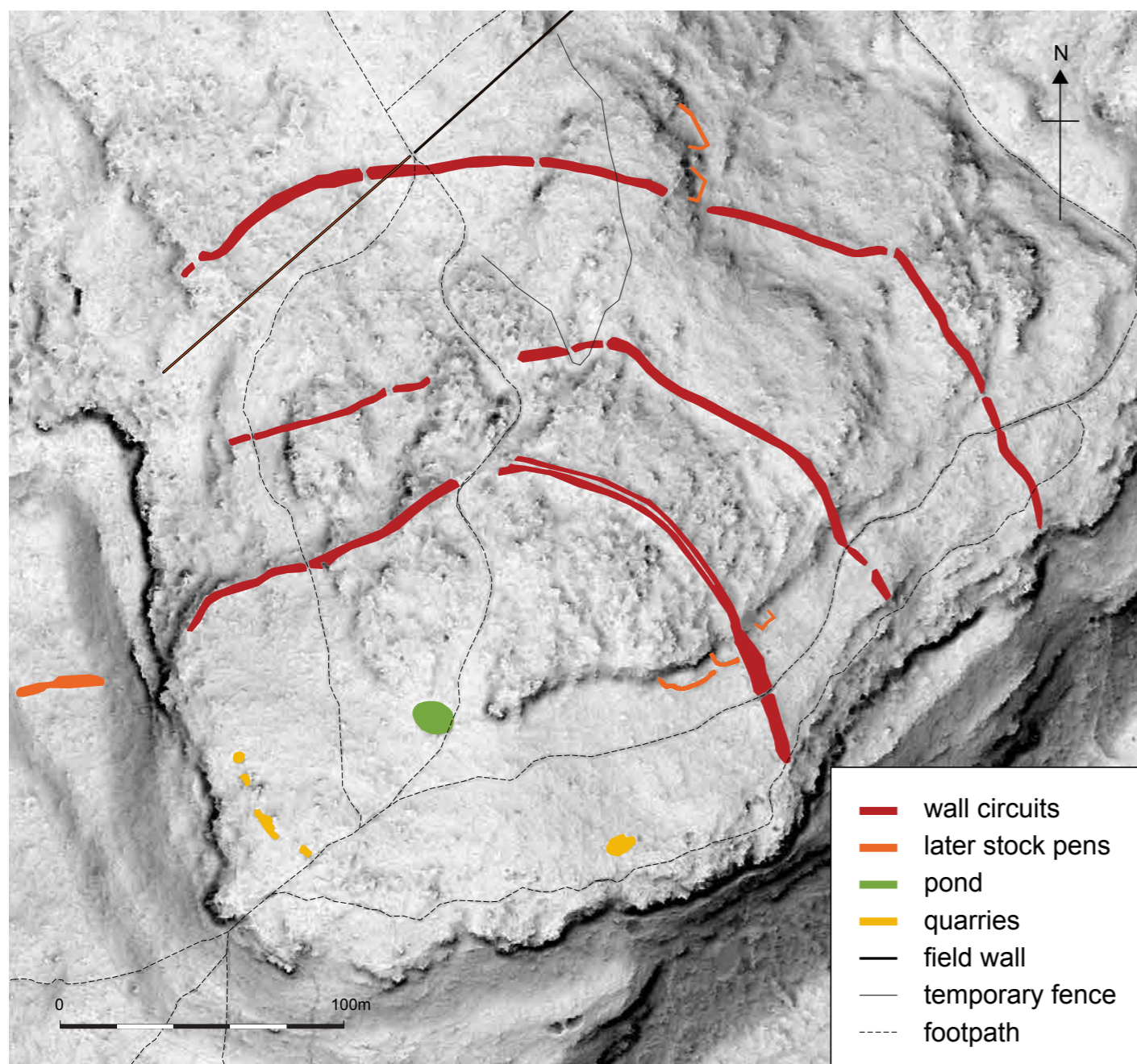
#### Existing knowledge

The existence of three walled circuits on Warton Crag was first

recorded by William Hutchinson in a letter communicated to the Society of Antiquaries of London in 1788 (Hutchinson 1789). Hutchinson was a solicitor, but also a keen antiquary and the author of historical accounts of Durham and Cumberland. The inner circuit was, and still is, the most substantial, described by Hutchinson as formed of facing stones 10ft (c 3m) apart, set within a more extensive scatter of tumbled stones up to 10 paces (c 8-9m) wide. He described

the outer circuit as less massive, and the middle as less massive again. He identified two entrances in both the inner and middle circuits, and three in the outer; he also mentioned the ruins of a small square hut within the interior where 'a beacon used to be fired', and a circular depression which he thought might be a reservoir for water (although he did not specify whether he thought this contemporary with any of the other structures) >>





**Above:** The final plan of the enclosure, derived from aerial mapping of lidar data refined by ground observation.  
© Historic England, Sharon Soutar

Hutchinson interpreted the site as a defensive encampment associated with native British resistance to the Roman conquest of northern England. This view is in line with the orthodox paradigm of the 18th century, which interpreted field monuments within a historical narrative derived from the few surviving relevant works by Classical and early medieval authors. We now call this period the Late Iron Age. Hutchinson's dating has been followed uncritically by subsequent investigators, including the Ordnance Survey, the Victoria County History, and the archaeologist James Forde-Johnstone, all of whom have surveyed the site and interpreted it as a hillfort – although each has offered a somewhat different take on the form and extent of the earthworks.

#### Lidar and field survey

The high-resolution lidar data central to the new research was collected on a 0.25m grid and processed in-house to produce various visualisations of the terrain. These are striking, showing much of the extent and form of the enclosure as well as its topographical setting. The monument can be clearly seen to be defined by three irregular circuits, of which the inner – enclosing almost 3ha of the Crag summit and

containing large areas of exposed limestone pavement – is the most massive. There is no evidence that this inner wall ever continued above the main, steep southern scarp-edge known as Beacon Breast. The lidar survey revealed no surviving internal structures contemporary with the enclosure – indeed the fractured and irregular nature of the bare limestone pavement makes permanent occupation unlikely. The walls of a number of small 'pens' are, however, visible against a low limestone scar just back from Beacon Breast, and a circular depression can be seen towards the centre of the monument. These are almost certainly post-medieval stock enclosures and a dewpond (the latter probably to be equated with Hutchinson's reservoir) for grazing cattle. The visualisations also suggested a number of gaps in each of the three circuits although from the lidar alone it was impossible to ascertain whether these are original entrances or later breaks.

The density of vegetation cover over parts of the site meant that even lidar as high-resolution as this could not pick out all the earthworks, however. The aerial mapping was therefore loaded onto a handheld (mapping-grade) Global Navigation Satellite System device, to be taken in to the field where

interpretation could be checked and enhanced, and additional detail added. The ability to view the mapping and lidar visualisations at the same time as having a good fix of one's ground position was a great help; previously, it had proved difficult to follow the walls through the dense undergrowth, and almost impossible for a field investigator to know exactly where they were when examining features on the ground.

The field survey demonstrated that the walls are all similar in build, consisting of rubble infill between faces of orthostatic construction (that is, formed of stones set on end); they are, therefore, as far as we can say based on surface evidence, probably all contemporary. Survey was even able to identify individual *in-situ* surviving orthostats and confirm that the walls were originally up to 3m wide, as reported by Hutchinson. The survey also revealed that the southern end of the middle wall extended 30m further than plotted from the lidar, all the way to the crest of Beacon Breast, and identified a number of additional stock enclosures. These features were all invisible on the lidar because the vegetation was exceptionally dense in particular areas. Finally, the field survey confirmed that a number of >>





**Left:** Part of the middle wall-circuit showing wall faces formed by *in situ* orthostats.  
© Historic England, Marcus Jecock



**Middle:** The additional section of the middle wall identified by field survey immediately above Beacon Edge. The ranging rods indicate the site of a newly recognised entrance through the wall.  
© Historic England, Marcus Jecock



**Right:** The western entrance in the outer rampart, flanked by transverse orthostats.  
© Historic England, Marcus Jecock

the breaks seen on the lidar are original entrances and – on the basis that entrances are likely to be distinguished by large flanking orthostats set at right angles to the line of the walls – was able to identify further examples.

These observations all cast doubt on the traditional interpretation of the monument as a hillfort. Hillforts typically have massive defences and few entrances. The walled circuits on Warton Crag are extremely ruinous, but from what we now understand of their construction it is difficult to see how they could ever have stood much more than a couple of stone courses high; this, combined with the fact they lack accompanying ditches, suggests they are unlikely ever to have presented a serious obstacle to determined attackers. In addition, whereas hillforts normally only have one or

two entrances, Warton has at least two in the inner circuit, three in the middle circuit, and possibly as many as four in the outer one.

Rather, the site seems to have more in common with a class of upland enclosure which in recent years has been recognised in increasing numbers across northern England. All examples of the class are defined by stone walls, though these vary in size and construction technique. Few have yet been extensively investigated, but several – particularly in Cheshire and Derbyshire – have seen small-scale excavation which has dated them to the middle and later Bronze Age. Their function is not well understood – indeed they may not all have been used in the same way – but the excavators of the Gardom's Edge enclosure in the Derbyshire Peak District

suggested that site may have acted as a central place for pastoralist farmers to gather at certain times of the year. The aim may have been to sort, exchange and serve animals, settle feuds, and simply re-affirm communal bonds (Barnatt *et al* 2017). Only excavation will confirm whether Warton Crag is another example of this class of Bronze Age enclosure, but we can be confident it is not a hillfort. Undoubtedly more such enclosures will be identified over the coming years, perhaps including a number that, as at Warton, are hiding as it were in plain sight.

The results of our research have been published as an Historic England Research Report (Evans *et al* 2017). They will be used to inform the future management and conservation of this important site for future generations to enjoy ■

## The walled circuits are unlikely ever to have presented a serious obstacle to determined attackers

### The authors

**Marcus Jecock FSA**  
*Senior Archaeological Investigator with Historic England.*



Marcus has worked for Historic England and its predecessors for over 30

years. He specialises in the survey and interpretation of landscapes and field monuments, and has worked on sites of all periods in many different parts of England. He currently oversees Historic England's Rapid Coastal Zone Assessment Survey programme.

**Sally Evans**  
*Aerial Investigator with Historic England.*



Sally has over a decade's experience working on large-scale aerial

investigation and mapping projects, focussing on the identification of previously unknown archaeological landscapes. She is interested in how analysis of project results can be used to identify threats to archaeological monuments and inform the protection of archaeological sites.

### Further information

Barnatt, J, Bevan, B and Edmonds, M 2017 *An Upland Biography: Landscape and Prehistory on Gardom's Edge, Derbyshire*. Oxford: Windgather Press

Evans, S, Jecock, M and Oakey, M 2017 *Warton Crag Hilltop Enclosure, Warton, Lancashire: Aerial Mapping and Analytical Field Survey*. Historic England Research Report 33/2017: <http://research.HistoricEngland.org.uk/>

Hutchinson, W 1789 'Account of antiquities in Lancashire. In a letter to George Allan, Esq, FAS from William Hutchinson, Esq, FAS'. *Archaeologia*, 9, 211-218



The motte and later  
stone-built great tower.  
© Historic England,  
James O. Davies,  
DP181985

# Snodhill Castle, Peterchurch, Herefordshire

Revealing a Marcher castle.



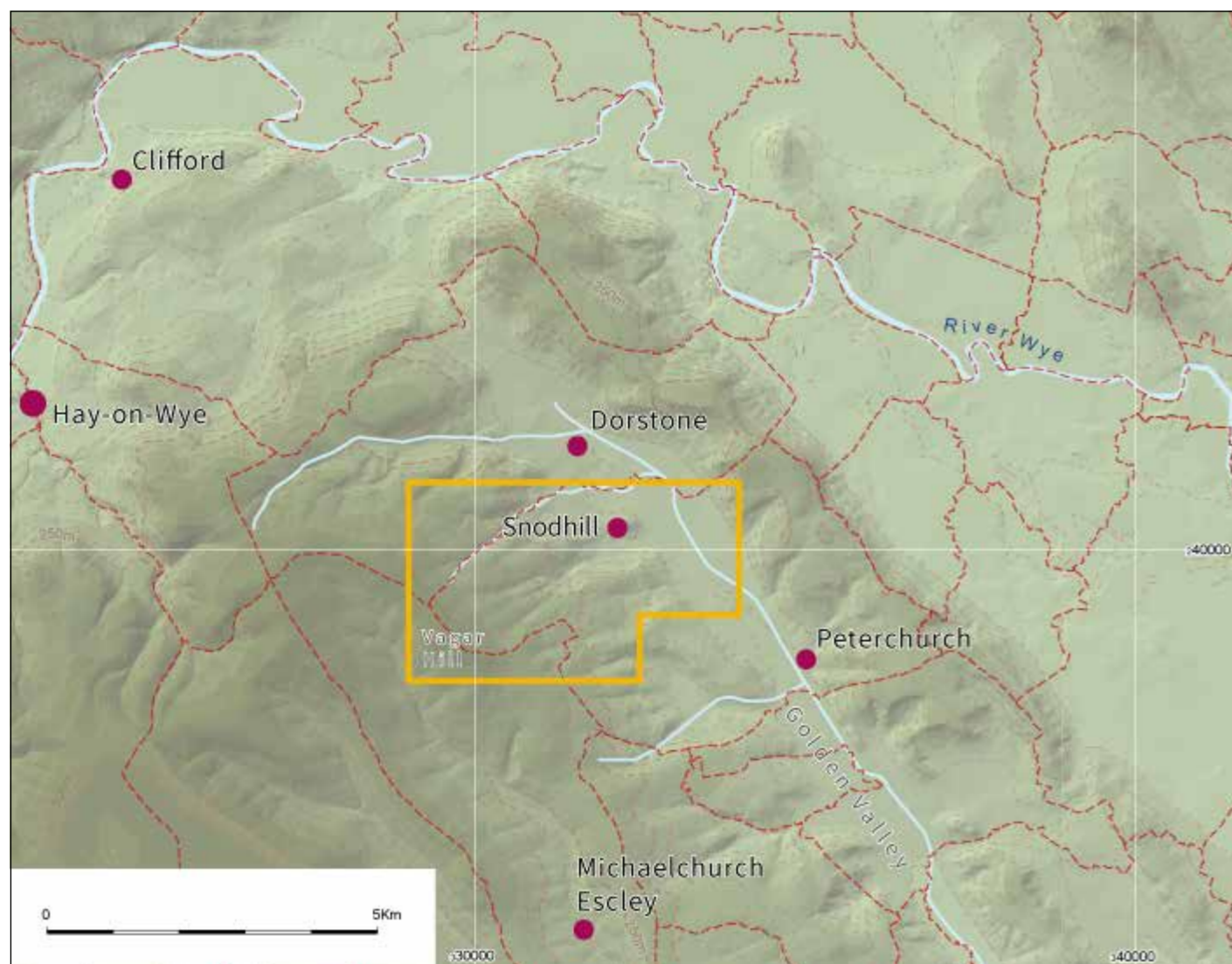
Snodhill was a significant frontier castle, but its history is obscure and it has been inaccessible for a generation. In 1986 both castle and manor were sold at auction, and the new owners were absentees who prohibited all access to the site, not least by neglecting it so that brambles and scrub invaded. It became physically impossible to get through the gate; Snodhill Castle was entombed in a thicket as dense as that which surrounded Sleeping Beauty's castle.

The site was placed on the Heritage at Risk Register in 1998. In 2016 Historic England was instrumental in transferring ownership

to a newly established Snodhill Castle Preservation Trust (itself set up with support from Historic England's team in the West Midlands). Grants of more than £500,000 from Historic England enabled clearance of overgrowth to reveal the castle once more, major repairs and establishment of a management regime to ensure access and enjoyment of the site in the future. Historic England's Research Group was then allowed the privilege of surveying a major Marcher castle which had been inaccessible to scholars for a generation.

Documentary sources are extremely sparse, so archaeological study of the physical

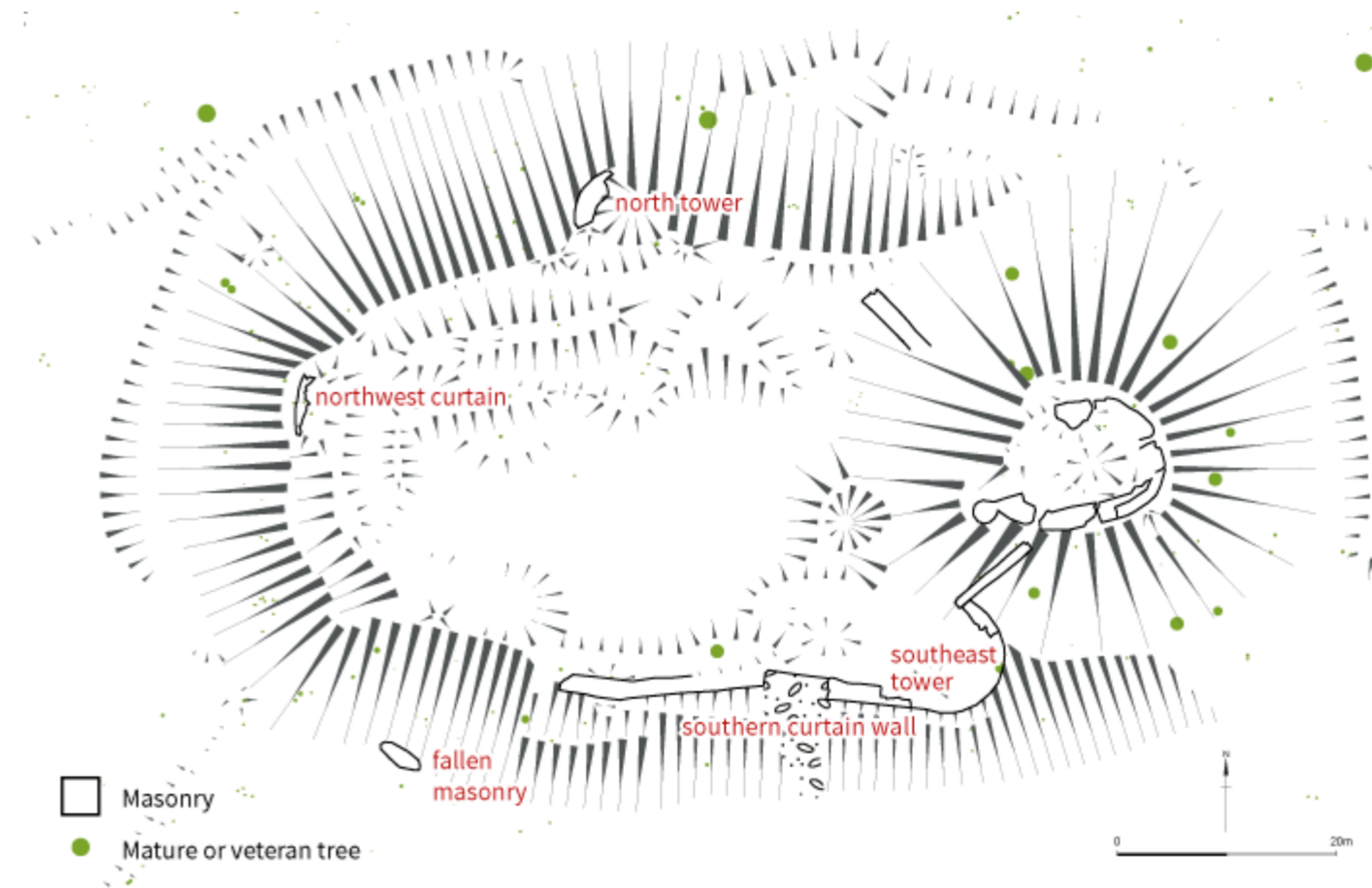
**Below left:** Snodhill's regional setting, with the study area outlined in yellow. © Historic England, Sharon Soutar



remains was of paramount importance. The research has informed conservation work at the site, and will form the basis for the preservation trust's own proposed research programme. The trust's volunteers had already made a good start on clearing the site so, following a very fruitful visit involving staff from Historic England and members of the Castle Studies Group, the survey began in the winter of 2016-17.

The castle lies within the Golden Valley, six miles east of Hay-on-Wye and close to the Welsh border. It is situated on a steep-sided knoll, from which it dominates this part of the valley. It is a large motte-

**Below right:** Plan of Snodhill Castle. © Historic England, Sharon Soutar



and-bailey castle of 11th- to 12th-century date, with surviving masonry elements that attest to later medieval developments. It sits within a landscape that preserves many historic features, including a deer park, a moated site, settlement remains and evidence of former routeways, fields, and quarries. Our research therefore involved detailed survey and investigation of the castle's earthworks and stone structures, and a wider-ranging aerial investigation of the setting. Concurrently with our survey Herefordshire Archaeology opened some small excavation trenches in advance of consolidation works, revealing further details of the castle's structure >>



### The castle's history

Snodhill Castle was founded at some time before 1136, probably by one of William the Conqueror's lieutenants in the Welsh Marches. It undoubtedly had a timber-framed tower and other wooden defences, but our research suggests that a substantial stone-built hall may also have stood in the bailey from a very early date. Only the lower part of one wall of this building is currently visible. By the mid-12th century the castle was in the hands of the Chandos family, who were to hold it for 400 years. It was the head or *caput* of the Honour of Snodhill, a group of manors and estates scattered across Herefordshire. The castle was re-fortified in stone, probably in a piecemeal fashion, at various points during the 12th to 15th centuries. An elaborate great tower was built on the motte and subsequently enlarged by the addition of a substantial forebuilding. A curtain wall was constructed, probably in a series of phases; later, probably in the 14th or 15th centuries, at least two towers were added to it; they stand on the north and south-east sides of this wall. A range of buildings was also constructed within the northern and western sides of the bailey. Two of the very few historical references to the castle suggest that it was 'in ruins' in the mid-14th century, but that by the beginning of the 15th century it was thought capable of being put in a state of defence against the Welsh. This probably reflects the fluctuating fortunes of the Chandos family >>



**Below:** Snodhill from the air: the castle is within the wooded area at bottom right and the deer park occupies much of the landscape above and to the left. © Historic England, Damian Grady, HEA 29993/008, 25 November 2016



Below: The park pale on Vagar Hill. © Historic England, James O. Davies, DP195848

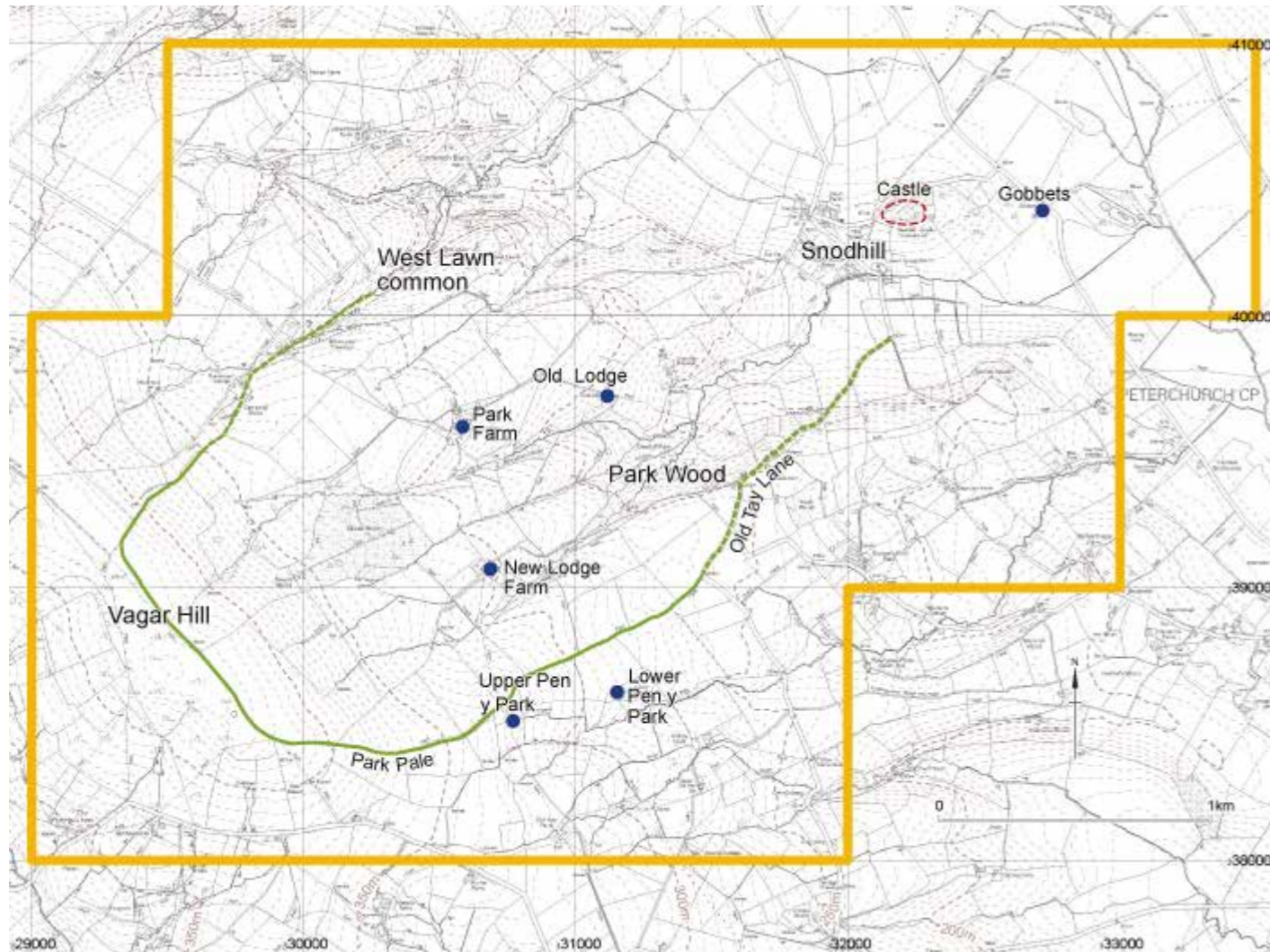


### **A lordly landscape?**

The current settlement at Snodhill consists of a few farms and houses, scattered mainly to the west of the castle. It is probable that the medieval settlement was no more extensive, though possible building platforms have been noted on an area close to the castle known as The Green. However, there is an extensive open space on the east side of the castle knoll itself, and this may have been intended for some function attached to the castle, such as an outer bailey or a garden. It may also be that the castle's founders intended to lay the area out as a borough, an economic development of a type carried out by many lords of Marcher castles, with varying levels of success. If this was the intention at Snodhill it seems never to have been accomplished, though further research may throw more light on this question. Snodhill is situated in a very fertile valley, and the economic basis of any settlement there will have been mainly agricultural – but the area's complex geological formations have been extensively exploited by quarrying, and if this took place early it may have added significantly to the revenues of the manor.

It was probably in the 14th century that the owners of the castle laid out an extensive deer park, occupying a side valley to the south-west of the castle and stretching to the near horizon when viewed from the handsome windows in the castle's great tower. This park incorporated lodges and subsidiary enclosures, perhaps for specialised functions such as the breeding of deer. The park pale survives well on Vagar Hill, where a massive drystone wall is fronted by a still-visible ditch >>





On the opposite side of the castle from the deer park, in the valley bottom, is another site of great potential interest. Close to a farm called The Gobbets, near the River Dore, is an earthwork resembling a small moated site with a pond or small lake to one side. This is known locally as 'The Splashes'. Traditionally interpreted as a 'homestead moat', this site seems

more likely to be another element in the designed leisure landscape of the castle – a modest version of the grand 'Pleasance' at Kenilworth, possibly including a garden. It is notable that moats are extremely rare in this part of Herefordshire and that the only one close to Snodhill is also adjacent to a castle, at Chanstone.

**Above left:** Snodhill Castle, The Gobbets and the Park; park place-names are highlighted. © Historic England, Sharon Soutar

A modest version of the grand 'Pleasance' at Kenilworth, possibly including a garden.



**Above right:** Earthworks at The Splashes, with the moated site towards the right; details from aerial photography, superimposed on Environment Agency lidar plot. Lidar © Environment Agency 2006. All rights reserved

Snodhill is one of many castles in the region – there are no less than 12 in this part of the Golden Valley alone, all within a distance of 10 miles. Virtually nothing is known of the history of any of these castles and archaeological study has been extremely limited so far. A great deal more research is needed. Thanks to the efforts of the Snodhill Castle Preservation Trust

a good start has been made at this, one of the more prominent castles of the area. It will be opened to the public when the current programme of conservation work is complete ■



### The authors

Mark Bowden MCifA FSA  
*Senior Investigator  
with Historic England.*



Mark's research interests include landscape archaeology, hillforts, castles, designed landscapes, common lands, and the history of archaeological survey. He has published widely on these and related issues and contributes to training courses on archaeological survey and investigation. He is currently manager of one of Historic England's Historic Places Investigation Teams, and Chair of the Landscape Survey Group.

Rebecca Lane MA  
*Senior Investigator  
with Historic England.*



Rebecca worked in the commercial sector for six years as a buildings archaeologist, and latterly as a historic buildings consultant, before joining English Heritage in 2010. Now a member of Historic England's Historic Places Investigation Team, she is responsible for a range of projects looking at early architectural fabric in historic towns, and has recently produced the new edition of *Understanding Historic Buildings*, a guide to good recording practice.

Fiona Small  
*Investigator  
with Historic England.*



Fiona has worked for the organisation and its predecessors since 1992, trained as an air photograph interpreter, and subsequently worked as an aerial investigator. She has been involved in a number of major National Mapping Programme projects. Fiona has particular interests in 20th-century military archaeology, and in the contribution aerial archaeology can make to understanding historic landscapes and the evidence for the continuity of human activity through time.

### Further information

Bowden, M, Lane, R and Small, F  
2017 *Snodhill Castle, Peterchurch, Herefordshire: Archaeological, Architectural and Aerial Investigation and Survey*. Historic England Research Report 76/2017: <http://research.HistoricEngland.org.uk/>

As part of the ongoing work with the local community and Snodhill Castle Trust the Historic England Photography team created a [short film](#) charting the work of the project.





# Framlingham's historic workhouse

A unique embodiment of Poor Law history,  
standing within the inner bailey  
of the famous Suffolk castle.



**Above:** Aerial view of Framlingham Castle, taken by Damian Grady in September 2012. © Historic England, 2758/015

The fairy-tale silhouette of Framlingham Castle – with its wall-walk, turrets and decorative Tudor chimneys – draws visitors from far and wide. Until the 17th century the inner bailey was filled with stone structures, including a great hall, lodgings and a kitchen. Today, however, this area contains just one two-storeyed building, abutting the west wall. This structure clearly did not form part of the medieval castle complex, although several carved heads have been reset on its façade and some old fabric is buried in its walls.

The building comprises a central range flanked by north and south ranges, forming a U-shape which is open to the east. In order to access the wall-walk, visitors are directed through a shop and café in the central range. The gabled 'Red House', lying to its south, served as a private dwelling after Framlingham Castle entered guardianship in 1913, but was altered to provide a catering kitchen and offices in 2017. It is not currently open to the public. The range to the north, known at one time as the 'White House', has accommodated the Lanman Museum, a local collection, since 1984. Visitors thus pass through the building on their way up and down from the wall-walk, but few pay it the attention it deserves >>



**Top:** Medieval carved head, reset on workhouse façade.  
© Kathryn Morrison



**Bottom:** English Heritage's shop at Framlingham Castle in 2016, taken before the recent works were implemented.  
© Kathryn Morrison



**Poor Law history**

Recent research by Emily Cole and Kathryn Morrison of Historic England’s Historic Places Investigation Team, undertaken at the request of English Heritage, has shown that the building was erected in two main phases. These represent significant steps in the institutionalisation of poor-law provision in the 17th and 18th centuries. No other surviving building illustrates this story. The Framlingham Workhouse, as the building should be called, is thus very rare and special.

The tale begins in 1664, with the erection of the Red House as a workhouse for Framlingham parish. At this time, the wool trade was in decline, spinners were

out of work, and poverty was rife. Complying with the Elizabethan poor laws, Framlingham’s overseers had collected relief for the poor of the parish since at least 1568. This would have been dispensed either in cash or in kind. The workhouse provided a very different approach. Essentially, it was a spinning-house – a workshop or factory – where the poor came each day to spin or weave and thus earn their keep. Unlike the workhouses of the Victorian era, it was not a residential institution. Most 17th-century workhouses of this type occupied converted buildings, but several are known to have been purpose-built. Just one other example survives from the 17th century, built in 1626 in Newbury, Berkshire.

Framlingham Workhouse was erected by Pembroke College, Cambridge, fulfilling a bequest from Sir Robert Hitcham (1573-1636), who had owned the castle. The architect may have been Peter Mills, who designed several other buildings for Pembroke College around this time, including almshouses in Framlingham itself. Although not residential, the workhouse has a domestic form, thus replicating the conditions in which the poor worked in their own cottages. The workmaster, John Kilbourne, lived in the north range of the castle, which stood until 1700. The White House – a remnant of the original castle buildings – became a boy’s school, also set up under Hitcham’s will, and overseen by the resident schoolmaster, Zaccheus Leverland.

Before long the workhouse was beset by problems. Not least, the workmaster (probably Kilbourne) ran off with the stock. Like most enterprises of its type, it fell into abeyance. The idea of resurrecting the workhouse along more modern principles was broached in 1699, by which time the national trend was for larger residential institutions set up by incorporations of parishes. These accommodated children who were given a rudimentary education alongside training in spinning or another craft skill. The Red House was put to this purpose for several years under the governorship of Thomas Harding, but eventually began to accept adults as well as children >>



Above: A drawing by Robert Hawes of the north range of Framlingham Castle, as it stood prior to its demolition in 1700. The Red House is shown to the left. © by permission of the Master and Fellows of Pembroke College, Cambridge, Pembroke College N5

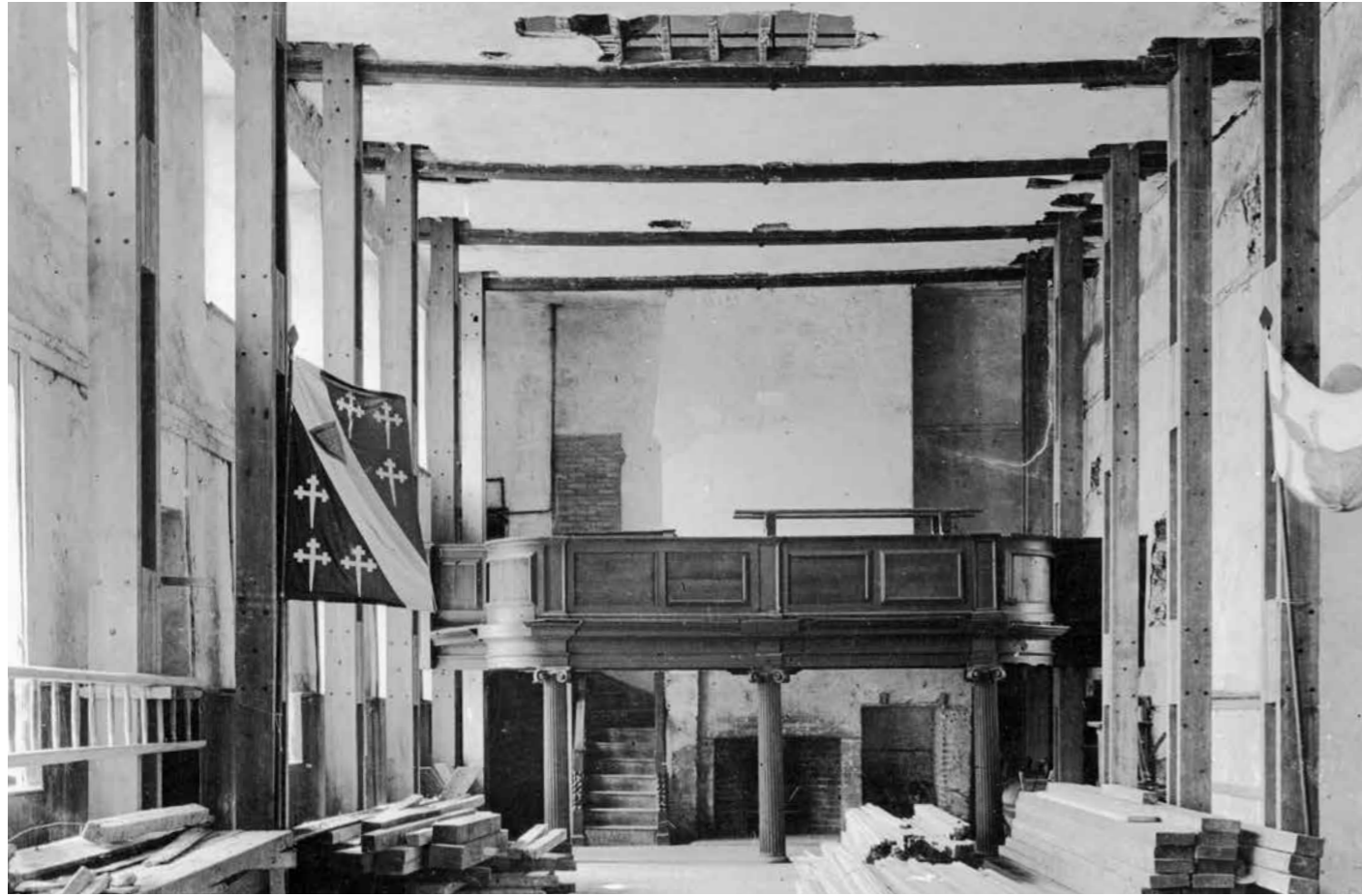
Right top: The Red House. © Kathryn Morrison



Right bottom: The new workhouse, photographed here in 2006, was built between the Red House and the White House in 1729. © Kathryn Morrison







**Above:** The Castle Hall in around 1930, showing the gallery, formerly the organ loft of the parish church. © Historic England, AL0686/004/02

As the need for residential workhouse accommodation grew, plans were laid for a larger institution. The central block was erected in 1729 on the site of the great hall of Framlingham Castle. It included work rooms and dormitories, and for the first time a ‘workhouse test’ was applied. This concept had gained ground after the passage of Knatchbull’s Act (1723), which triggered a great increase in workhouse provision across the country. People were now compelled to live and work in Framlingham Workhouse in order to receive relief in the form of bed and board: the ultimate test of their poverty. Inevitably, the building filled with those who struggled to look after themselves – the very young, the very old, the sick or infirm, and unmarried mothers. In parallel, so-called ‘outdoor relief’ (or dole) was dispensed to assist Framlingham’s industrious poor.

Eventually Hitcham’s school quit the White House which, in 1797, became part of the workhouse, with its bakehouse on the ground floor. It was only in 1813, however, that the Red House was also absorbed into the workhouse.

Everything changed in 1834, when the New Poor Law was introduced. A network of Poor Law Unions covered the entire country, and Framlingham was assigned to Plomesgate Union. A new workhouse was built at Wickham Market on a double-cruciform plan, designed to segregate different classes of inmate, indoors and out. The notorious Victorian workhouse system was born, leaving hundreds of parish workhouses empty across England.

After its inmates moved out, the centre of Framlingham Workhouse was gutted to create a ‘Town Hall’ or ‘Castle Hall’, with a gallery at its south end. The hall was put to various uses: for public gatherings, as a court house, and as a drill hall. The attic was retained – possibly, initially, as a dormitory for a girl’s school that occupied the upper floor of the White House. Beneath this, next to the former bakery, was a fire engine house. As for the Red House, it became home to the master of Hitcham’s school until 1882, when the schoolmaster Samuel Lane died and it was taken over by the drill instructor and his family >>

**Right:** The interior of the exhibition space, looking up from the ground floor into the former first-floor dormitory, taken before the recent works were implemented. © Kathryn Morrison



**Below:** The attic of the 1729 workhouse. © Kathryn Morrison





## Guardianship

When Pembroke College placed Framlingham Castle in guardianship in 1913, on the eve of the Great War, the tarnished and over-stretched Victorian workhouse system was slowly being superseded by the modern system of old age pensions and other social security benefits. Politically-correct language is not a wholly recent phenomenon: the term ‘workhouse’ was already loaded with stigma and, in 1911, was formally replaced by ‘poor-law institution’. Correspondence relating to Framlingham Castle referred euphemistically to the ‘poorhouse’, rather than the ‘workhouse’, and the central block was persistently called ‘Great Hall’ for much of the 20th century. Because of this prejudice, it was difficult for its 20th-century custodians and visitors to value Framlingham Workhouse as a building, or appreciate its history.

The Red House, though of supreme importance as a rare relic of the Old Poor Law, was allowed to decay to such an extent that extensive repairs were needed in the 1950s. Fortunately, it survived with much of its plan-form intact and was eventually listed at Grade I.

A new scheme has recently been completed to improve the visitor experience at Framlingham Castle, with a kitchen, café and first-floor exhibition space. With more information available about the site’s history as a workhouse, and incentives to spend more time at Framlingham Castle, visitors will also be able to pause to consider those unfortunates who – despite the sublime setting – suffered for their poverty within the castle walls ■

## The author

Kathryn A Morrison MA (Hons) MA FSA  
Joint Head of *Historic Places Investigation with Historic England*.



Kathryn studied art history before embarking on a career as an architectural investigator. Her publications include *The Workhouse: A Study of Poor-Law Buildings in England* (English Heritage 1999), *English Shops and Shopping: An Architectural History* (Yale University Press, 2003) and *Woolworth’s: 100 Years on the High Street* (Historic England, 2015).

## Further information

Cole, E and Morrison, K 2013 *Red House (formerly Framlingham Workhouse), Framlingham Castle, Suffolk*. Historic England Research Report 23/2016: <http://research.HistoricEngland.org.uk/>

Framlingham castle visitor information: <http://www.english-heritage.org.uk/visit/places/framlingham-castle/>

**Below:** A tinted postcard of c 1900 showing the double doors on the ground floor of the north range, which served as Framlingham’s fire engine house. © Kathryn Morrison





The Grade II\*-listed church of St Leodegarius, a complex medieval building with a Victorian tower.  
© Historic England, Patricia Payne



# Enhancing Nottingham's local list

Increasing coverage to support the protection of Nottingham's heritage.

Research into Old Basford, an easily-overlooked suburb of Nottingham, has highlighted the impact of industries associated with lace manufacture, as well as the area's development from village to suburb. In particular, the workplaces and homes of prominent industrial-era lace bleachers were identified, as well as the gentry residences of the pre-enclosure village.

The research was undertaken during a work placement at Nottingham City Council, which was part of a collaborative PhD co-funded by Historic England. It produced a historic area assessment and identified new assets to be added to the local list, thus contributing to one of Nottingham's Heritage Action Zone projects. More widely, the research considered how best to support the protection of locally listed assets through Article 4 directions; trialled the local list selection criteria; and set a methodology which could be followed by

local volunteers seeking to continue the local list enhancement project in other parts of Nottingham.

## Old Basford

Old Basford is today a suburb of Nottingham. It is a centre for light industry, has good transport links into the city centre, and is also increasingly significant as a residential area. Its character is mixed, and defined by the close proximity of industrial buildings to residential and housing infill, creating streets in which buildings of diverse eras sit side by side. The medieval village of Old Basford is difficult to discern to the untrained eye, but a glimpse survives of it in the form of the Grade II\* listed church of St Leodegarius, and two Grade II-listed 18th-century houses. Entries on the National Heritage List for England recognise some of Old Basford's most important assets – the brewery, maltings, cemetery chapel, and a pub – but little had been formally identified at a more local level >>





**Above:** Basford House, one of the eighteenth-century Grade II-listed houses in Old Basford. © Historic England, Patricia Payne

**Below:** A Georgian house in Old Basford that has now been added to Nottingham's local list. © Historic England, Patricia Payne



The research uncovered some buildings of architectural value that have previously been overlooked, such as an 18th-century house whose poor condition in the early 1990s probably accounts for its omission from the first local list. It has now been renovated and stands as a fine example of Georgian domestic architecture, revealing the lifestyle of Basford's gentry at this period. Its gate piers, still inscribed with the owner's surname and now incorporated into the entrance of the local brewery, show the extent of the grounds of the house.

Historical accounts of Old Basford have captured the attention of local people, including their representatives in the local authority. Where these match with surviving historic fabric, new assets have been added to the local list. The Fox and Crown, for example is a Victorian building on the site of a much earlier pub called The Bowling Green, which attracted day trippers from Nottingham in the 18th century, highlighting the rural nature of Basford at

that time. As there was no police station, the landlord of The Bowling Green was in 1707 also a gaoler. The cellars were used as the local lock-up and may still be there today. These associations are important links to the history of Basford as a village.

Other additions to the local list reveal a different aspect of its history: the Victorian industrialisation and growth of the village thanks to its role in bleaching works, which were an important element in Nottingham's famous lace industry. The River Leen and the Day Brook provided the ample water essential to this process. A factory and a house have been added to the local list as they illustrate the home and workplace of a bleachworks owner in the late 19th century. The factory building, retaining a plaque reading 'George Pearson and Co/Bleachers Dyers and/Lace Finishers' is a rare survival of an industry which transformed Basford from small village to industrialised suburb within a century >>

As there was no police station, the landlord of The Bowling Green was in 1707 also a gaoler



**Left:** The Fox & Crown, on the site of the earlier Bowling Green Inn. © Historic England, Patricia Payne



These are just a few examples of the heritage assets highlighted by the project. Designation of a conservation area was considered but it was decided that the scattering of individual assets in the area lacked a unifying character, with little positive contribution from the spaces and buildings in between: as a result, these structures better merited management through local listing. The suggestions for the local list were then used to pilot the criteria to be used across Nottingham, which utilise Historic England's guidance for local lists.

### Using Article 4 directions

It was also important to consider how best to give local designation weight in the planning system. Nottingham has a policy within its local plan, and this could be supported by the production of a supplementary planning document, along with training for council staff in how to deal with non-designated heritage assets. The research examined a further option in support of local listing: use of Article 4 directions.

Article 4 directions can come with a wide range of permitted development rights: these include alteration, painting of exteriors, and the positioning of satellite

dishes. Article 4 directions also offer protection to locally listed assets beyond recognition through the National Planning Policy Framework, and can be tailored to the characteristics of a place. The research suggests that it would be beneficial to implement a single Article 4 direction preventing demolition for all locally listed buildings outside of a conservation area. This strategy conserves resources while bringing locally listed buildings outside a conservation area into equivalence with those inside one, and thus offers clarity across the system. The consultation process for adoption to the local list can be combined with the consultation for Article 4 directions, thus avoiding duplication. Again keeping resources in mind, the compensation payments associated with Article 4 directions can usually be avoided if 12 months' notice is given before the direction comes into force.

### Making local lists work

The local list selection process must work alongside the planning process if it is to be effective. A rigorous approach to selection is beneficial as it enables the local list to be a trustworthy flag to planners of heritage value, and thus less easily challenged by planning applicants. For this reason, it is vital to review the content of those

local lists that have evolved gradually over time. It is also important to note that the creation of a local list should not exclude assets which are not on it from having value. Such structures may still be considered as 'non-designated heritage assets', as stated in the National Planning Policy Framework. It may be wise to state this in supporting documentation.

The goal for Nottingham is to adopt a local list which is known and used by local people as well as being a robust planning document. Once adopted, anyone can nominate a building for inclusion in Nottingham's list. The research project included several activities aimed at the general public: a walking tour of Old Basford, an article in the local press, and a training event for voluntary researchers. These promoted the heritage of the area, encouraging pride in the local landscape, the value of which is easily overlooked. Furthermore, the training day passed on a methodology that depended on locally available resources: it can thus enable volunteers to expand knowledge of Nottingham's heritage and identify further candidates for the local list.

Overall, the research contributed to wider thinking on the local list adoption process

which was taking place as part of the Heritage Action Zone project, and its results will enable the local list to work well for local communities and planners alike ■

### The author

Claire Price

*PhD student with the University of York and Historic England.*



Claire's research focuses on statutory and non-statutory heritage lists in England. Prior to her PhD, Claire was the

Listed Buildings Caseworker for the Council for British Archaeology.

### Further information

Beckett, J 1997 *A Centenary History of Nottingham*. Manchester: Manchester University Press

Bowley, A S 1998 *Basford – Village to Suburb*. Nottinghamshire: Walk and Write

Historic England, 2016 *Local heritage listing: Advice Note 7*: <https://HistoricEngland.org.uk/images-books/publications/local-heritage-listing-advice-note-7/>

**Right:** George Pearson & Co, one of the few surviving bleachworks buildings. © Historic England, Patricia Payne



**Right:** Rosebery House, built for George Pearson, bleachworks owner, in 1884. © Claire Price





# Major parish churches – perceptions and expectations

Research identifies the depth of the issues facing a distinctive type of church building.

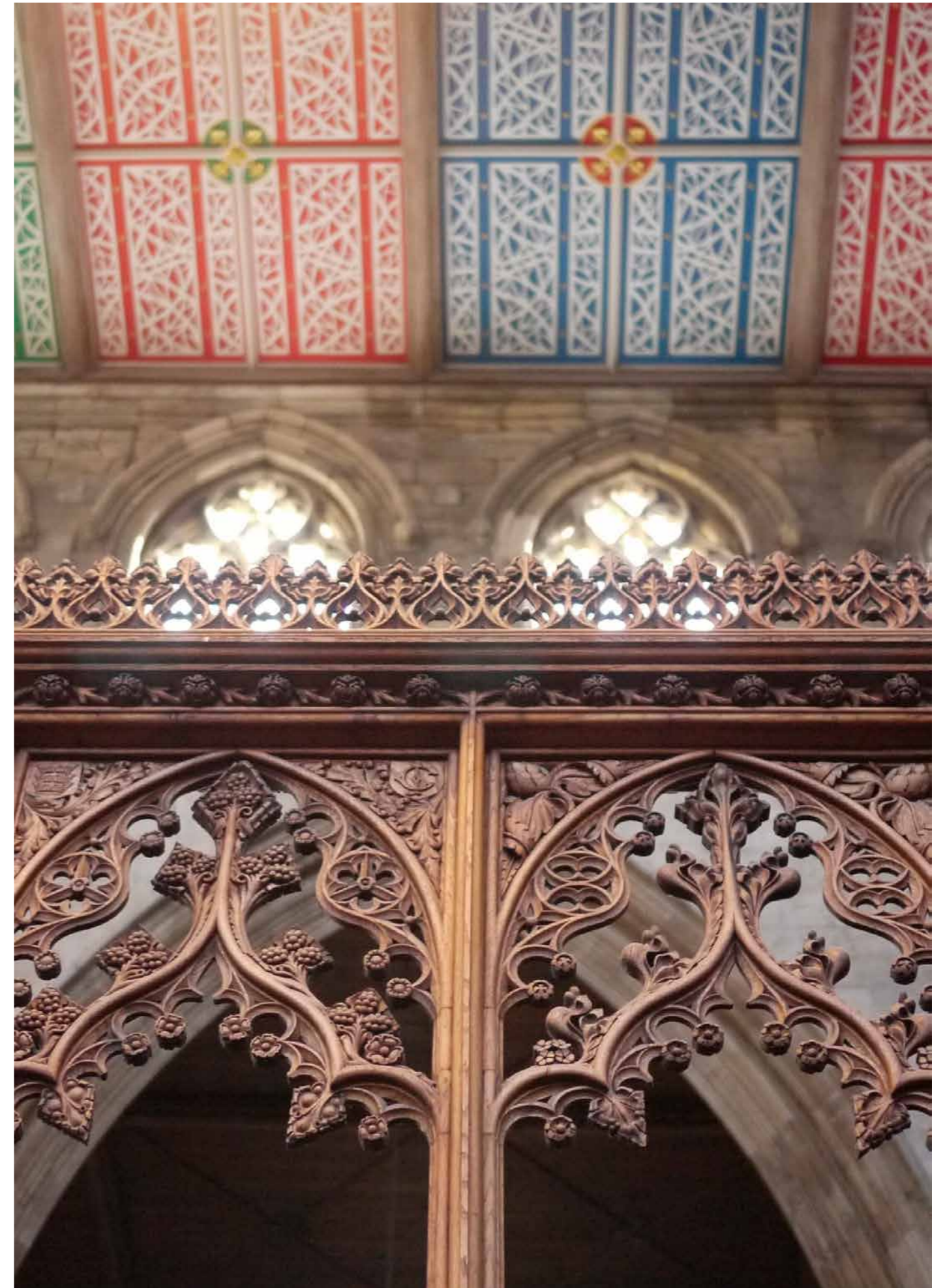
In 2016, Historic England commissioned research into the sustainability of the Church of England's major parish churches. The project was conceived by Doncaster Minster and supported by the Church Buildings Council, the Greater Churches Network, the Heritage Lottery Fund and a team of expert consultants. The resulting research report ([Burrows 2017](#)) sought to understand the particular challenges set by the need to sustain these buildings as active places of worship; it also analysed the opportunities they present. The evidence it provides confirms that these churches bear a great weight of responsibility. They will require additional resources if they are to remain sustainable in the long-term.

The term 'major parish church' was developed by the Church Buildings Council as a way of defining those churches which are comparable to cathedrals in scale of significance, size, and prominence but do not have the same level of recognition, resources, or support. Such a church has all or some of the following characteristics: it is large – with a footprint of over 1,000 sq m – it is on the National Heritage List; it is open to visitors daily; and it makes a significant civic, cultural, and economic contribution

to its community. There are approximately 300 such churches in England, compared with the Church of England's 14,500 other listed places of worship.

The methodology collected data (both hard and anecdotal) on the condition of the built fabric; access to resources (such as paid staff, funding, and advice); visitors; and wider support. Eighty major parish churches were asked to participate in an online survey covering a range of themes, from the constraints and opportunities of managing a listed building to the challenges and opportunities created by the need to welcome visitors. Fifty of these churches then became the subject of a written case study. At least one representative from each was interviewed over the telephone and asked to describe the challenges, frustrations, opportunities, and joys of life in such a building. Twelve were selected for further, in-depth consideration, which included meeting on site with representatives at the church itself. The wider experiences of strategic decision-makers were also captured, through contact with diocesan support officers, archdeacons, and church architects. The perceptions of the local community were captured as part of an [associated film](#) >>

**Opposite:** The sheer scale and volume of significant historic fabric, such as this painted roof and decorative screen, sets major parish churches apart. © Rebecca Burrows





## Findings

Some of the headline findings were anticipated – but others were more unexpected. Historic England's Heritage at Risk register (2016) included no less than 16 per cent of major parish churches, compared to just 6.8 per cent of listed churches overall. Half of the churches do not generate sufficient income to meet expenditure, and major parish churches spend on average a staggering 37 per cent of their outgoings addressing urgent issues with their built fabric that had been identified in their compulsory quinquennial inspections. However, a major parish church's most challenging characteristics are often also its biggest asset: almost 90 per cent of representatives believe the scale and significance of their church is a 'help' to mission and ministry.

Major parish churches dominate the environment in which they are set, and welcome visitors from all over the world. Beverley Minster is the symbol of Beverley. Bath Abbey is an icon of Bath. They are like cathedrals. Except they are not. The retention of pre-Reformation titles, as with Hexham Abbey and Christchurch Priory, or the use of recently-bestowed honorific titles, as with Leeds Minster, have little practical bearing but can reinforce assumptions about status, function, wealth, and profile. Bath Abbey attracts around 400,000 visitors per annum, but the average number of annual visitors to major parish churches is a modest 23,200. By comparison, the average number of annual visitors to each of the Church of England's 42 cathedrals is 238,000. Cathedrals are each blessed with a minimum of three clergy. Among major parish churches, 88 per cent have to share their clergy with other parish churches in their group or

benefice. It is usual for a cathedral to have a dedicated Fabric Advisory Committee, and support from the national Cathedrals Fabric Commission for England. A major parish church must jostle for attention with its fellow parish churches when applying to its Diocesan Advisory Committee for advice about the building. Nearly all major parish churches operate within the parish system and with parochial resources, no matter what cathedral-like expectations they shoulder.

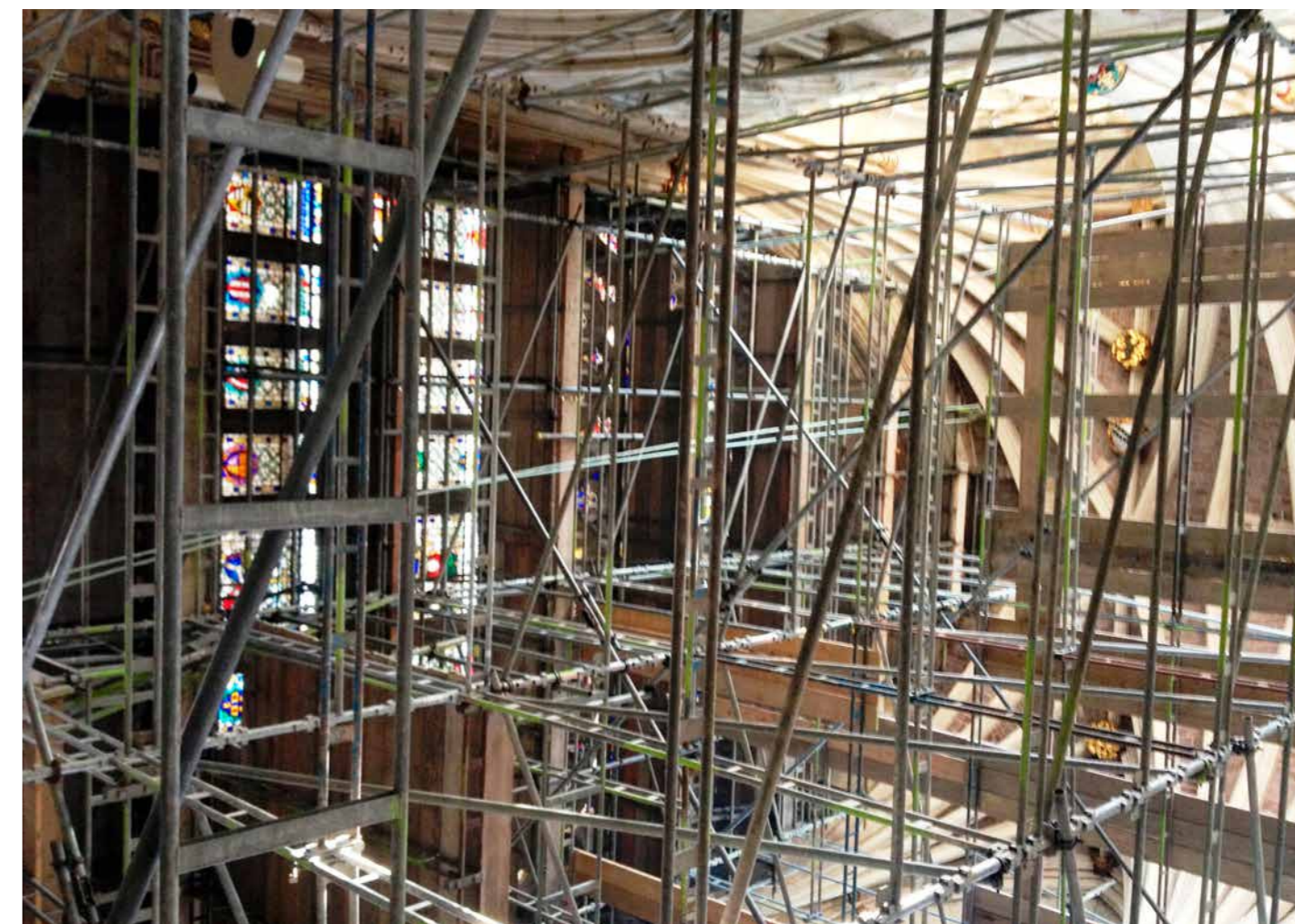
If it is perfunctory to compare major parish churches with cathedrals, comparing them with each other can throw some stark differences into relief. Dorchester Abbey is located in a village in an area of low deprivation, and its parish expects it to sustain a cathedral-standard programme of cultural activities. By contrast, St Agatha, Birmingham is located in an inner city area of high deprivation, and has had to learn

how to deliver an appropriate missional response to occasional acts of extreme violence in the parish.

The common challenge all such parish churches face is financial. Running costs can be £1,000 a day. 43 per cent of major parish churches cite parish share (or its equivalent) – an annual sum a parish is asked to contribute to diocesan running costs – as their largest item of expenditure, and 44 per cent cite building repairs. The average cost of a major repair and development project for a major parish church is £550,000. It is therefore surprising that approximately two-thirds of major parish churches have not received a grant from the Heritage Lottery Fund, the principal funder of heritage and conservation repair projects in England. For those that have received a grant, the average award to a major parish church has been £350,000 per project >>



A major parish church must jostle for attention with its fellow parish churches when seeking diocesan advice



Above: A bucket is used to catch drips from a leaking roof at a major parish church. © Rebecca Burrows

Above: Internal scaffolding during a substantial repair project at a major parish church. © Rebecca Burrows



Many major parish churches employ paid staff such as directors of music, administrators, and youth workers. Friends groups and trusts help raise funds for these churches, which also enjoy the support of, on average, 57 volunteers (though some find recruitment of volunteers difficult). The dedication of such individuals is unequivocally among a major parish church's greatest assets; a lack of diocesan and external support is arguably its greatest threat.

Major parish churches are prominent manifestations of the Church of England within communities, a fact reflected in their high attendance figures at Christmas and civic services. But they are also acknowledged to be embodiments of history and servants of the wider community, as well as being nationally important heritage assets.

The report's findings thus illuminate a group of culturally and socially significant historic buildings

that cannot be considered to be sustainable within the current parish system. It provides vital evidence for everyone who cares for and about these buildings, including national policy makers such as those behind the government's recent [Taylor Review](#), which examined issues of sustainability in English churches and cathedrals. The major parish churches report and the Taylor Review are just the first steps towards a sustainable future. Considered strategic planning, increased moral and financial support, and the sharing of best practice will be useful facets of future sustainability strategies for such buildings.

The future of these remarkable buildings as places of worship, architectural wonders, and community lynchpins requires that they be seen and supported as such. It is vital that perceptions are shaped and expectations managed. These are responsibilities that must be shared ■

### The authors

Rebecca Burrows MSc, IHBC  
*Associate Heritage Consultant at Purcell.*



Covering the north of England, Rebecca specialises in unlocking the potential of challenging heritage sites, from places of worship to industrial heritage at risk.

Ben Stoker, MPhil

*Freelance arts and heritage consultant.*



Specialising in nationally significant buildings and collections, Ben has particular expertise in ecclesiastical art and design and 19th and 20th-century painting and sculpture.

### Further information

Burrows, R 2017 *Major Parish Churches: Exploring Challenges and Opportunities*. Swindon: Historic England: <http://research.historicengland.org.uk/Report.aspx?i=15860>

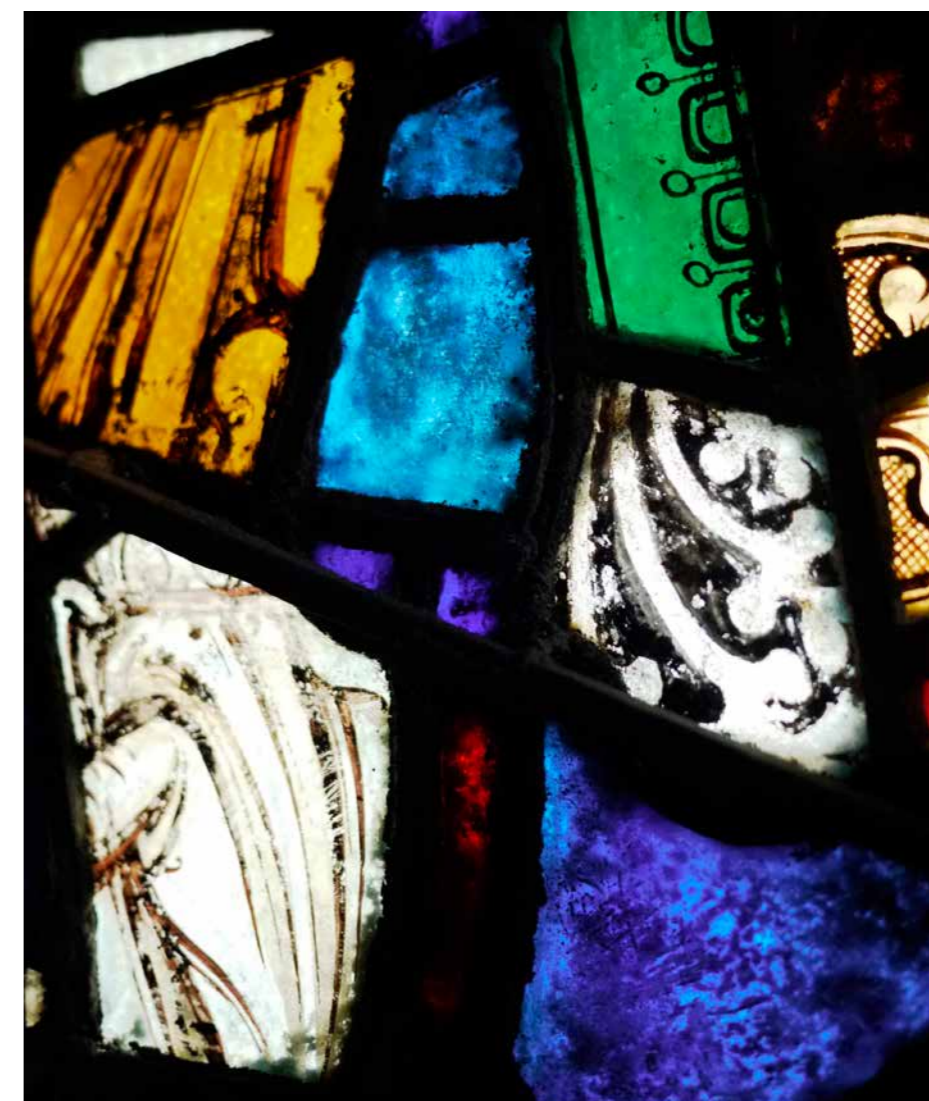
The Major Parish Churches Project, introductory video: <https://vimeo.com/183370054>

*The Taylor Review: Sustainability of English Churches and Cathedrals*: <https://www.gov.uk/government/publications/the-taylor-review-sustainability-of-english-churches-and-cathedrals>

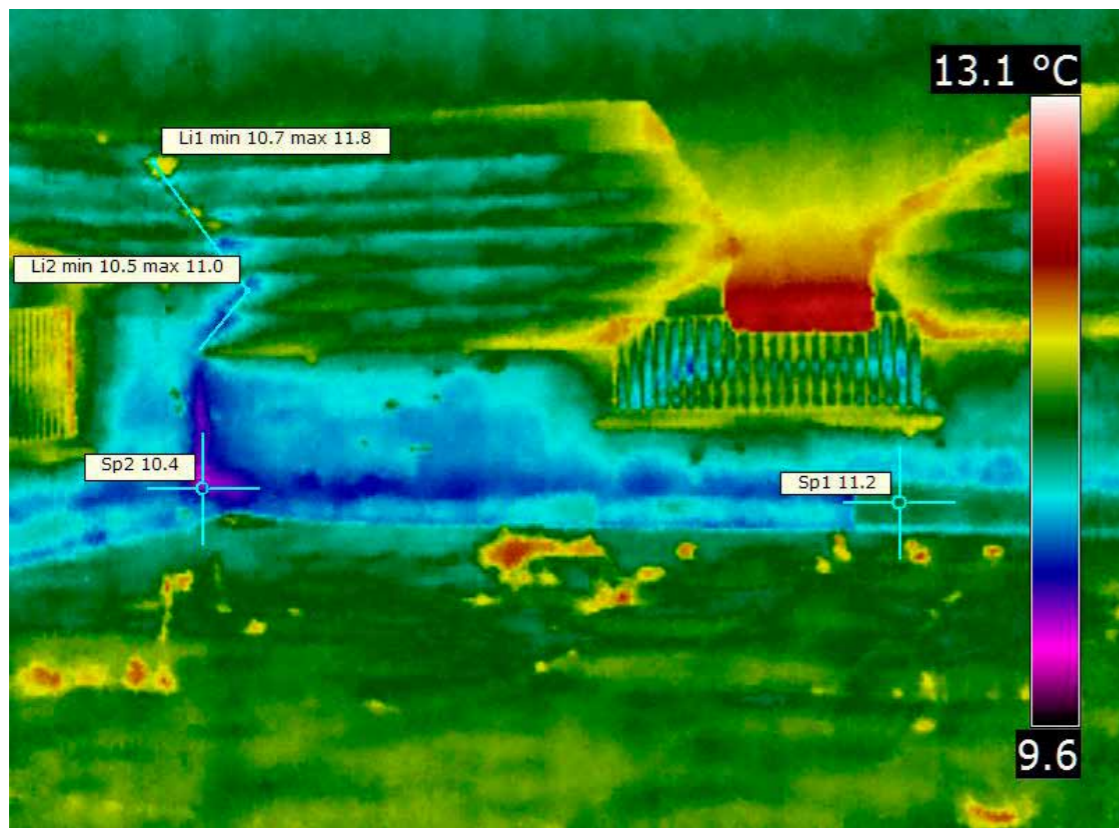


**Left:** Community activities taking place at a major parish church.  
© Rebecca Burrows

**Right:** Ancient artefacts such as these pieces of medieval glass are part of what makes major parish churches distinctive.  
© Rebecca Burrows







**Top:** South-east corner of the roof of the keep, Carlisle Castle. © Historic England, Soki Rhee-Duverne

**Bottom:** Blue areas at Carlisle are colder, indicating damp masonry; faint yellow ones are warmer, indicating voids. © Historic England, Soki Rhee-Duverne

# Thermography in historic buildings

Infrared thermography can provide invaluable information, without intrusive investigation.

Infrared thermography is a non-destructive means of investigation that captures the heat energy emitted from the surface of a material. Images are recorded using an infrared camera, in which the intensity of the infrared radiation is converted to a colour or black and white palette, the patterns of which are an indicator of temperature. Infrared radiation is invisible to the naked eye as the wavelengths occur in the range of the electromagnetic spectrum which is longer than that which the eye can detect.

There are multiple situations in which infrared thermography can be useful in historic buildings. The information it provides can help improve understanding of a problem, as well as determine the performance characteristics of a building and assess its structural and environmental

integrity. Historic England and its predecessor English Heritage have been using the technique since 2002. The technique is particularly useful as it allows diagnosis of problems without the need for intrusive investigations.

Thermography can be used to assess the effectiveness of energy efficiency improvements, measure levels of deterioration caused by moisture ingress, identify risks created by condensation, find physical defects, and investigate electrical faults. Diagnosis of such issues extends the life of a building and improves the living conditions of its occupants. However, successful interpretation of the images must be accompanied by a comprehensive survey of the fabric and an understanding of the history of any interventions that have taken place in it >>



### Identifying areas of moisture risk

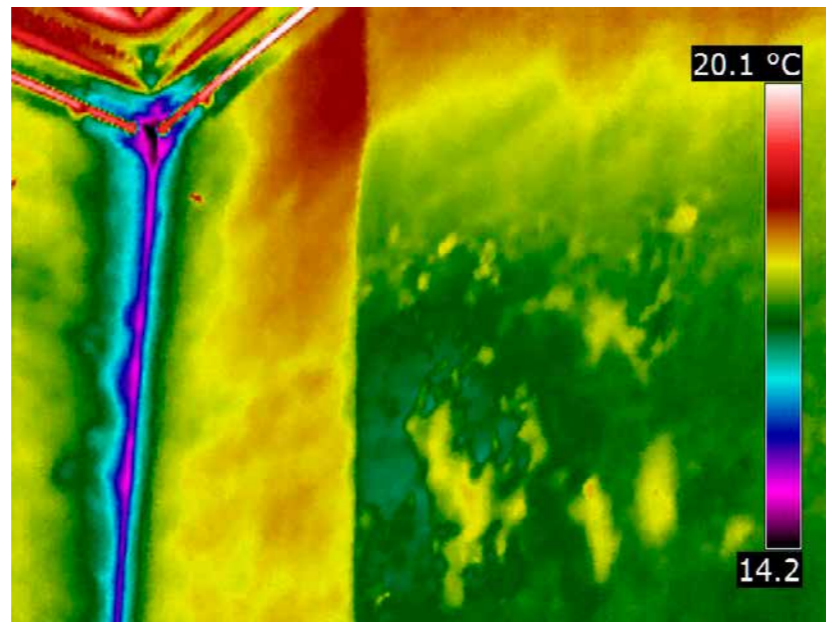
The keep of Carlisle Castle has a history of penetrating dampness. Considerable remedial work has been carried out over the years, including the insertion of a damp-proof membrane in its flagstone roof. The problems have not gone away, and an infrared thermography survey was carried out as part of preparatory work for planned interventions to manage the moisture ingress. The survey highlighted areas of condensation risk in the interior of the keep, as well as damp masonry on the lower parts of the parapets, corners, and flagstone joints of the roof. Possible voids between the membrane and the flagstone roof were also identified.

Thermal imaging was also employed to determine the cause of moisture ingress in the north elevation of the Orangery at Kenwood House, London. Heaters helped to increase local temperature in order to reveal information from the depth of the wall. Water has a higher heat capacity than most materials; it also retains heat longer. Damp areas thus appear warmer than their surroundings and can be identified by thermography.

The survey at Kenwood revealed an unexpected and distinct difference in the pattern of moisture ingress beneath the paint. The apparent difference may be the result of a previous intervention in the fabric: an impermeable membrane that is trapping water leaking from defective rainwater goods. Possible voids or damp areas also became more visible.

**Right:** North wall of the Orangery at Kenwood, showing delaminated and blistered paint caused by damp. The area is to the right of the suspected impermeable membrane shown in the accompanying infrared image. photograph. © Historic England, Soki Rhee-Duverne

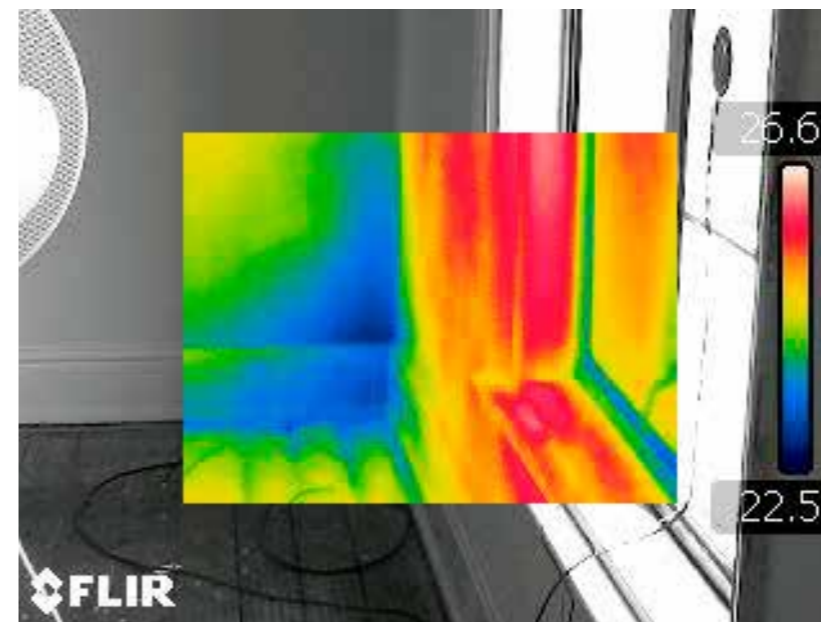
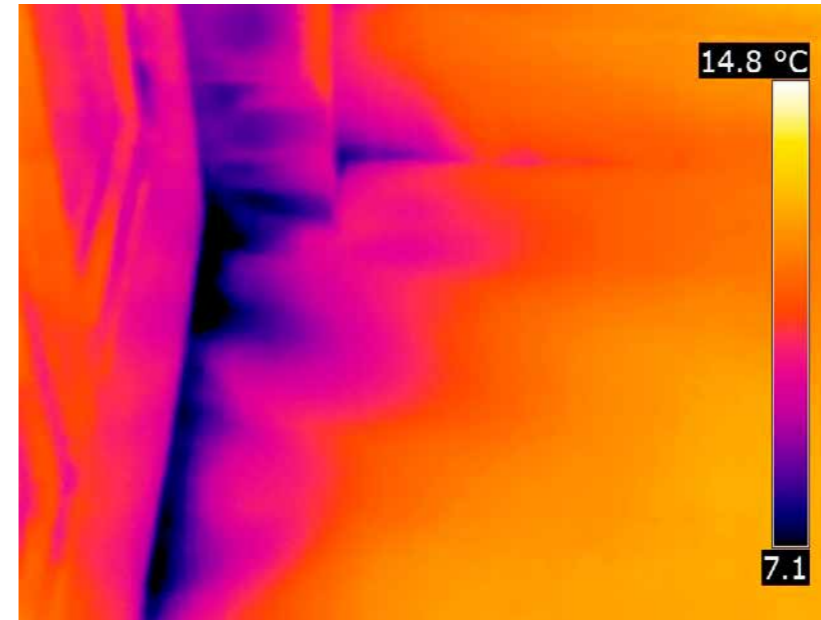
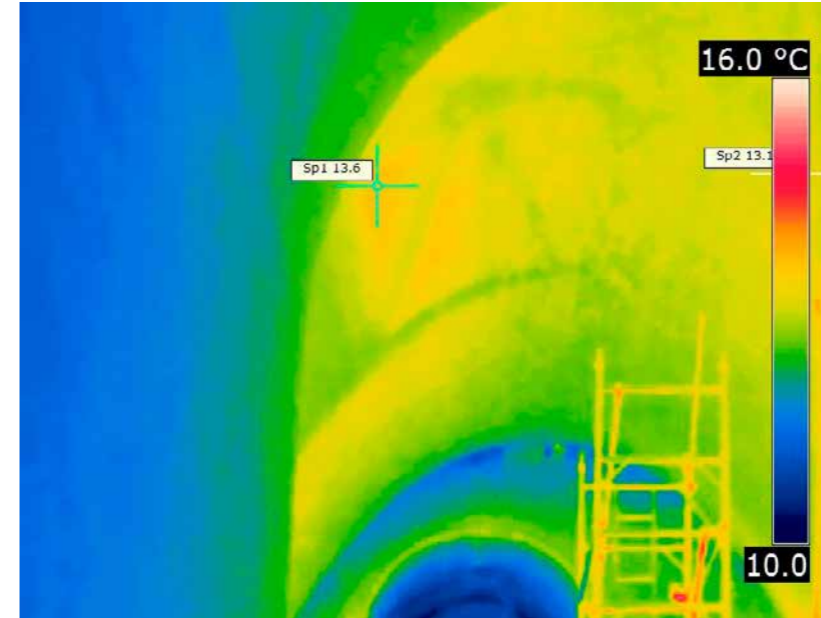
**Below:** The large rectangular area to the left indicates the location of the possible impermeable membrane beneath the paintwork. The yellow patches are possibly voids, or the areas of damp on the wall in the companion photograph. © Historic England, Soki Rhee-Duverne



**Opposite top:** Dover Castle: after the fire was extinguished, a 1°C surface difference was revealed on the right- and left-hand sides of the bedchamber. © Historic England, Soki Rhee-Duverne

**Opposite middle:** Cooler air being drawn inside through gaps under the door of the Bolsover house. © Historic England, Soki Rhee-Duverne

**Opposite bottom:** Thermal bridging in the corner and round the window frame of the house at Bolsover. © Historic England, Soki Rhee-Duverne



### Effect of heat

At Dover Castle, brick dust was noticed falling from the vaulted ceiling in Henry II's bed chamber. Thermography was used to help establish whether there was a relationship between the nearby fireplace, in which a fire is often lit, and the increased rate of delamination of the brick.

A trial was conducted with and without the fire being lit. A small surface temperature difference was noticed, caused by convection in the area immediately above the fire – and surprisingly, also on the wall and ceiling opposite it. It is possible that this slight rise in temperature, in combination with the continued exposure of the fabric to sea salts, is sufficient to exacerbate the delamination process.

### Energy efficiency

Infrared thermography is particularly effective in assessing thermal performance. To assess the effectiveness of recent energy efficiency improvements, the technique was used in one of the houses at the model village of New Bolsover in Derbyshire.

The survey was carried out in combination with an air pressurisation test. This measures the rate a building leaks air by reducing the air pressure inside it, which in turn draws cooler air in. Thermographic images of the resulting temperature change help to identify the paths the leakage is taking and the locations at which the air is entering.

The survey also helped assess the effectiveness of the house's insulation, revealing areas of missing insulation in the loft and significant areas of heat loss through window frames and as a result of thermal bridging, the result of changes of the qualities of the walls at corners and junctions >>



## Monitoring wet historic heating systems

Several projects have used thermal imaging to determine the condition of historic heating systems. The technique has proved to be particularly useful in examining heating systems that have been concealed within the fabric of a building.

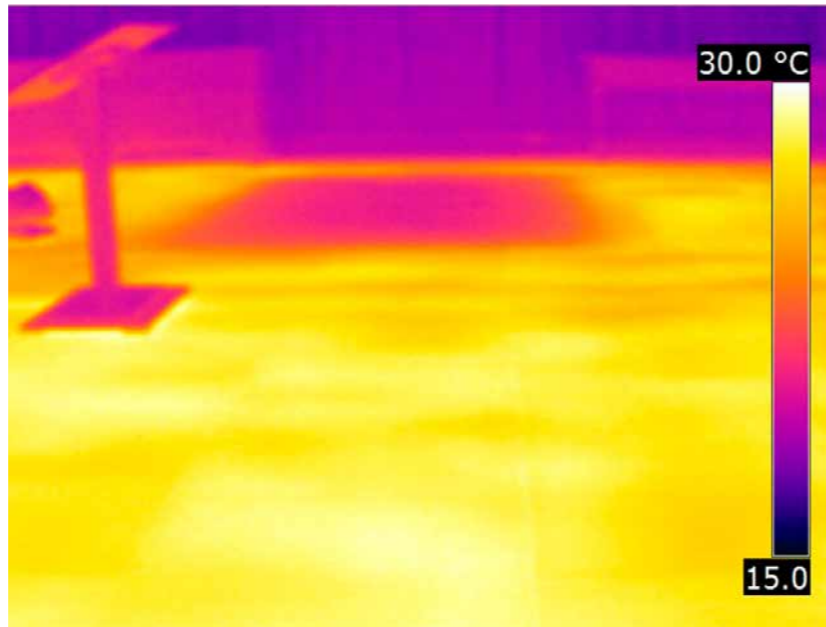
One such is Eltham Palace, London, a large Art Deco house built in 1933-6 for Stephen Courtauld and his wife Virginia, incorporating the late 15th-century great hall of Eltham's royal palace. The Courtaulds included in their work many building services which were modern at the time, including a central heating system that covered house and great hall alike.

Rather than place radiators in the main rooms (and thus spoil their appearance), the heating pipework was concealed in the fabric of the building. An underfloor heating system made of heavy-grade steel was installed under the stone flags in the great hall. Heating pipes also ran under the floor and in the walls or ceilings of the rest of the house.

The heating system has been in use for some 70 years, and by 2008 it was beginning to fail. There were numerous leaks, and little control of the system itself. The lack of an effective water treatment regime was the main cause: over time, the system became blocked with residue.

The decision was made to replace the heating system. Very little information had been recorded about the location of the pipework and thermal imaging was thus used to map out the layout of the system and identify any defects in it.

This process was successful. It also helped to find the cause of damage to gold leaf and veneers in the historic interior, caused by their continued exposure to excessive amounts of heat.



## This process helped to find the cause of damage to gold leaf and veneers in the historic interior

In 2012-14 the heating system throughout the house was replaced like-for-like. The stone slabs in the great hall, installed in the 1950s, were lifted and the heavy-grade steel pipework was replaced with a plastic equivalent. In line with conservation heating principles, an environmental monitoring system was installed, controlling relative humidity rather than temperature (conservation heating is designed to slow down or prevent deterioration of historic interiors and their collections).

### Conclusion

Infrared thermography has proved to be a useful non-destructive diagnostic technique. It is particularly helpful when carried out in combination with other forms of investigation. For diagnosis to be successful, thermal imaging should always be followed up by further investigations and comprehensive building surveys.

There are limitations to the technique. It only detects changes in temperature and the images it produces only record conditions at a single moment in time (some cameras do have a video capability). Reliable results can only be achieved under the right weather conditions. Thermal imaging is also a surface technique. Shallow sub-surface information can sometimes be revealed, but this requires the application of heat to the materials below the surface ■

With thanks to Geoffrey Holder, Historic Building Surveyor, English Heritage Trust; and Bolsover District Council.

### The authors

Soki Rhee-Duverne, MA MSc  
IHBC Affiliate  
*Architectural Conservator with Historic England.*



Soki works in the Building Conservation Research Team. She has worked for Historic England and its predecessor, English

Heritage, since 2007 and has held previous roles as a conservation scientist and researcher. Her current responsibilities are managing research projects on energy efficiency and the hygrothermal performance of historic buildings, and carrying out advisory work for internal and external clients.

Caroline Cattini, CEng FCIBSE  
*Senior Building Services Engineer and Energy Manager with Historic England.*



Caroline has worked for Historic England and its predecessors since 2003, and is responsible for advising on building services and energy

efficiency measures, both on Historic England's buildings and when they arise in statutory casework.

**Opposite top:** Eltham Palace great hall.  
© English Heritage Trust

**Opposite middle:** Thermal image of part of the great hall floor at Eltham Palace. The square area of coolness indicates where one of the underfloor heating coils has failed.  
© Historic England, Caroline Cattini

**Opposite bottom:** Thermal Image of the ground floor drawing room at Eltham, showing the heating coils concealed in the ceiling.  
© Historic England, Caroline Cattini



# Working on the Edge

Our changing perceptions of the wreck of HMS *Colossus*.

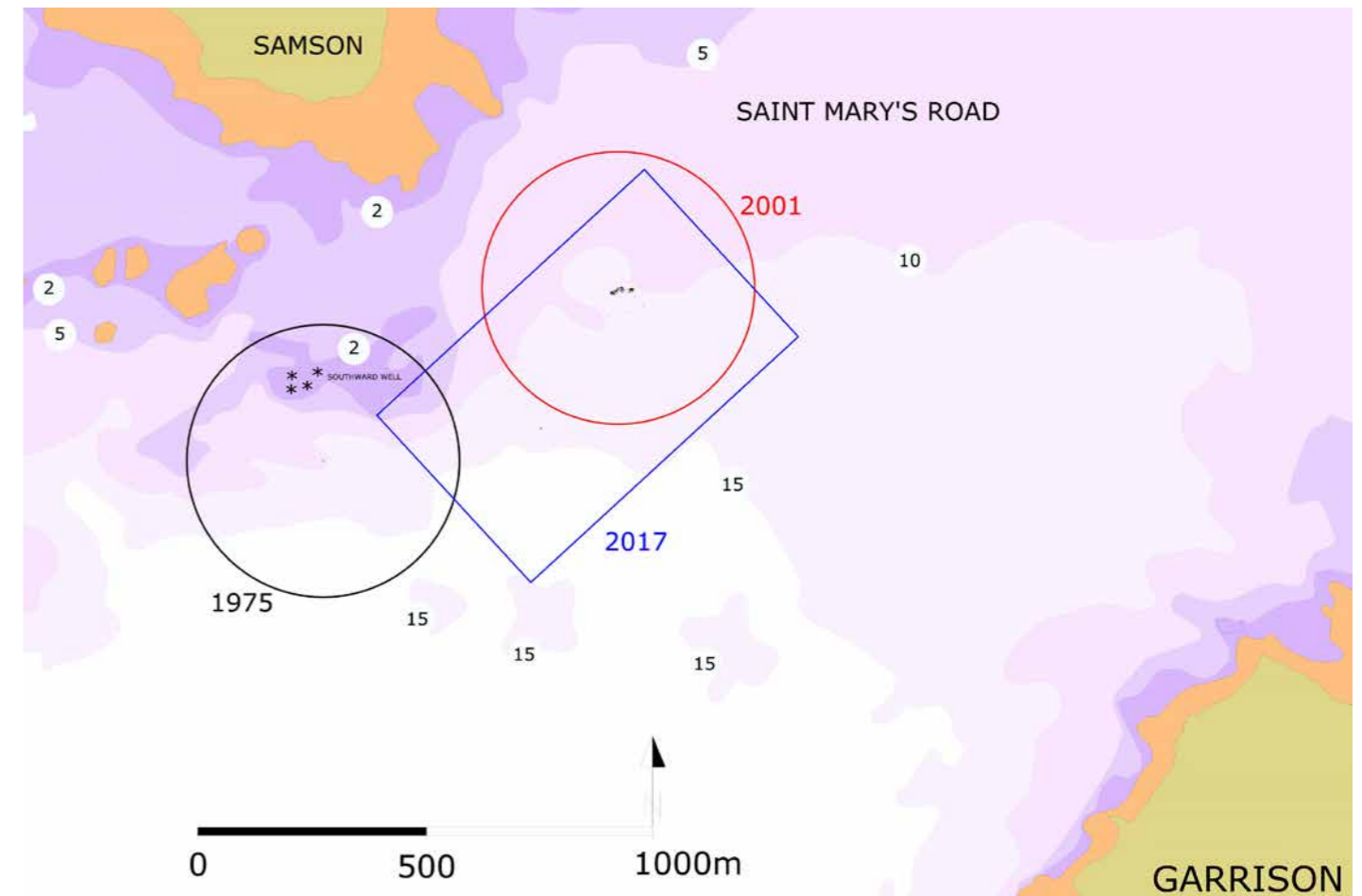
HMS *Colossus* was a 74-gun warship built in 1787 and wrecked 11 years later on the Isles of Scilly. She was the first Royal Navy ship of that name; five more were built over the years, culminating in an aircraft carrier launched in 1943. The '74' was one of the most successful design-types of its period, and ships of this class formed the backbone of the naval battle fleet during the Napoleonic wars.

Investigation of the *Colossus* has a long and varied history, from the search for the wreck, begun in 1967 by the Penzance salvor, restaurateur, and museum proprietor Roland Morris; to the work undertaken exactly fifty years later by the Cornwall and Isles of Scilly Maritime Archaeology Society (CISMAS). During that

time perceptions of the wrecking process have changed significantly, as is demonstrated by the fact that, between 1974 – when Morris finally found the wreck – and the present day, three completely different designated areas have existed around this protected wreck site. The final understanding has only been reached in the last year, thanks to Historic England-funded fieldwork by CISMAS.

Roland Morris spent nine years investigating the site. Most notably, he discovered over 30,000 shards of ancient Greek pottery – part of Sir William Hamilton's collection, which *Colossus* was transporting to England (it is now in the British Museum). The plan published by Morris shows a site which is widely dispersed, being over 250m long from east to west >>

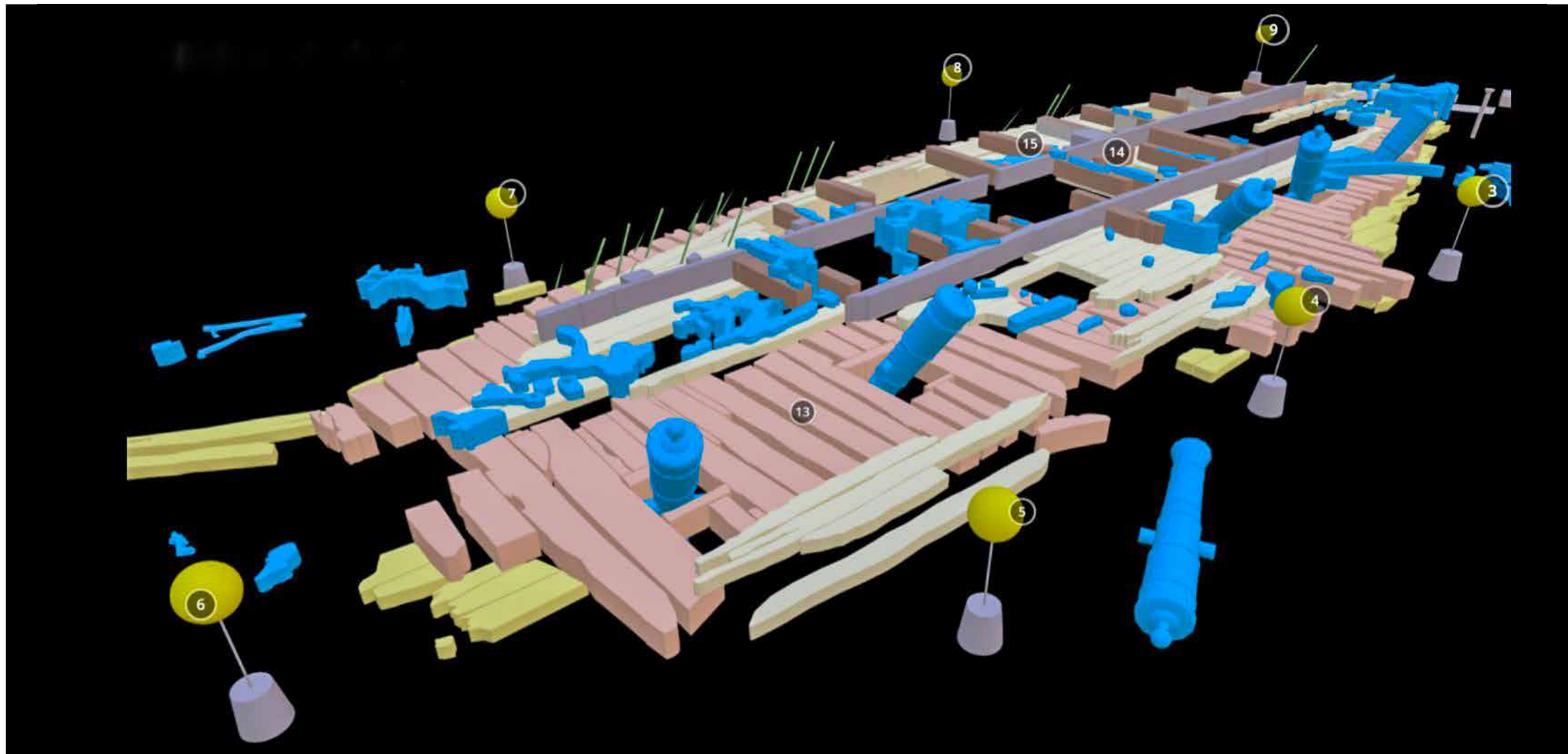
**Below:** The three different designated areas for *Colossus*: in black the area in force from 1975 to 1984; in red from 2001 to 2017. The blue rectangle is the current designated area, enacted in 2017. © CISMAS





It is worth describing how Morris understood the distribution of the material he spent so long excavating. He was convinced the hull lay with its stern to the west (where he found four rudder pintels) while the galley area (with its 'smoke blackened marble slabs') was over 200m to the east. By 1984 he was convinced there was nothing left to find on the site, and it was de-designated and then largely forgotten. Today, although the general area where Morris worked is clear, it is difficult to establish the exact location of his investigations. That said, in harmony with our theme, much of the area he examined was located at (and beyond) the edge of the site's then-designated area. At this point, then, our perception was of a dispersed site, situated to the east of the Southard Well reef, where the *Colossus* had foundered.

This all changed in 2001, when several iron guns and an area of ship structure were discovered about 400m to the east of the Morris site. The remains were spectacular, consisting of the port side of the ship from mainmast to stern. The timbers looked flawless when first exposed. Five iron cannon stood upright on the seabed, their muzzles buried in the sand – incredibly, they were still within the gun-ports of the hull. A carved human figure, part of the stern decoration, lay on the seabed. A new designation was enacted, this time centred on the newly discovered remains, and positioned over 700m to the north-west of the previous designation. Clearly this was now a site of two parts. Subsequent survey work established that the two sites were



**Above:** A three-dimensional representation of the stern site-plan for HMS *Colossus*. Note how the upper deck guns sit upright in their gunports. © CISMAS

in fact connected by a motley scatter of wreck debris. It was still thought that the wreck itself occurred on the Morris site, which now became known as the bow site, and we assumed that the stern had travelled to its present location some time after the ship had been wrecked.

Our changing perceptions of the site created a number of misconceptions. It has been written variously that the *Colossus* was demoted to a

stores ship; was badly damaged at the battle of Cape St Vincent; and that it participated in the Battle of the Nile, and had over 200 wounded from that battle on board -- hapless individuals who were saved as the ship foundered by being lashed into the rigging. None of these assertions is true, and yet they continue to surface in diverse publications and inevitably colour our perceptions of the wreck.

## Incredibly, the cannons were still within the gun-ports of the hull

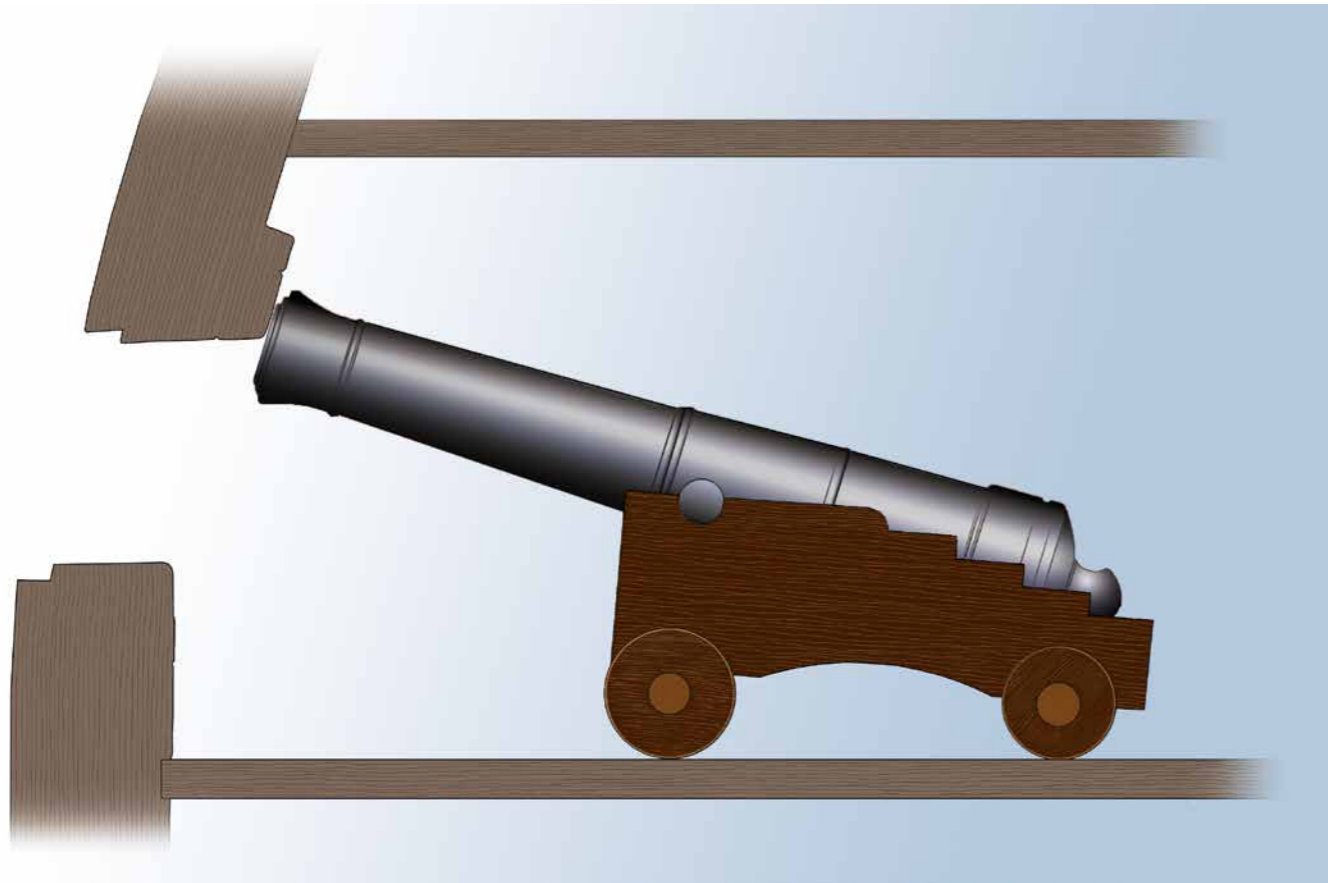
Perhaps the most irksome perception is rooted in the fact that *Colossus* was one of four ships in her class said to have been a direct copy of the captured French 74 *Courageux*. It is often opined that French 74s were superior sailors to British-built 74s, the design of which they influenced. This is a complex issue, which would require far more space than we have here for my hobby horse to canter in. However, the fact that *Courageux*

was captured by the British 74 *Bellona* in 1761 after a long stern chase perhaps illustrates that all is not quite as it seems. (*Bellona* was designed by Sir Thomas Slade, most famous for being the architect of HMS *Victory* of Trafalgar fame).

Over the fifteen years from 2001, the stern of *Colossus* was the subject of a number of research projects. These included a detailed baseline survey, trials of different

methods of stabilising the wreck, a long-term artefact reburial assessment and two small scale excavations, aimed at answering specific questions about the site. In addition, a dive trail around the visible remains was installed in 2009 along with a waterproof printed visitor's guide. A web-based [virtual dive trail](#) allows non-divers a degree of access to the site. As this work progressed, it became clear that our view of the wrecking >>





**Above:** The guns on 18th-century warships were lashed with their muzzles up against the upper gun-port sill when not in use. It is easy to see how they would end up falling through the gun-ports when the ship fell over onto her side. © CISMAS / Historic England, Vincent Griffin

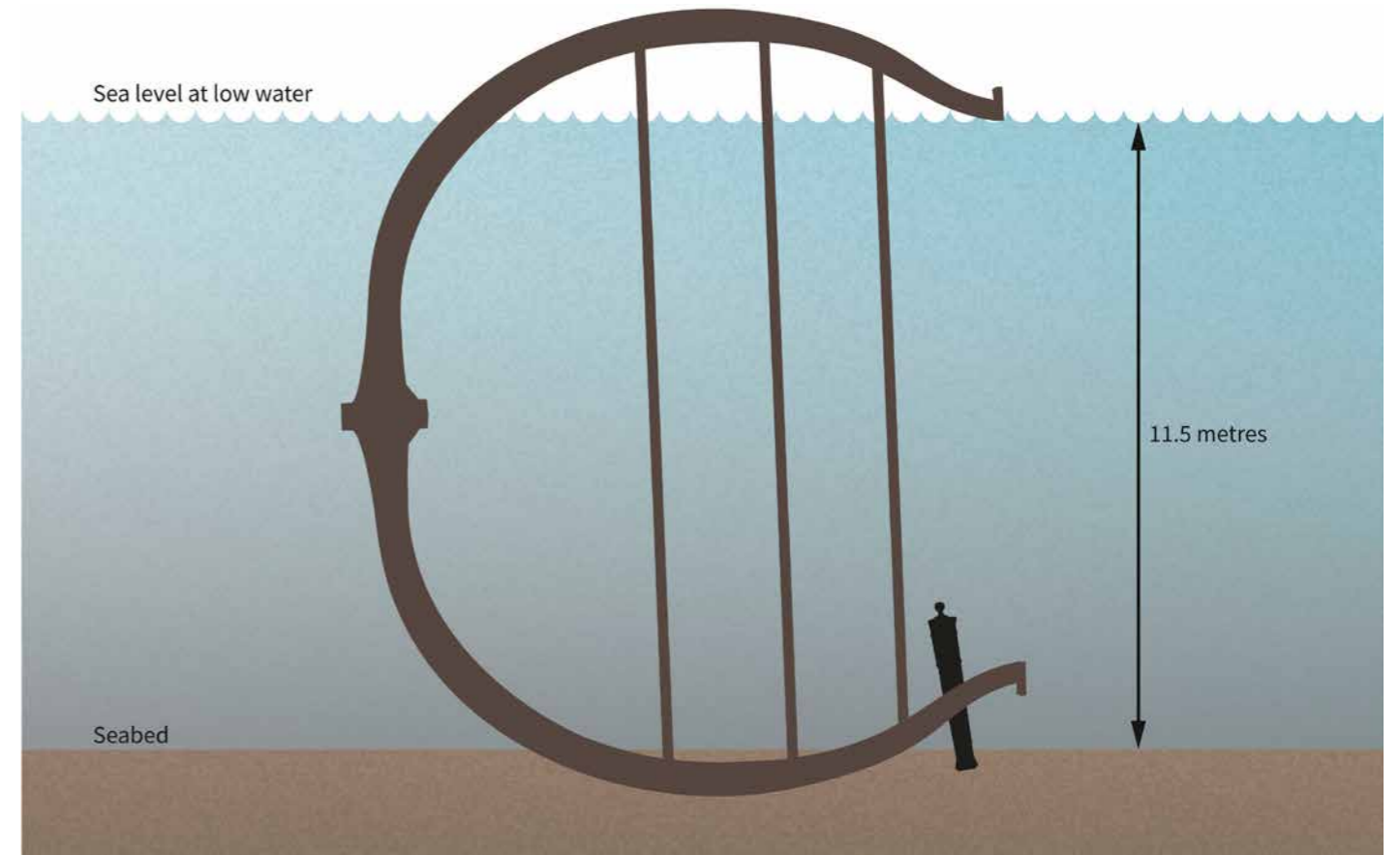
process the ship underwent still did not accord with the observed disposition of artefacts on and around the site.

One of the abiding enigmas of the stern site was how the five upper deck cannons came to rest in their unusual positions. In the conventional wrecking scenario, the ship foundered at Southard Well and a section of the stern then drifted east to its current position. The problem with this is that we know the ship fell onto her beam-ends (side) within hours of her abandonment. It is hard to see how the upper deck guns could have stayed in place throughout such a process. As she rolled over onto

her beam-ends, the ship's guns and ballast would have shifted and she would be likely to remain on her side. The stern section would then need to have travelled east, lying on its side, for 300 to 400m, making the present disposition of the guns even more incredible. In addition, during 2015 it became clear that there were other anomalies in the distribution of the material on the seabed, and that a different wrecking scenario was required to explain them.

Accordingly, in 2017, CISMAS was commissioned by Historic England to investigate the edges of the site. The aim was to come to a better understanding of the wrecking of *Colossus*. The project involved

25 detailed searches of the area beyond the known site, covering over 34,000 sq m of seabed. The process was strenuous and often monotonous, particularly in areas where there were few artefacts. But the absence of wreckage in certain areas proved as informative as the locations where some numbers of items could be found. The conclusion of this survey was that *Colossus* foundered a short distance from the location of the stern remains, rather than at the Morris (bow) site near Southard Well reef. Thus our perceptions of this wreck have shifted once again, this time not by a careful study of the known and familiar, but by looking beyond the edges ■



**Above:** With the ship on her beam-ends (side) it is clear that the curve of the upper hull tumblehome allows the upper gun-deck guns to protrude through the gun-ports – which also help hold them upright. It is then easy to imagine how they became buried muzzle down in the seabed. However, it is difficult to see how the hull could then travel over 300m along the seabed without shedding the guns. © CISMAS / Historic England, Vincent Griffin

### The author

**Kevin Camidge, MCIfA**  
*Freelance maritime archaeologist and Archaeological Director of CISMAS.*



Kevin worked for many years as a terrestrial archaeologist in Lincoln before moving to Cornwall in 1987 and learning to dive. Kevin then became the nominated archaeologist for several of the protected wreck sites in Cornwall. He founded CISMAS in 2004 with the aim of getting more members of the public actively involved in maritime archaeology.

Kevin is passionate about traditional (wet-process) photography, Egyptology and good old-fashioned excavation – as a great man said: ‘dead archaeology is the driest dust that blows’.

### Further information

The new wrecking theory and the evidence on which it depends: [www.cismas.org.uk/downloads.php](http://www.cismas.org.uk/downloads.php)

The virtual dive trail for HMS *Colossus*: <http://hmscolossus.cismas.org.uk>



**Above:** One of the upper gun-deck ‘upstanding’ guns on the stern site. These are 18lb guns, which are 9ft (2.75m) long; roughly half the length of the gun is buried in the seabed. © CISMAS



# The past as the key to the future

Reconstructing past sea levels on the Isles of Scilly, and projecting how the island landscape might change in the future.

The Scillonian archipelago of approximately 200 islands, islets, and rocks lies about 45km south-west of Land's End. At present only five islands are inhabited: St Mary's, St Agnes, St Martin's, Bryher, and Tresco. Several small islands including Teän, Samson, and St Helen's were occupied in the recent past. The islands are separated by wide expanses of shallow subtidal and intertidal environments, created by rising sea-levels during the 11,700 years of the Holocene.

The Lyonesse Project is a collaboration between the Cornwall Archaeology Unit, the Cornwall and Isles of Scilly Maritime Archaeology Society, the universities of Aberystwyth, Cardiff, and Exeter, and Historic England. It has investigated the changing nature of the Scilly environment during this period, reconstructing how the prehistoric inhabitants of the islands adapted to their changing land and seascape, as well as how the islands might change in the future >>

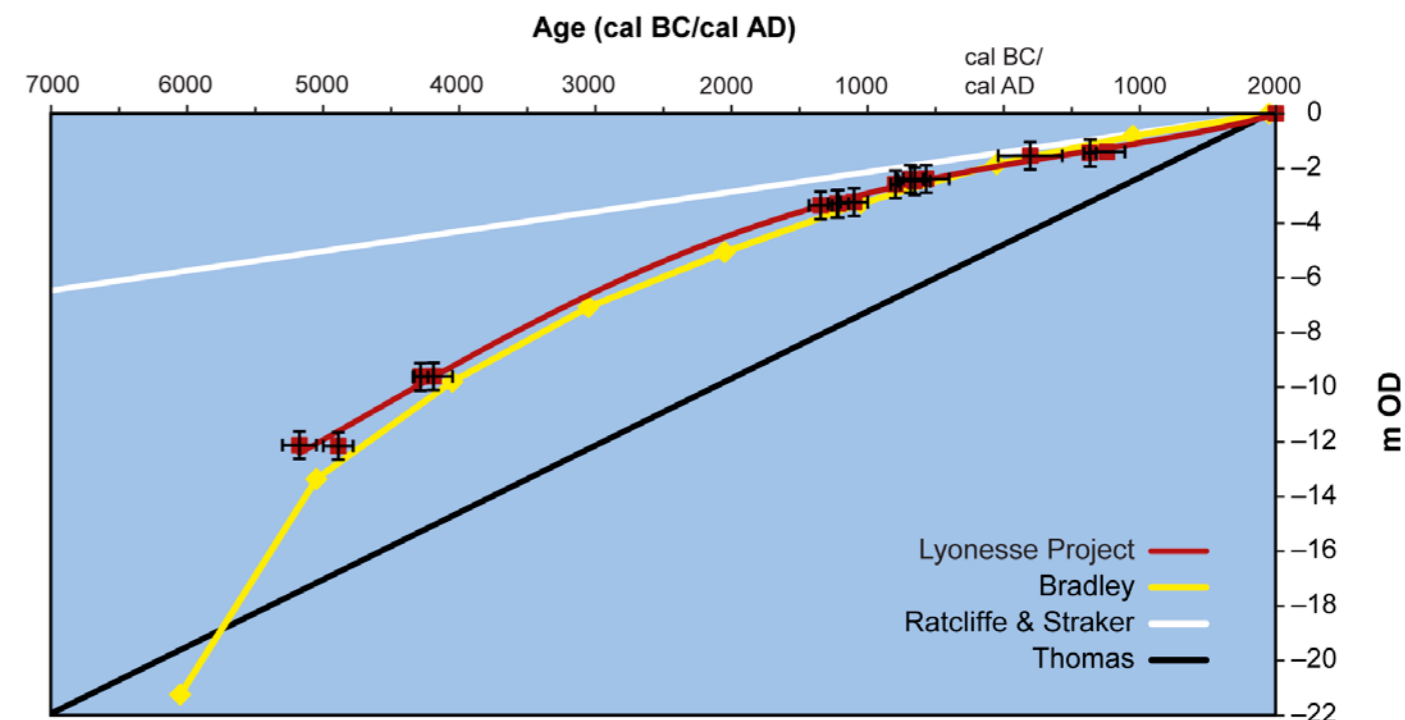
**Opposite:** An aerial view of East Porth, Teän, with St Helen's and Men-a-Vaur in the background. © Cornwall County Council HER, F92-238.







Above: Augering at Porth Mellon, St Mary's.  
© Cornwall County Council



Above: Sea-level curves for the Isles of Scilly.  
© Historic England, Peter Marshall / Vincent Griffin

## The changing environment

Sediment samples from 25 locations across the archipelago were taken for palaeoenvironmental analysis. Research on this material included pollen analysis, to reconstruct vegetation change, and analysis of foraminifera: amoeba-like single-celled micro-organisms which tell us about changing types of saltmarsh environment. Optically Stimulated Luminescence of sand units and radiocarbon dating of organic material provided a chronological framework for interpreting such palaeoenvironmental proxies.

The pollen record shows that the Scillies were colonised rapidly by woodland at the beginning of the Holocene, reflecting the warming that took place across north-west Europe at this time. Open ground within the forested landscape of the Mesolithic would have been generated by a combination of fires and floods, the latter caused by rising sea-levels. The amount of woodland cover began to decline from c 5000 cal BC, with the vegetation cover showing much greater diversity than before. For the

last 3,000 years the landscape of Scilly has largely been open with land used for grazing and cultivation.

## Past sea-level index points

In order to build a record of sea-level change for the Isles of Scilly, samples were identified from which an accurate palaeo-elevation above sea-level (an 'indicative meaning') could be established. Foraminifera secrete tiny shells (tests) that survive as fossils, and these can pinpoint the elevation of the deposit in which they are found relative to the sea-level at the time of their formation. Sea-level index points were therefore derived from samples in cores containing foraminifera that were indicative of environmental conditions different to those of the present day.

## A new sea-level curve for Scilly

The plotting of sea-level index points allows a reconstruction of the timing and tempo of changing sea-levels. The data show that previous reconstructions of sea-level change were inaccurate: an imaginative

attempt by the late Professor Charles Thomas (1985) lacked any scientific dates and was based on the vertical elevation of submerged archaeological sites that could be broadly dated on the basis of associated material culture and place-name evidence. This analysis clearly overemphasised the rapidity with which the sea rose. The more gradual rise proposed by Radcliff and Straker (1996), based on the first radiocarbon dated samples for the Scillies, is more consistent with the new data – but only for the last few thousand years. The new data generated is more robust, more complete, more accurate – and correlates well with the most recent estimates of relative sea-level changes around the British Isles.

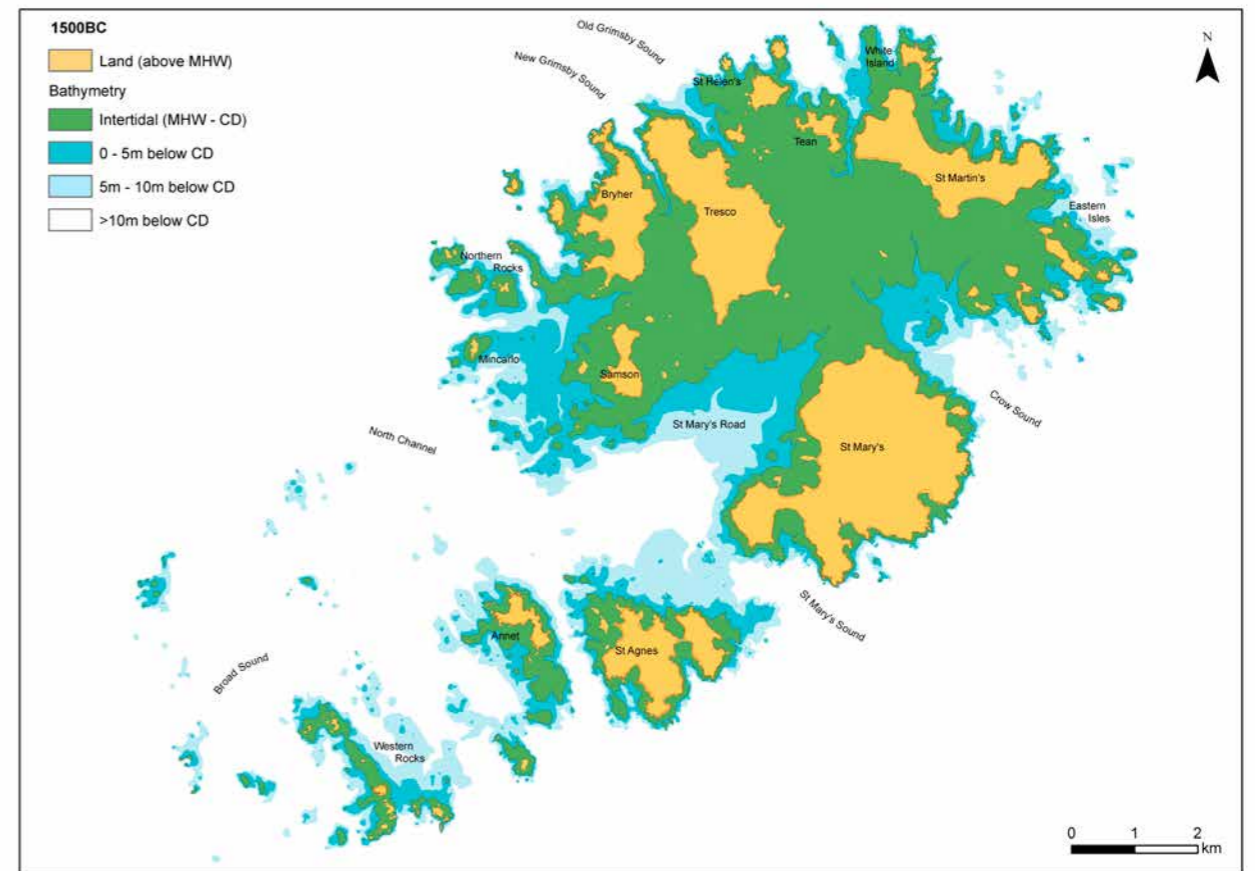
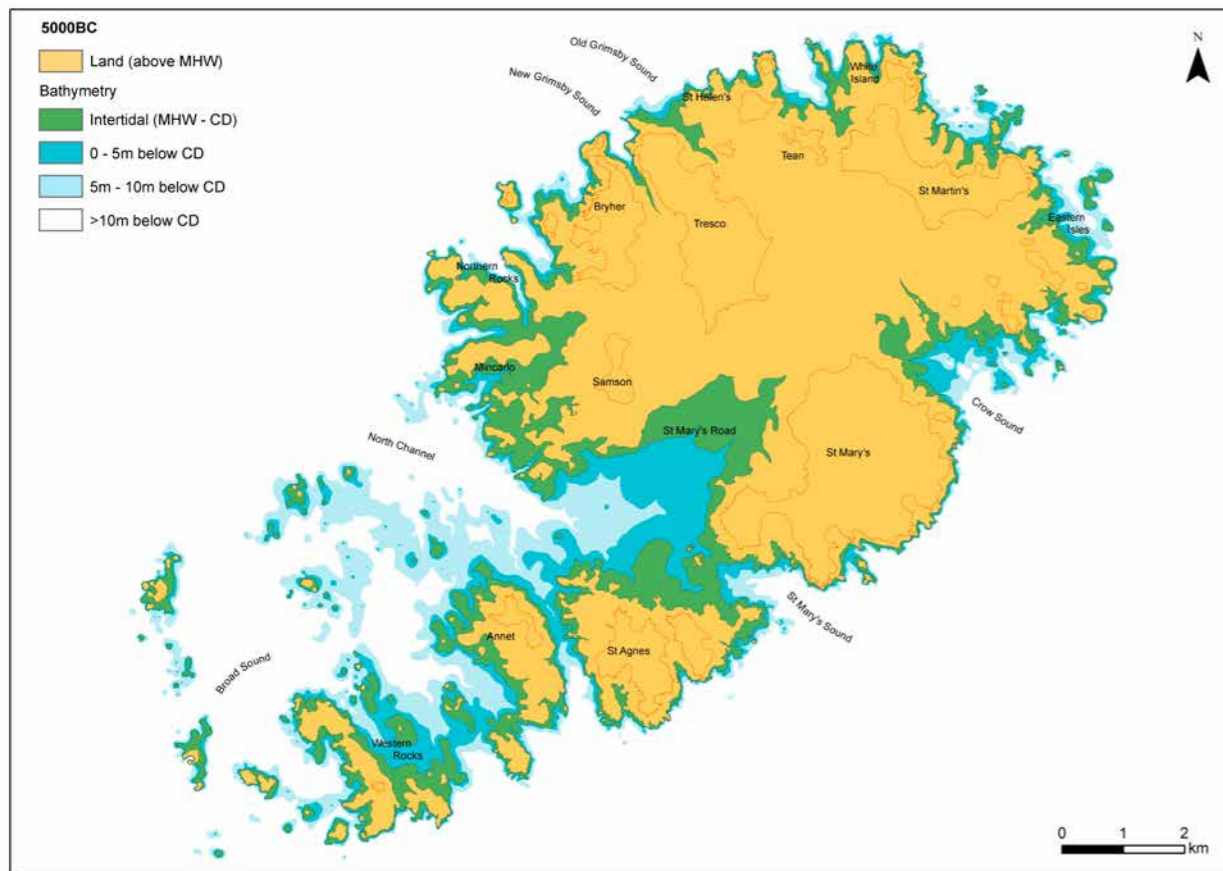
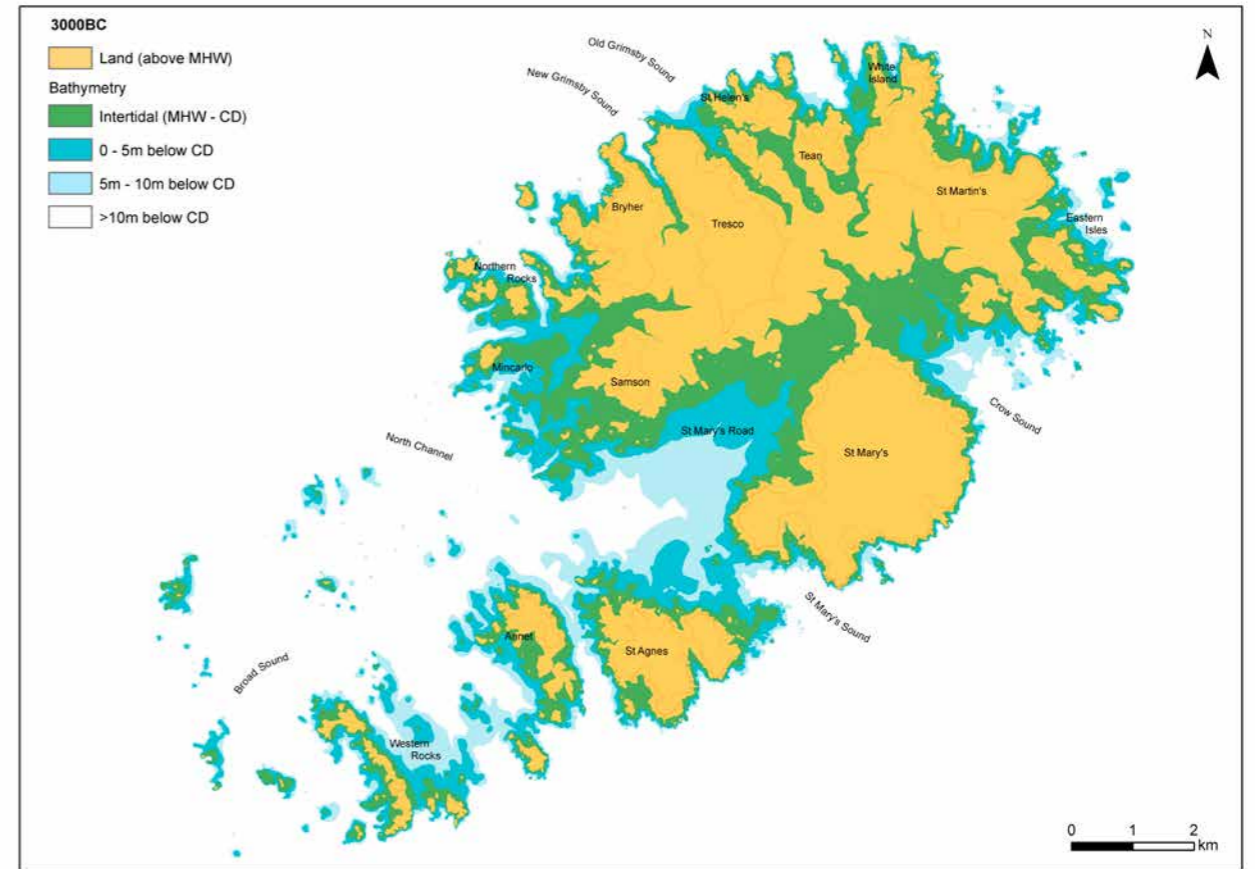
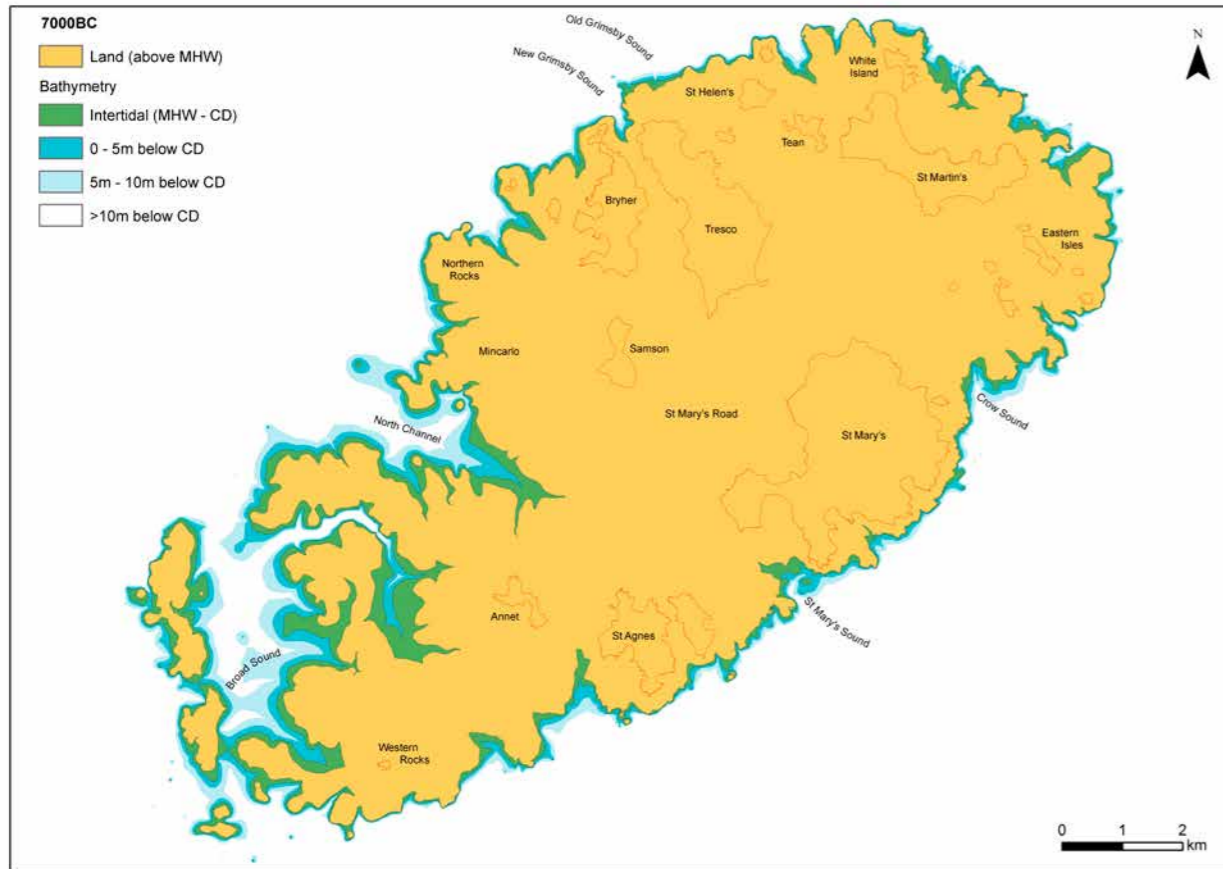
## Sea-level rise and changes in land area

Sea level rise in Scilly would have had a significant impact on the prehistoric landscape and how it was used. The timing and nature of changing land areas, especially the process of separation of the individual islands, has been the subject of considerable speculation and debate. The new sea-

level data provides a much more robust basis for reconstructing these changes, especially for the period from 5000 cal BC, when a larger number of secure sea-level index points are available.

The new sea-level curve was used to model a number of palaeo-shorelines, and thus to reconstruct past geographies. These reconstructions indicate a rapid rise in sea-level from c 5000 cal BC onwards. Scilly had been a continuous landmass -- for example, in 7000 cal BC – but now St Agnes and the other western islands began to separate from the rest. By 3000 cal BC tidal flooding began to separate the elements of the main island group. Tresco, Bryher, and Samson remained joined throughout this period. The most dramatic loss of land took place from 2500/2000 cal BC, when the equivalent of two-thirds of the entire modern area of the islands began to be lost to the sea. By 1500 cal BC the configuration of the islands was approaching that of the present day >>





Above and opposite: Modelled land and intertidal areas at 7000, 5000, 3000, and 1500 cal BC. © Cornwall County Council



### Future sea-level rise

The provision of baseline data on local relative sea-level change has been used alongside estimates of past sea-levels to estimate future sea-level rise in Scilly. UK Climate Projections is a climate analysis tool which features the most comprehensive climate projections for the UK, shown in probabilistic form, and illustrating the level of confidence in each prediction. Possible changes in land and intertidal areas by 2100 resulting from four scenarios for future sea-level rise were given in Lowe et al (2009) and suggest there will be some loss of land surface, but the largest change will be a reduction in the size of the intertidal zones. The result of this loss will be significant for the character of Scilly, with the islands becoming permanently separated by deeper waters, and surrounded by individual, relatively narrow, intertidal areas. There is therefore a risk of flooding to low-lying and narrow areas of land, which could in turn lead to the formation of new islands. Although potentially dramatic, these changes, if they happen as predicted, will be relatively minor compared to those that took place in the second half of the third millennium cal BC.

### The past as key to the future

Robust palaeoenvironmental reconstructions, such as those produced as part of the Lyonesse Project, are important if we are to meet the environmental challenges of the future. They help in determining policies for mitigating or adapting to climate change, and evaluating what can be learned from the past ■

### The authors

**Peter Marshall**  
*Scientific Dating Radiocarbon Specialist with Historic England.*



Peter works in the Research Group as part of the Scientific Dating Team, coordinating the programme of commissioned radiocarbon dating. He has been involved in many iconic archaeological projects

over the last twenty years, providing precise chronologies that help us to understand past human activities and how landscapes have changed.

**Charlie Johns MCIFA**  
*Archaeology Projects Officer at the Cornwall Archaeological Unit.*



Charlie has worked with the unit for 26 years. An experienced field archaeologist, he is now responsible for developing the organisation's maritime capacity and for projects in the Isles of Scilly. Past projects in

Scilly have included the Bryher sword and mirror burial excavation, the Isles of Scilly Rapid Coastal Zone Assessment Survey, and the Scilly Historic Environment Research Framework. He helped to establish the islands' Community Archaeology Group, which he continues to organise. Current projects include the South Cornwall Rapid Coastal Zone Assessment and delivering Heritage at Risk services in Scilly, both funded by Historic England.

### Further information

Bradley, S L, Milne, G A, Shennan, I and Edwards, R 2011 'An improved glacial isostatic adjustment model for the British Isles'. *Journal of Quaternary Science* 26, 541-52.

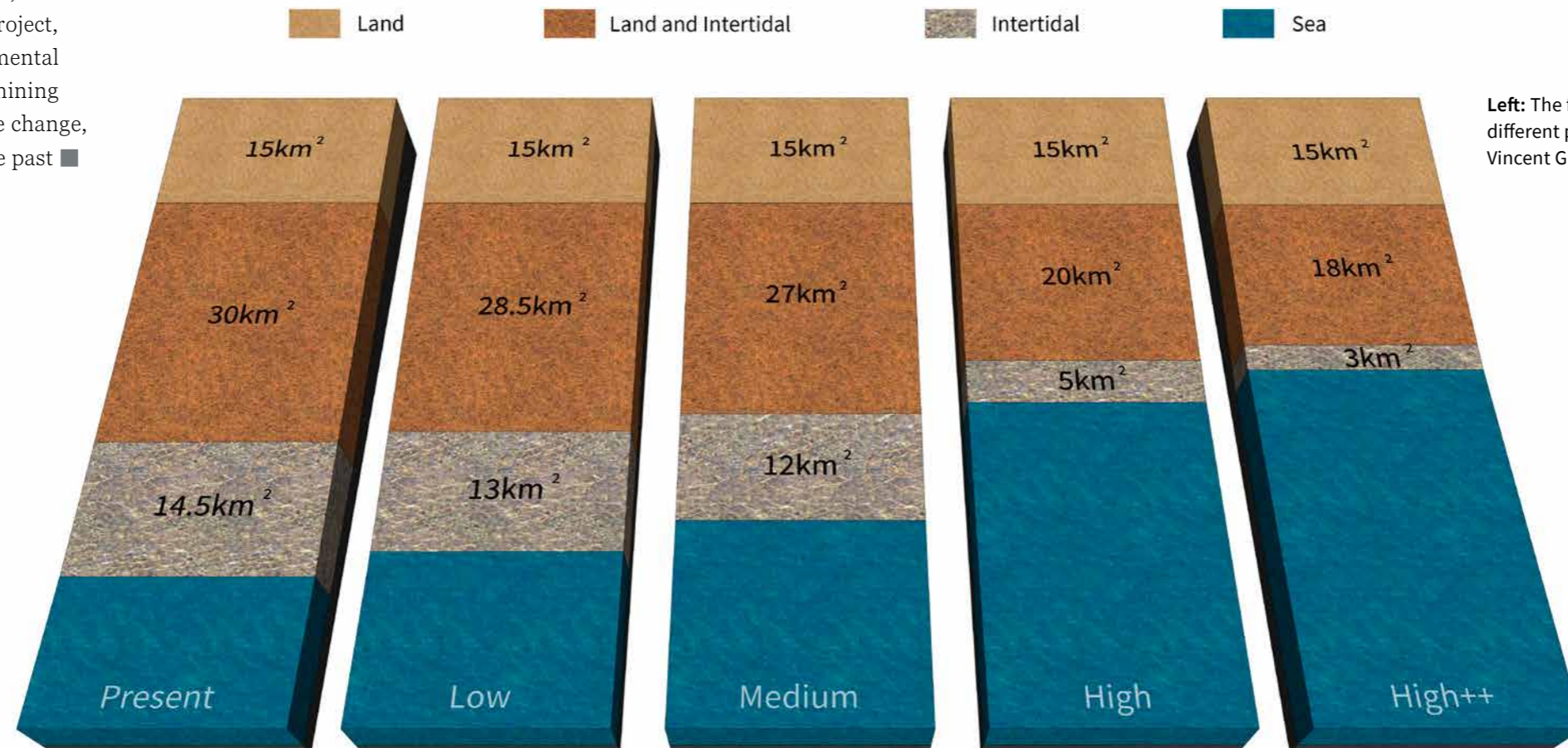
Charman, D, Johns, C, Camidge, K, Marshall, P, Mills, S, Mulville, J and Roberts, H M 2016 *The Lyonesse Project: A Study of the Evolution of the Coastal and Marine Environment of the Isles of Scilly*. Truro: Cornwall County Council

Lowe, J A, Howard, T P, Pardaens, A, Tinker, J, Holt, J, Wakelin, S, Milne, G, Leake, J, Wolf, J, Horsburgh, K, Reeder, T, Jenkins, G, Ridley, J, Dye, S and Bradley, S 2009 *UK Climate Projections Science Report: Marine and Coastal Projections*. Exeter: Met Office Hadley Centre

Ratcliffe, J and Straker, V 1996 *The Early Environment of Scilly*. Truro: Cornwall Archaeological Unit

Thomas, C 1985 *Exploration of a Drowned Landscape: Archaeology and History of the Isles of Scilly*. London: Batsford

### The loss of future land surface will be significant for the character of Scilly

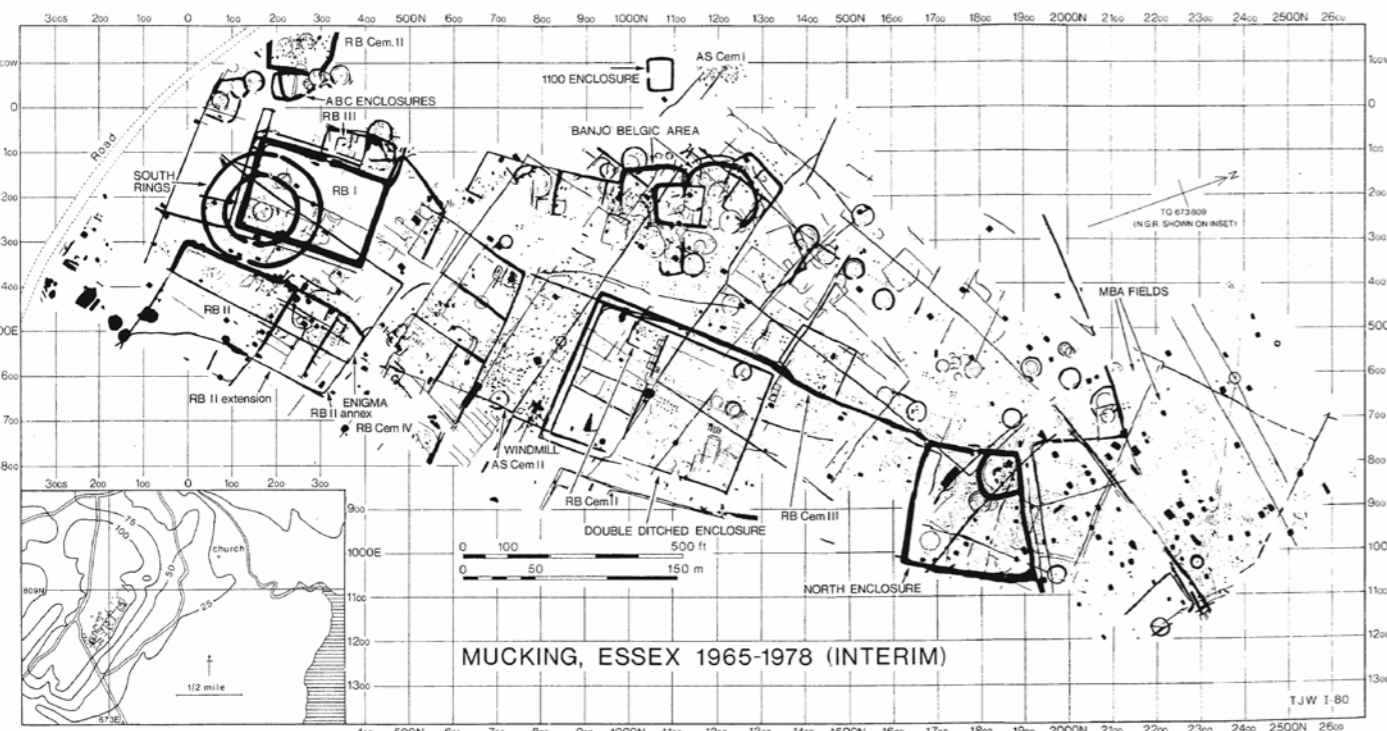
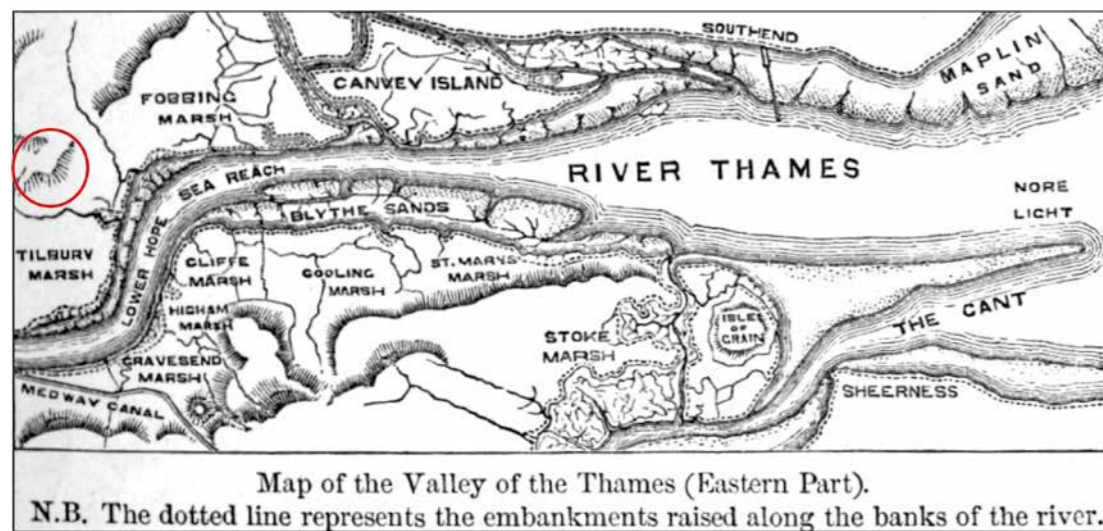
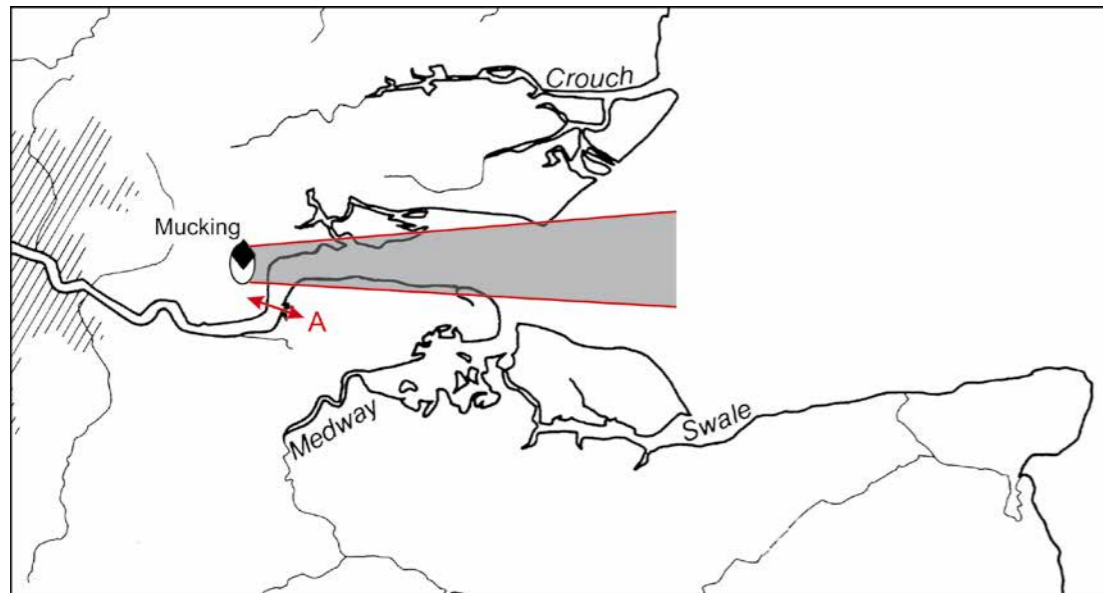


Left: The future extent of land and intertidal area under four different projections for sea-level rise by 2100. © Historic England, Vincent Griffin



# Writing Mucking

Preparing a major 1960s excavation for publication.



Dug between 1965 and 1978 on a windswept, Essex Thames Gateway-side terrace, Mucking was a place like no other excavated in Britain; it became something of a fieldwork legend. The publication by the Cambridge Archaeological Unit of the site's last two volumes – covering the prehistoric and Roman periods (Evans *et al* 2016; Lucy and Evans 2016) – took some eight years, and was both a daunting challenge and a great privilege.

With its primary record existing in the form of 363 notebooks, the excavation's archival sources were far from perfect. Yet it has to be appreciated just what an unprecedented dataset the directors, Margaret and Tom

Jones, amassed. Amounting to over 1.7 million finds, its bald gazetteer numbers are staggering: more than 1,100 burials and some 400 structures.

A figure from Samuel Smiles' *James Brindley and the Early Engineers* of 1864 singularly expresses Mucking's situation. The hachuring in the engraving actually shows the site's terrace-locale, on a scarp overlooking marshes at the last downstream bend of the Thames. There is effectively nothing in the viewshed between the site and the Continent. Indeed the French coast, lying only some 125km distant, would have been closer to Mucking than, for example, Oxford, and Continental connections loom large in the site's sequence >>

**Opposite top:** Mucking's Thames Gateway-side location, with downstream viewshed indicated; below: Smiles' 1864 mapping, with site-area indicated in red.  
© Cambridge Archaeological Unit

**Opposite bottom:** Site plan, 1980 vintage. Clark 1993, Fig 4.



## Challenging conditions

Digging, for the most part, was on a year-round basis and it is estimated that, in total, the excavations involved some 5,000 participants. They operated out of a ramshackle series of wooden huts and caravans and, living on site, conditions were by all accounts often bleak. Many of the surviving participants looked back on these days with a mixture of fondness and angst. Whatever their circumstances, Mucking, like Winchester at about the same time, proved a major rite of archaeological passage. The archive includes full annual staff registers, indicating what few paid positions there were, as opposed to the volunteer mass; and with males and females having differently-coloured entries, it has the potential to be the basis of a unique social history of a great excavation.

With the fieldwork undertaken in pre-computer days – prior even to reduced photocopy reproduction – and aiming for 100 per cent excavation of its more than 40,000 features, what the Joneses attempted at Mucking amounts to an act of outrageous audacity. Margaret Jones clearly considered sampling to be an anathema and felt that total excavation was the only reasonable response to the blanket destruction that was threatened by the area's gravel extraction. In truth, they generally achieved a c 75 per cent sample of the site. Having to work to the annual schedules of the quarry's stripping and extraction meant that – especially in the early years – the rhythms and levels of work went awry at times, with portions having to be left uninvestigated. Regardless of this, the sheer scale



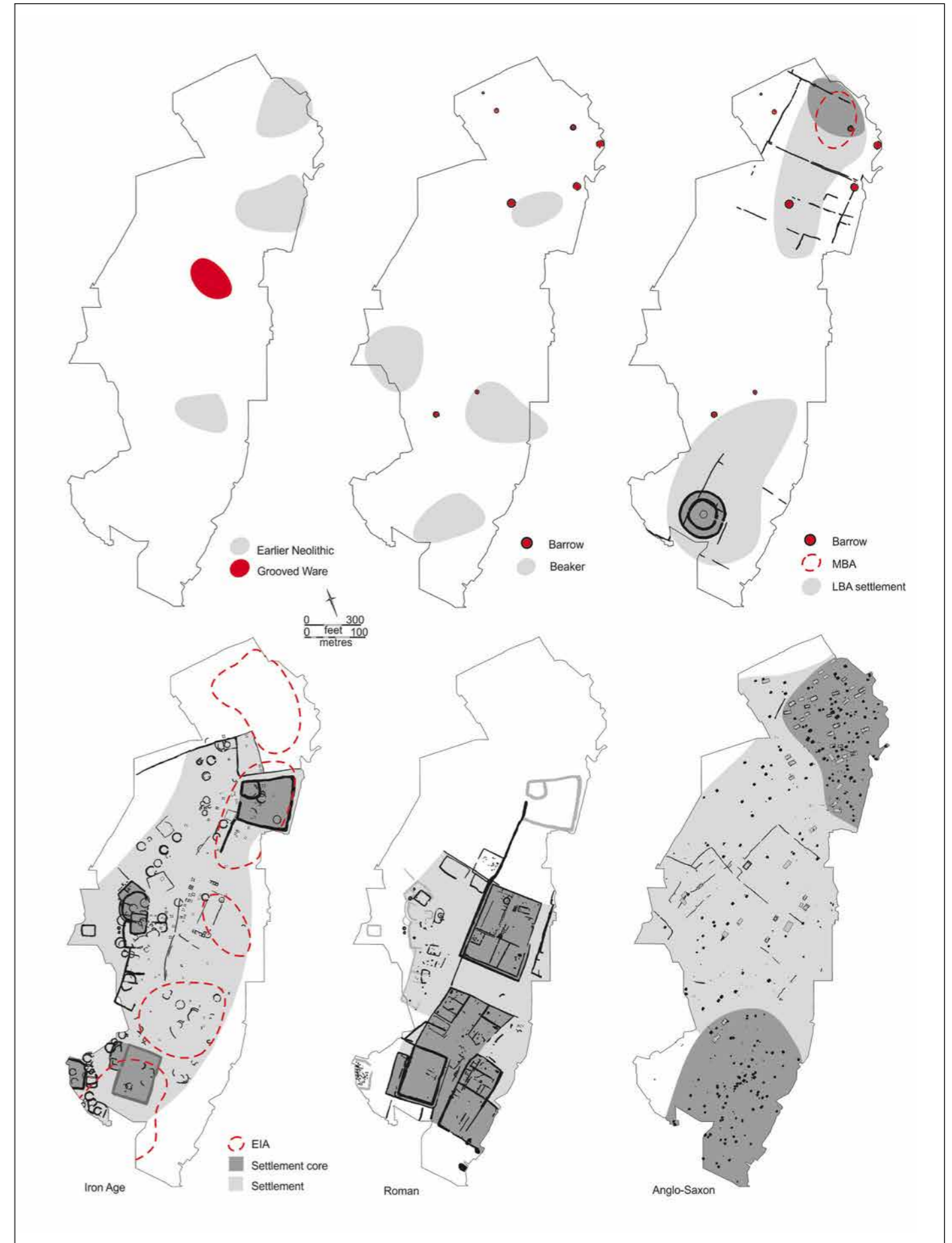
Top: Site infrastructure, with Margaret Jones (left). © Mike Pitts

Bottom: Quarry-edge digging, with Tom Jones (lower left). © Mike Pitts

of the site's finds assemblages provides unique insights and, indeed, even after our efforts at writing up, the material still hold great potential for future study.

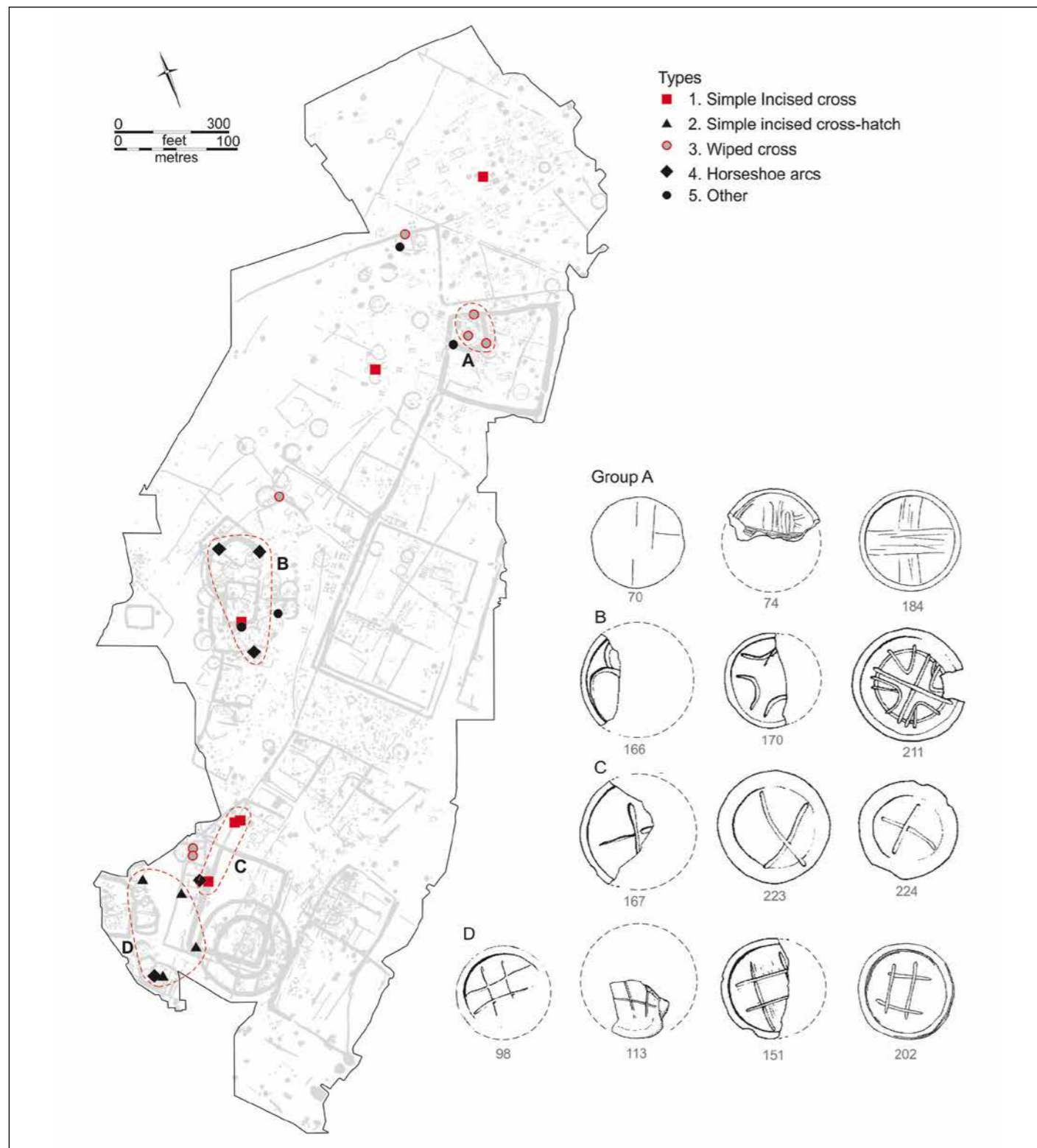
Digging of this intensity means that, for us, the site's finds distributions of material older than the Middle Bronze Age, residual though they largely were, could

be deployed to plot Mesolithic, Neolithic and Early Bronze Age surface-scatter usage (sometimes accompanied with pits), so that something approaching a full settlement sequence could be traced. The scale of the site's assemblages also implies that certain finds categories, which are usually only ever retrieved since in ones or twos, were at >>



Above: Mucking's phasing sequence. © Cambridge Archaeological Unit



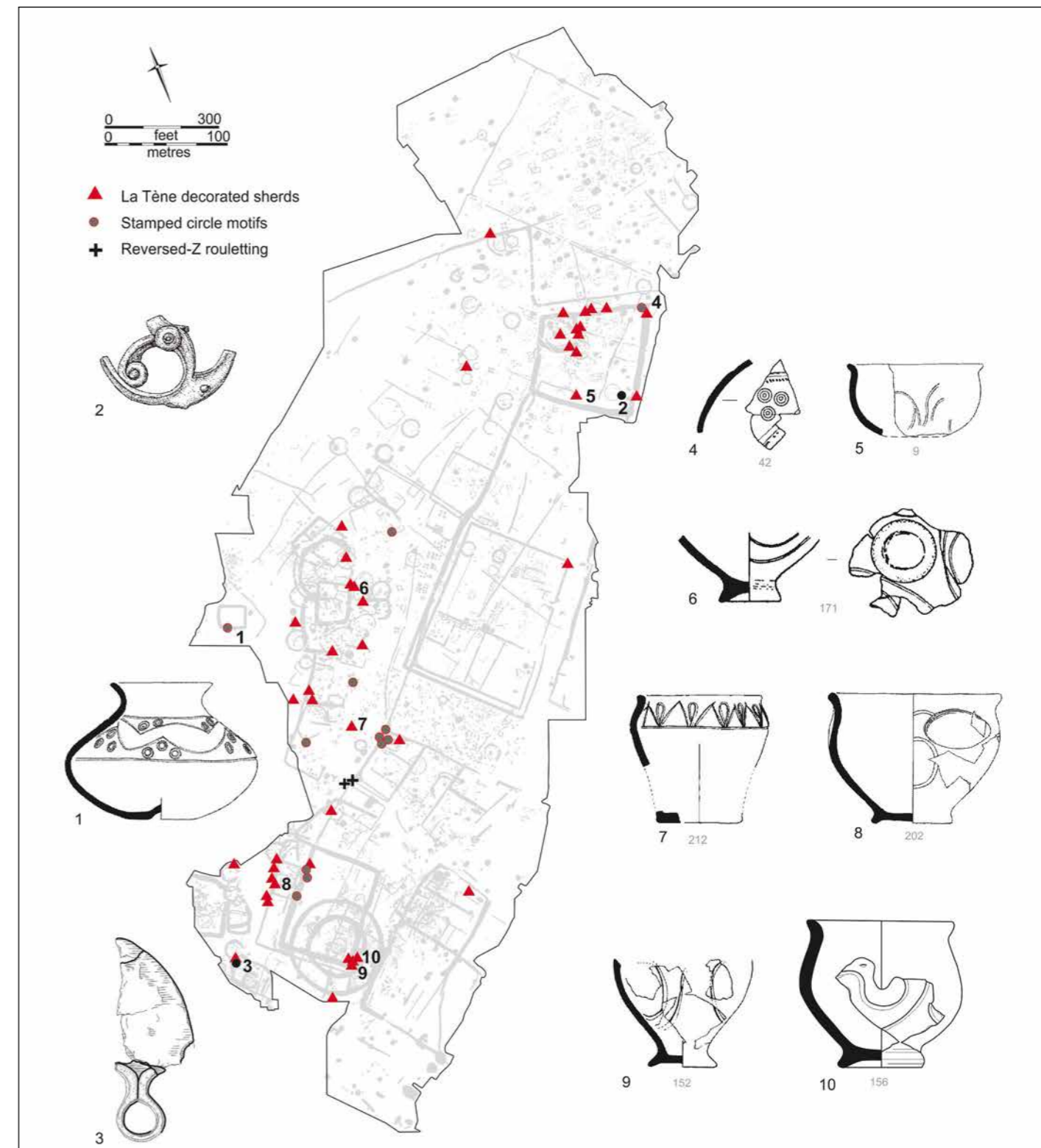


Above: Makers'-marked pottery bases, their types and distribution. © Cambridge Archaeological Unit

Mucking recovered in such numbers that their distributions can be meaningfully interrogated. Amongst the best examples are the variously owner/producer-marked

later Iron Age pottery bases. Similarly, portions of more than 70 La Tène-style vessels were present; these are usually only represented by, at most, five such sherds on

comparable excavations. When combined with the evidence of contemporary metalwork, not only do they allow questions of 'style in the landscape' to be addressed but,



Above: 'Style in the landscape': distribution of La Tène-decorated pottery, with selected vessels and metalwork illustrated. © Cambridge Archaeological Unit

on the basis of their completeness, also issues of feature- versus surface-finds recovery. With, for the most part, only some 10 per cent of the original total number of

vessels represented (and correlating these with more statistically sound estimations of feature- as opposed to surface-deposit finds densities from other sites), Mucking's

original total assemblages would have been truly vast!

Paul Barford's 2011 paper outlines the site's fraught post-excavation >>



history, which thus need not greatly concern us here. In its aftermath the finds records (including location co-ordinates) were computerised, under the auspices of Ian Graham at the Institute of Archaeology. A previous attempt to write up the site failed to activate these files. This however we managed to do (admittedly accepting a c 5 per cent error-factor) and the resulting files proved a mainstay of the writing project.

Working out of Thurrock Museum, with a Manpower Services Commission-funded team, the Joneses had actually progressed many facets of the site's post-excavation work before; in the later 1980s, it was taken from them and allocated to a dedicated team at the British Museum (Clark 1993). Although we faced severe problems deciding which version of the many extant specialist texts should be taken as final and authoritative, it was only an advantage to be able to draw upon both phases of the site's study. Indeed, in a number of cases our main role was to reactivate original specialists so they could complete their texts, with only Matt Brudenell's Late Bronze/Iron Age pottery analysis being a fresh commission.

### Working in retrospect

We tried to balance our approach to tackling Mucking's enormous (and unwieldy) British Museum-housed archives. It was accepted from the outset that there couldn't be a 'Mucking for the 21st century' and that site investigations are intrinsically rooted in their time (this is also why the volumes appeared under our unit's 'Historiography and Fieldwork'

heading rather than in Mucking's own series). Piecing together how – and why – the Joneses interpreted the site's sequence was, therefore, considered imperative and, in this, we had the advantage of being able to draw upon their many interim notices. Yet, at the same time, it could no longer just be 'their site'. Interpretive frameworks have greatly changed over the intervening decades,

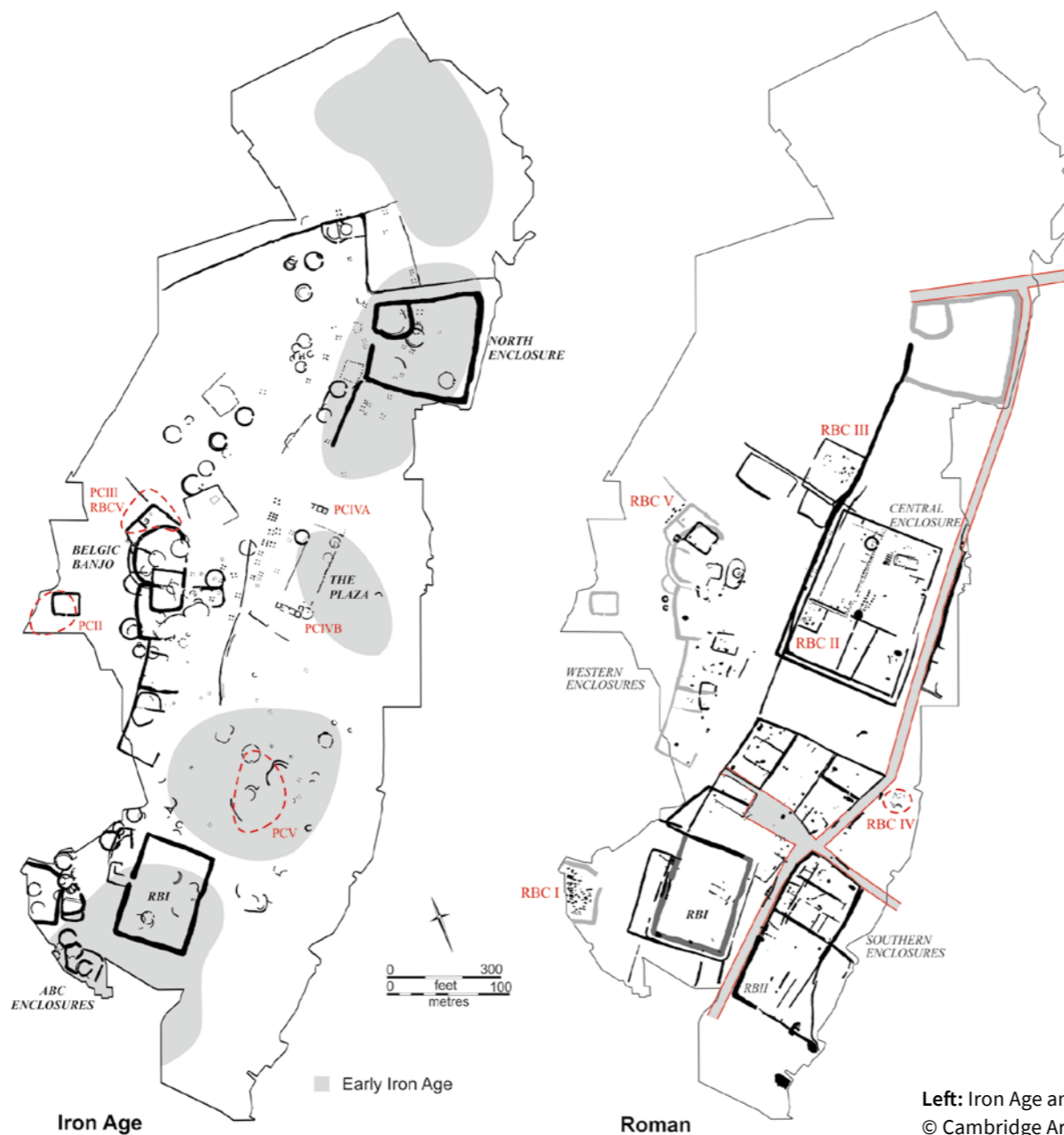
especially in the light of the many subsequent Thames Gateway excavation campaigns. These dual interpretative perspectives proved a difficult path to tread, but were essential if justice was to be done both to the sequence itself and the Joneses' decades-long efforts.

Working from the reams of texts and the site's phased dyeline plans, it can be estimated that the Joneses

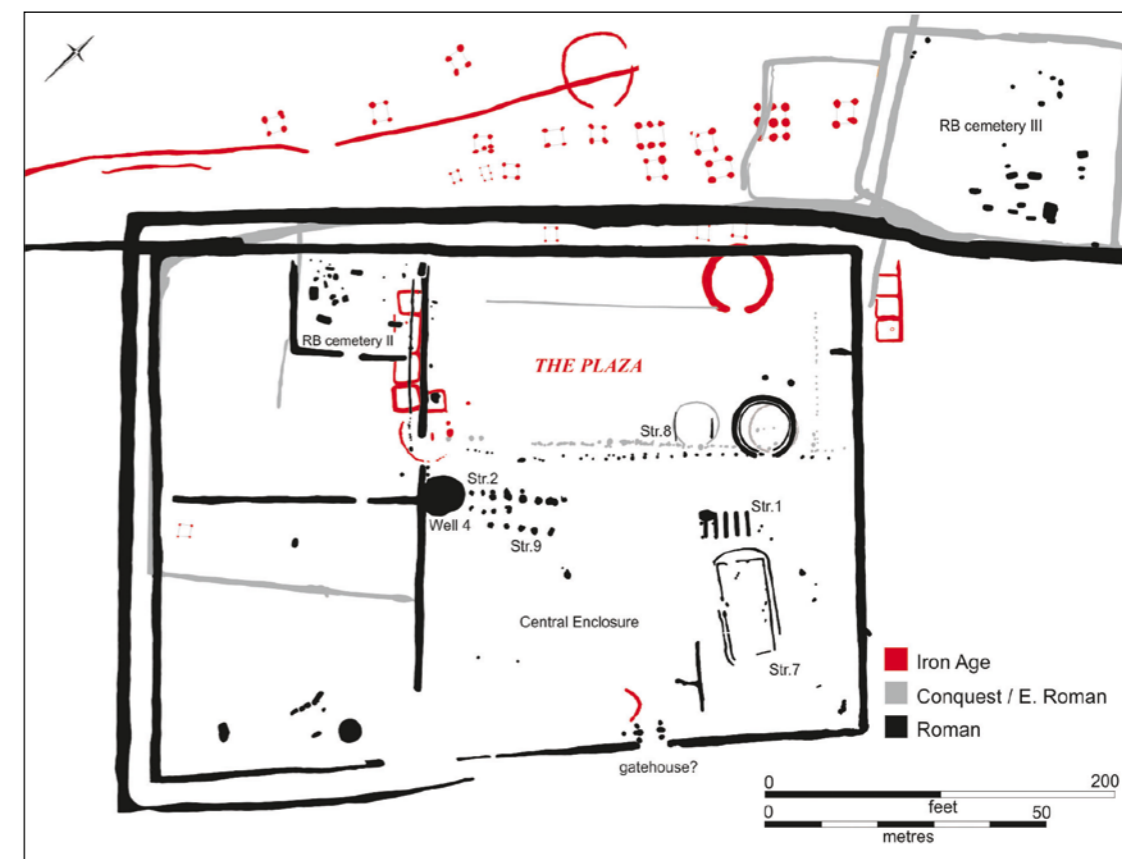
actually got somewhere in the area of 80 per cent of its sequence right. Our main contribution was the realization of the scale and character of Mucking's layout in the Late Iron Age. An area termed by us The Plaza, this had at its core a great ceremonial ground flanked on two sides by ranges of square barrows. A row of raised granaries were arranged along the back/northern aspect of this area, defining the rectangular space,

which was subsequently fenced off. The granaries would have had an enormous grain-storage capacity and, arguably, imply export off-site. While this might have only been confined to the immediate area (eg to Colchester/*Camulodunum*), it may have reflected cross-channel ties, as both the barrow ranges and some of the pottery (Terra rubra) show connections with France's Champagne district.

Now that we are able to appreciate Mucking's Late Iron Age, something approaching a causative narrative can be construed for the site from the Late Bronze Age onwards. It was from that time, with the establishment of both the North and South Rings – ringwork enclosures akin to that at Springfield Lyons (Essex) and relating to bronze and salt production – that the sequence >>



Left: Iron Age and Roman phase plans. © Cambridge Archaeological Unit



Above: The Late Iron Age 'Plaza'. The Roman-era overseer's house is Str 7. © Cambridge Archaeological Unit





became 'special', remaining so until the end of Early Anglo-Saxon times. (Prior to that, what we see at the site has to be counted as generic 'settlement fabric' and largely reflective of broader regional trends, though it includes a renowned Beaker inhumation accompanied by 11 arrowheads, and a Middle Bronze Age field system along with eight small ring-ditch burial monuments.) There is not the scope here to otherwise detail the terrace's Iron Age settlements (involving more than 110 roundhouses), nor, for that matter, the estate centre and crossroads settlement the site became in Roman times. The latter had a major overseer's residence and, in its many parts, included five separate cemeteries and 23 pottery kilns. What does warrant emphasis is that our review of the site's Late Roman pottery evidence suggests that the Saxons got there very early – possibly even in the later decades of the fourth century – as almost all the Late Roman wares (Mayen, etc) occurred in *Grubenhäuser*/Sunken Feature Buildings within its southern sector. This need not apply that the *feoderati* model (allied military settlers nominally in Roman service) proposed by the Joneses was necessarily correct, but adds weight to their arguments – and clearly there was Roman/Saxon overlap at the site.

Like much of the other evidence since forthcoming from the area of the Thames Gateway, Mucking's sequence does not present a picture of uninterrupted continuities. It rather attests to a much more dynamic and widely-connected past than many researchers, until of late, have been willing to admit ■

### The author

Christopher Evans FSA  
Executive Director at Cambridge  
Archaeological Unit, University  
of Cambridge.



Having worked  
in British  
archaeology for  
over 35 years,  
Evans co-  
founded The

Cambridge Archaeological Unit in 1990, together with Ian Hodder. He has directed a wide variety of major fieldwork projects, both abroad (Nepal, China & Cape Verde) and in the UK, most recently publishing the results of the Haddenham Project in 2006, the South Cambridge/Addenbrooke's Environs Project in 2008, *Fengate Revisited* in 2010, the Colne Fen Project's *Process and History* volumes (2013), the volume on the prehistory of Mucking itself (*Lives in Land*), in 2016 and, also in that year, *Twice-crossed River: Prehistoric and Palaeoenvironmental Investigations at Barleycroft Farm/Over, Cambridgeshire*. Elected a fellow of the Society of Antiquaries of London in 2000, he is a member of the editorial board of *The Bulletin of the History of Archaeology* and, together with Tim Murray, edited *Histories of Archaeology: A Reader in the History of Archaeology* for Oxford University Press (2008).

### Further information

Barford, P M 2011 'Mucking: real heritage heroism or heroic failure?', in Schofield, J (ed) *Great Excavations: Shaping the Archaeological Profession*. Oxford: Oxbow Books, 212-30

Clark, A 1993 *Excavations at Mucking: The Site Atlas*. London: English Heritage in association with the British Museum Press

Evans, C, Appleby, G and Lucy, S with Appleby, J and Brudenell, M 2016 *Lives in Land – Mucking: Excavations by Margaret and Tom Jones 1965-78: Prehistory, Context and Summary*. Oxford: Oxbow Books/Historic England

Hirst, S and Clark, D 2009 *Excavations at Mucking: The Anglo-Saxon Cemeteries*. London: Museum of London Archaeology

Hamerow, H 1993 *Excavations at Mucking: The Anglo-Saxon Settlement*. London: English Heritage

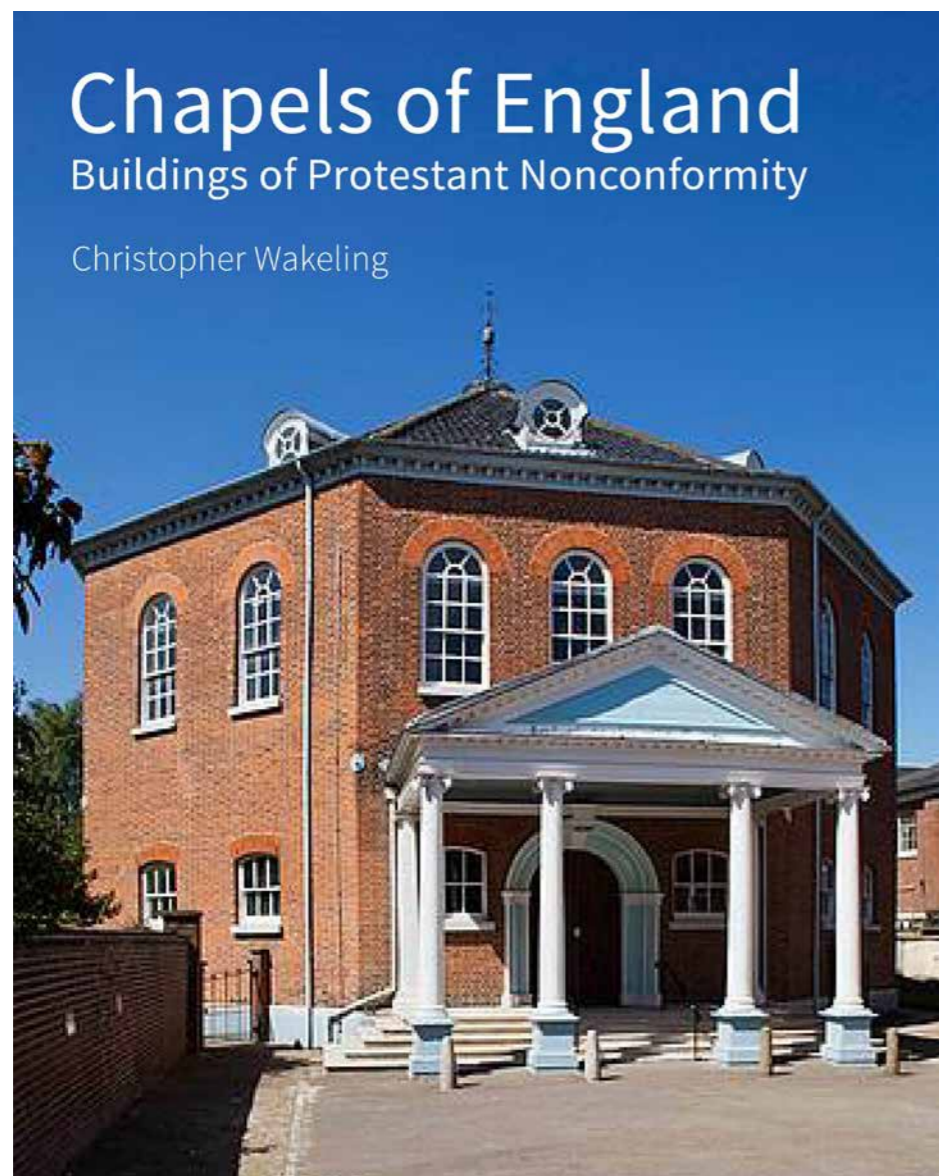
Lucy, S and Evans, C with Jefferies, R, Appleby, G and Going, C 2016 *The Romano-British Settlement and Cemeteries at Mucking: Excavations by Margaret and Tom Jones 1965-78*. Oxford: Oxbow Books/Historic England

**Opposite:** Excavation of the square barrow range. © Tom Jones, Mucking archives



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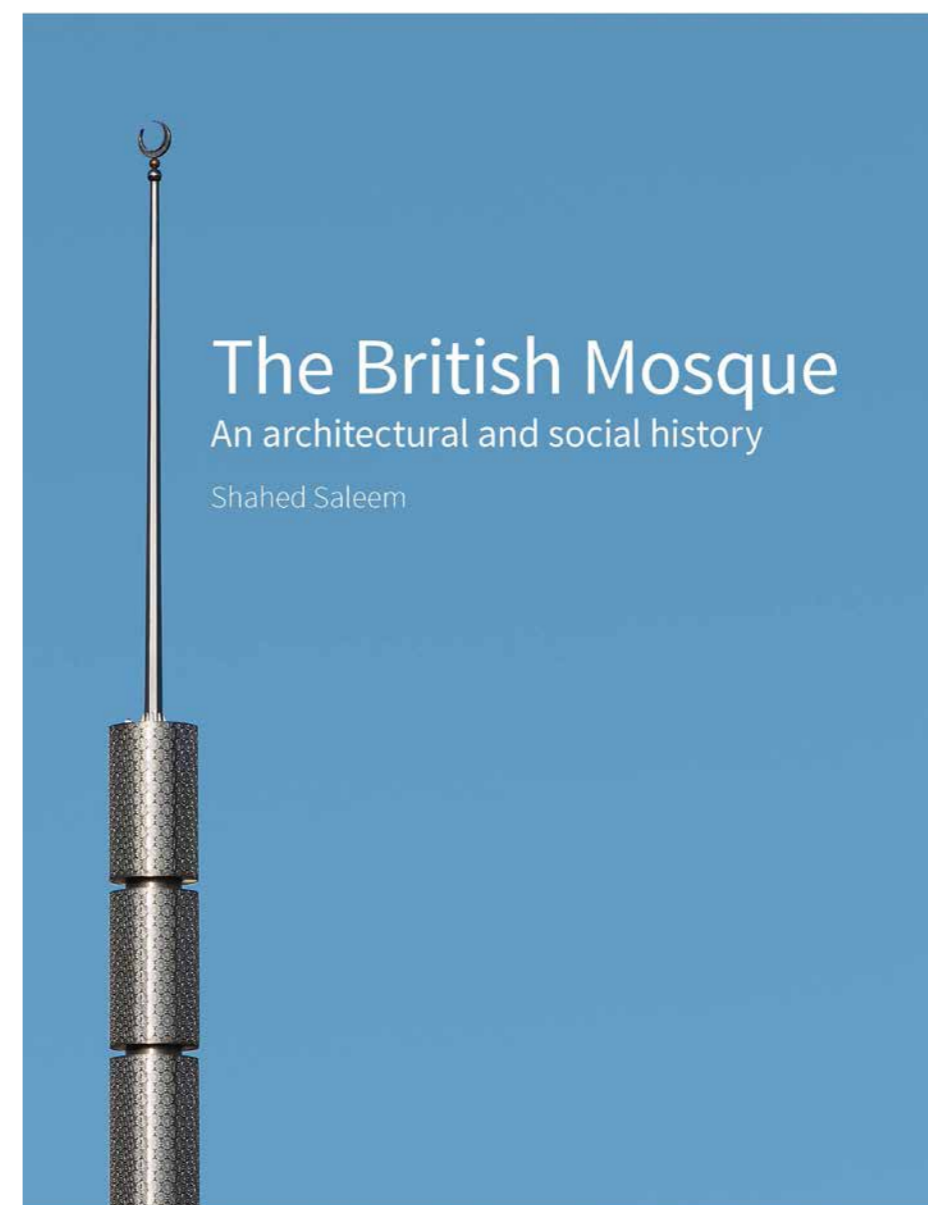
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