Heritage Sector Net Zero Projects Audit

PREPARED BY

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Historic Environment Forum

Foreword

"*If working apart we are a force powerful enough to destabilise our planet, surely working together we are powerful enough to save it*". With these words Sir David Attenborough called for greater collective climate action at the COP26 UN climate conference. Collaboration is at the heart of the Historic Environment Forum (HEF), and since 2020 the Forum has recognised climate change as one of the biggest challenges threatening the resilience of the sector.

HEF has facilitated collaborative work on this topic by hosting a series of task groups. In 2021, the COP26 Task Group produced and launched **Heritage Responds**, a report highlighting the positive contribution heritage organisations and their partners are making to the climate debate. The report was complemented by a geographical mapping of case studies (Heritage Responds Climate Change Story Map) demonstrating how the sector is taking action.

In 2022-23, building on Heritage Responds, the Sustainability and Climate Change Task Group pooled expertise and guidance, sharing advice to support the efforts of the sector towards achieving net zero. The Green Skills in Heritage Task Group (2023-24) subsequently addressed one of the key actions of the **Heritage Sector Resilience Plan**, by analysing skill gaps and needs, as well as looking for ways to stimulate demand for appropriate skills and providing necessary and sustainable training.

This report investigates the scale of investments needed in the sector to adapt to climate change and achieve net zero, and illustrates some of the related evidence gaps and policy challenges.

By understanding our skills gaps, investment needs, and collective potential, the historic environment sector takes another critical step towards developing a resilient, sustainable future; HEF continues to be committed to supporting the sector on this journey.

Adrian Olivier
Chair of the Historic Environment Forum

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Executive Summary

This report sets out research undertaken in relation to a Heritage Sector Net-Zero Projects Audit commissioned by the Historic Environment Forum. The research, focusing on skills and funding gaps, was undertaken using a series of interviews with case study organisations drawn from across the historic environment sector.

Amongst the case studies, there are examples of **current and ongoing commitment** along with a general goodwill **to implement net zero**. A majority of the case studies were at the start of this journey.

The combination of: need; plus the amount of properties and land; plus the fact most of the work has yet to be done, indicates a **large potential demand for suppliers working on net zero implementation and for the skills that are required for this work**. A gap in skills required to reach net zero was reported across all organisations.

There are a range of heritage skills that were identified as being required; alongside engineering and other non-heritage skills. There are also **significant skills gaps** in other crucial areas (which are not explicitly or exclusively heritage or net zero-related), for example:

- Project management
- Procurement
- Data analyst
- Planning process & listed building consent expertise
- Communications

The **financial picture is complex** and varied across the different organisations interviewed. In the majority of cases, funding is not yet available or allocated for the majority of net zero projects.

The **challenges** that face the sector in implementing net zero are **multi-faceted**, and often stem from external factors. A lack of funding and skills shortages are experienced by the case study organisations. Other challenges included: knowledge gaps; a lack of relevant data; inconsistent, unclear or missing legislation, targets, definitions and processes (e.g. in planning processes); difficulties with procurement; the scale of change required; and structural challenges.

This points to a huge potential demand for skills and training across the field of retrofitting heritage for net zero. In some respects this may represent a powerful message for trade/industry/ suppliers and an incentive for them to up-skill workers for working in heritage environments. However, until the other identified challenges can be overcome, this potential demand may not materialise into actual demand within the sector. The **barriers for net zero implementation are complex, and often systemic**.

From within the case study data, there can also be found a series of best practice examples of projects where heritage organisations are making progress on net zero implementation. They range from the use of ‘demonstration’ buildings for live training; to decarbonising large estates; to finding ways of bringing net zero skills from outside into the heritage sector.

1. Introduction

The Heritage Sector Net-Zero Projects Audit was commissioned in June 2024 by the Historic Environment Forum (HEF). The HEF is a collaborative initiative that brings together senior representatives from organisations working across the historic environment sector in England. The Net Zero Projects' Audit was commissioned by the HEF's Green Skills in Heritage Task Group.

1.1 Brief and Aims

The aims of the Green Skills in Heritage Task Group are:

1. To understand the breadth of green skills needed in the heritage sector to progress the work towards environmental sustainability, and ensure that the sector is able to harness the potential of funding streams related to environmental sustainability for the benefit of the historic environment
2. To coordinate with other working groups to gather evidence on the green skills needed in the heritage sector and assess gaps
3. To explore how to stimulate demand of these specific skills.

The original brief for the Heritage Sector Net-Zero Projects Audit was:

- Develop and test (for example using a sample of organisations) a methodology to collect high level information on:
  - The budget already allocated (secured and financed) to support works to net zero. Of this budget, it would be useful to know what percentage is capital/reserves or loan
  - The budget which would be needed by organisations to reach net zero, based on evidence, but not financed yet
- Develop recommendations to deepen the insights to provide more granular data to be linked with the skills needed (and the alignment with training availability and provision)

The original aims for the research, were:

- HEF (and/or its members) will be in a position to begin to collect consistent and robust cross-sector data sets, leading to informed pipeline roadmaps – matching training needs with skills delivery
- The data resulting from this exercise will be crossed with the mapping tool created by the task group, and will be used to inform a round table with trade bodies, and advocacy related to sustainability plans

1.2 Methodology

The methodology was proposed and then consulted on with the HEF Task Group members. The chosen approach was to focus on case study examples and to produce qualitative data through semi-structured interviews

The rationale for the approach was:

- Using interviews with case study organisations would result in nuanced information that would allow for consideration of context and detailed follow-up questions. The anecdotal qualitative data from these interviews would therefore have a depth and specificity that is not always possible from a survey or form
- Focusing on case study organisations meant that the results would show a range of different organisational sizes, types, and operational practices. These could be treated as 'types' or models if required for scaling up
- Further, it was not realistic to aim for comprehensive datasets across the whole sector, given the lack of standardisation across the sector and the short nature of the contract

The contents of this research report include the results of:

- Desktop research including case study websites and other relevant publications
- Semi-structured interviews with selected case study organisations

The structure of the report is:

1. Executive Summary
Setting out headline points

2. Introduction and Literature Review
With the literature review highlighting relevant data from other research reports

3. Findings
Organised thematically across the full body of research

4. Case Studies
Setting out qualitative data for each individual case study, to allow for detailed observation of practices

5. Recommendations
For future lines of enquiry

The structure of the Findings and Case Study sections of this report reflects the twin themes of the work: financing of net zero projects; and skills relating to net zero projects. In addition to these two themes, a third theme of 'challenges' is also set out, reflecting an organic response to the data that was common across all of the interviewees. It is hoped that by setting out the cited challenges, the HEF can better understand the barriers that exist to implementing Net Zero projects and practices.

2. Literature Review

Historic England: Skills Needs Analysis (2024)

The report, '*Skills Needs Analysis For the Repair, Maintenance and Retrofit of Traditional (pre-1919) Buildings in England*' commissioned by Historic England in September 2024 was reviewed as important context for the research.

In many cases the findings set out in that report are consistent with and complementary to the findings in this report.

The research set out the perspective of the suppliers of heritage building and craft skills. The findings show that there is huge demand for heritage skills, that this demand will grow, and that the suppliers may not have the capacity to meet that future demand. Whilst skills suppliers were generally confident in their ability to provide the correct level of skill for heritage projects, the one area of work where hesitancy and lack of experience was highlighted was in heritage retrofit.

On retrofit, the report stated that only 2% of all heritage projects undertaken by the surveyed suppliers related to retrofit. Under a third of the suppliers were confident that they had the right skills or access to the right training for heritage retrofit work. A gap in information/ guidance, as well as a gap in training and qualifications, was set out[1].

Challenges to working included issues such as: lack of clear definitions of 'retrofit'; procurement; lack of training; lack of apprenticeships; a concern over the consistency and quality of work in bespoke heritage surroundings; and delays relating to the planning process/listed building consents.

Concerningly, the report states, *"There appears to be extremely limited appetite among heritage specialist contractors to undertake retrofit works on pre-1919 buildings"* (p. 72).

[1] Although we cannot with certainty match these datasets up, these findings are relevant for the HEF research because it indicates how little retrofit work is being done across the sector. It could be assumed that a net zero project may include at least some element of work supplied by contractors surveyed in the HE report (for example a net zero project may involve repairing/conserving roofs and floors alongside the fitting of a PV panel or heat pump).

Heritage and Carbon Addressing the skills gap, Grosvenor (2023)

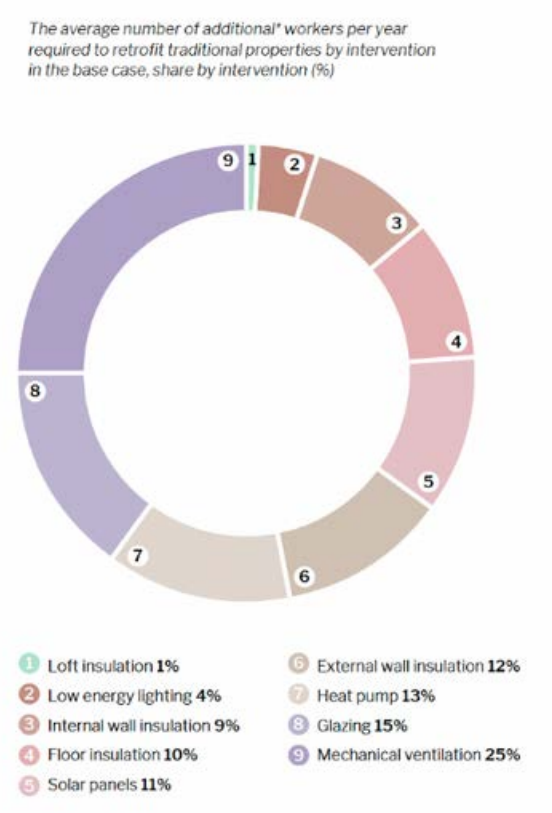
The report, *'Heritage and Carbon Addressing the skills gap'* by Grosvenor and partners in 2023 was also reviewed. The report includes high level data on the demand for workers in the heritage net zero sector, along with recommendations that are highly relevant.

The report gives the following figures:

- There will be a need for 205,000 workers *"to focus solely on retrofitting historic buildings every year from now until 2050 in order to meet the UK's net zero targets"* (p. 4)
- This equates to 105,000 additional workers, compared to current levels in the sector (p. 14)
- The report also splits this demand for workers between retrofit of residential properties – 81,000; and historic commercial stock of 24,000 (p. 14)

The report states that the amount of skills/ workers required in the heritage sector for retrofit represents a large portion of the overall skills base in the country, being 13% of all electricians and 18% of all plumbers.

The research categorises average number of workers by sector, as below (image from 'Heritage and Carbon', p. 14):



Like other research into the field, the Grosvenor report also highlights challenges relating to training and apprenticeships, certification, and local availability of suppliers.

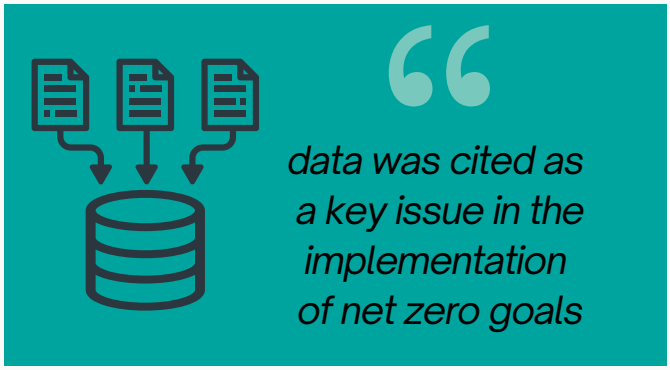
3. Findings

The following section describes the findings of the research using a thematic approach considering data that was gathered across all of the case studies. A number of key issues were cross-cutting throughout the interviews, although the approaches and thoughts about these issues was varied across the case studies. It is as important to state the differences and divergences in the experiences and opinions across the sector, alongside the similarities.

3.1 Overall

All organisations expressed an **understanding of the urgency of the work to implement net zero**. All were working on implementing net zero projects and/or practices.

All acknowledged various skills gaps that they had experienced in working towards net zero. There was a sense of a large 'potential' market for net zero retrofitting.



Need for Data

Across the organisations interviewed, **data was cited as a key issue in the implementation of net zero goals**. There were a number of common themes:

- All stressed the need for accurate data
- Where organisations had officers in-house to collect and analyse data, there were correlations with successes in implementing net zero
- A number cited a lack of data in collection, in analysis, and in use for decision-making. This included a practice of estimating or making assumptions when it came to setting targets for net zero
- Each organisation communicated data differently
- There is a lack of data available from supply chains
- A lack of knowledge of what to include in data collection, and how to define net zero, and a need for standardisation was seen
- It was acknowledged that having accurate data could lead to funding opportunities, or could help with assessing the Return on Investment (and calculating savings from measures)

Definitions

There were **varying definitions of 'net zero' across the sector**. Two organisations included just Scopes 1 & 2 emissions. Two case studies included Scopes 1 & 2 and certain elements of Scope 3 emissions. Two case studies included Scopes 1, 2 & 3.

This reflected another finding: that there is a general lack of guidance and regulation on how to achieve net zero in the UK which includes a lack of legally-enforceable, specific, statutory targets. A number of organisations' representatives commented that more definite guidance or regulation on such matters would be useful.

> *"there are varying definitions of 'net zero' across the sector*

Governance and Operations

The organisational structures, practices, and decision-making for integrating net zero-related activity were varied:

- For finance: some organisations had bureaucratic structures in which financing net zero implementation had to be considered as part of year-on-year budgeting; whereas others had more agile approaches in which funding could be spread across years and decision-making was less subject to budgeting processes
- For skills: some organisations had dedicated sustainability officers; whilst in others sustainability embedded across the departments and roles

3.2 Finance: budgets for Net Zero

Financial Data Overview

The table below summarises the findings relating to: the budget already allocated (secured and financed) to support works to net zero; details about the types of funding (e.g. capital/reserves or loan); and the budget which would be needed by organisations to reach net zero, based on evidence, but not financed yet.

Organisation	Overall cost of net zero implementation; Budget allocated and sources of funding; Unfinanced works (funding gap); Key context
Church of England	Est. £1bn – 1.2bn funding needed overall; £190m was earmarked by the Church Commissioners in 2022 with £30m allocated in the first tranche. £100m is earmarked for the second tranche. A funding application is underway for 2026, with the remaining allocation due in 2028. Shortfall will be funded from various sources including grants; public sector decarbonising funding; partnerships with private sector. Reserves not likely to be used.
Landmark Trust	No overall sense of total financial cost; or the total financial gap; One project at the larger scale cost £350k for a renewable energy system which was fully funded in-house. For future projects fundraising will be undertaken.
Historic Norfolk	One project, Grade I listed chapel: total cost of £2,225,000, of which the funding gap is £1,500,000. Various funding sources including Historic England. Five other buildings in portfolio with potential for net zero interventions; each with different potential costs, currently uncosted.
National Trust	Sense of high level costs. Examples: • decarbonising residential properties is £50-175m. • drainage works: £5-10m (wide range due to unclear line between what is net zero-specific, and what is general refurbishment). Grant funding usually undertaken on a property-by-property basis (or sometimes by region) 10 year Business Plan about to enter into new cycle (from 2025)
Holkham Estate	No full costs across all projects available No sustainability-specific central budget. Every element of the business contributes. More focus on changing working practices than on projects High costs of retrofit high, c.£120,000 per property
Wessex Archeology	Sustainability budget in place. Net zero measures and decisions also relate to other budgets such as the Capital Expenditure budget. Shift in practices is the focus e.g. which suppliers to use. Not looking at external funding
English Heritage	Net zero implementation not fully costed. Funding gap estimated £40m for Scopes 1&2 Potential funding sources: external grants, NLHF, private sector funding, in-kind funding, and partnerships + savings on operational practices (e.g. changing lighting settings)
Peak District	Data unavailable

Prioritisation

Across the range of organisations there were a number of **different approaches to prioritisation of funding**:

- Some organisations were adopting a practice of implementing 'quick wins'/ 'low hanging fruit', i.e. those more affordable and easily implementable measures
- Two of the organisations stated that they were prioritising the biggest emitters first
- A sense of urgency and greatest need was cited by one of the interviewees as a method for prioritisation
- One organisation has adopted a strategy of developing test cases during the early stages of implementation of net zero projects, in order to better advise other staff of learning from these projects
- Two of the organisations cites financial and income drivers for their prioritisation of funding

Lack of Data

In a high proportion of cases there was a **lack of data for the total costs of net zero projects.** This was for a variety of reasons:

- Organisations were in the early days of thinking about this issue in a holistic way
- Or, organisations were further along the route and were less concerned about financial pressures to reach net zero
- There was no separation of net zero from other budgeting of costs
- Individual projects or initiatives had been costed, but this data had not been scaled up across the whole organisation and/or across the whole net zero programme
- Net zero implementation did not involve additional capital expenditure, as it involved shifting everyday practices to working in a more sustainable manner
- Funding strategies are developed on a project-by-project basis as required
- Items such as heat pumps will be considered when other heating systems reach end of life and are due for replacement

Financial Planning

In three cases it was stated that there is no overall financial plan or funding strategy for net zero works across the organisation, or that net zero projects were not costed.

One organisation stated that drawing up a full plan of works was an 'Action' still to do.

In two cases there was a lack of financial cost data due to a lack of agency, wherein the case study was not the landowner or property owner.

One organisation noted that financial planning for large projects was difficult due to the constraints of planning within yearly budget cycles.

Two organisations stated that the costs for net zero retrofitting for each property were very different, and therefore difficult to estimate and scale up.

the lack of accurate and complete data often forces organisations to tackle sustainability on a case by case scenario, hindering the wider financial planning

Funding Sources

During discussion related to funding the current gaps in budgets for net zero projects, the following potential funding sources were mentioned:

- In-house rolling maintenance programmes
- Grants from external sources
- Public sector decarbonising funding grants
- Partnerships with private sector
- National Lottery Heritage Fund
- Historic England funding
- Income
- Boiler upgrade schemes
- Farming-related grants from government
- Savings
- Reserves not likely to be used

One particular organisation's representative described a challenge related to the size of the organisation (being a larger case study of hundreds of properties): it was found that grant schemes required lots of information that is not able to be provided for each property due to a lack of data gathering and grant-writing staff at property scale; but simultaneously there is no capacity for individual grant writing at the central team.

For two organisations, when it came to planning projects and implementing new practices, **financial viability** was stated as the key factor. In a number of cases potential or actual savings were not factored into financial planning. One organisation had noted that using economic modelling for carbon emission-related work was complex and often did not reflect the reality (for example, one model equated higher spending with higher carbon emissions).

One organisation had funding for capacity-building; one had funding allocated for innovation and pilot schemes in this field. One organisation's representative stated that **guidance on fundraising** would be welcome.

Credit: National Trust Images/Linda Goudie

3.3 Skills

Skills Data

In a number of cases there was **not a clear sense of the full skills that would be required to reach net zero**. Therefore, there was correspondingly no full understanding of the skills gap. This appears to correlate with the stages that organisations are at with their implementation of net zero. Almost all are at relatively early stages in the process, and as implementation continues it is assumed that further understanding of the specific skills will be gained through experience.

Cross-over Between Different Types of 'Gaps'

Where funding gaps exist, often there are also skills gaps and data gaps. It should be noted, however, that other factors are at play, meaning that these gaps are not always determining the effectiveness of net zero work. In some cases these gaps are overcome by factors including: agile organisations that can make quick decisions; dedicated staff that work hard to upskill; and strategic goodwill that means limited funds can be targeted effectively.

Combining Net Zero and Heritage Expertise

A number of interviewees stated that having sustainability/ net zero expertise brought into the heritage sector was important, without a need for these individuals to be heritage professionals as well.

Skills Gaps

All those interviewed identified some type of skills gap, both in-house and among suppliers, but to various degrees. The skills gaps that were identified by the case studies were:

- General knowledge gaps in every skill set across the organisation in net zero issues were described by two organisations
- Engineering/ installers of equipment (ie. installers of non-heritage items such as heat pumps, in a heritage environment) were mentioned by three case studies, along with general expertise in non-fossil fuel energy and heating
- Project managers were identified by two organisations
- Procurement officers were identified by three case studies
- Expertise in planning and planning processes were described by two case studies
- Difficulties in appointing apprentices were mentioned by two case studies
- Other skill gaps mentioned included: Historians; Builders; Volunteers; Housekeepers; Biodiversity officer; Data analyst; Architects and heritage architects with sustainably skills; In-house carbon accounting; Life cycle costing; General knowledge about effects of climate change & future planning

One organisation stated that they had not experienced a skills gap, but there was instead a gap in capacity.

Credit: English Heritage

In-house Skills Training

A majority of interviewees spoke positively about training for in-house staff related to net zero and it was clear that this area has **huge potential growth**. Apprenticeships were also mentioned as highly desirable by a number of the respondents, although difficult to attract. Two organisations stated that **training needs** were **greater than the training available**, with net zero training now needing to go into further, with more specific detail. More generalist training on sustainability themes and awareness was effective, but had been completed and incorporated into thinking already. It was time to move up a level in terms of expertise.

A number of the interviewees stated how useful practical case studies are for in-house upskilling, using experience of others as a learning mechanism. Others made requests for additional and better communicated case studies.

Use of 'middlemen' bridging a knowledge gap between in-house staff and external suppliers was a common practice, with organisations using companies that approved/vetted contractors, or provide other services relating to assisting staff with making good choices in relation to contractors.

Certification

The case studies had **varied responses when discussing certification**. Two organisations stated this would be a positive development and would promote reliability if it was credible. In contrast, two others stated a hesitancy to further certification requirements for suppliers, as it risked being too difficult for smaller contractors, giving them an additional burden.

Communication

Representatives stressed the importance of communication within their organisations on this issue. Where people felt they were working well, was often tied to good effective communication with staff. **In-house knowledge sharing was regularly cited as a positive step in working towards net zero.**

3.4 Challenges

The most regularly cited challenges that were cited for the implementation of net zero (with particular reference to financial challenges and skills-related challenges) were:

- **Lack of data**:
  - Four organisations mentioned problems due to data collection, monitoring, analysis. Two case studies stated that their lack of planning related to not having the ability to collect data (eg. no wifi, no BEMS)
  - Half the respondents stated that the initial data and targets they were using for planning net zero measures was based on assumptions (or data that later was developed and altered)
  - It was also mentioned that it is difficult to get data for Scope 3 emissions in particular

- **Lack of agency** over land or buildings (e.g. ownership lies with another party)

- Planning processes, **inconsistent or unclear advice** and legislation; lack of clear targets and drivers (e.g. from HE, government)

- A switch of priorities within **procurement** teams was stated as being required. Three case studies cited the case that net zero targets were not prioritised over financial targets in procurement teams.

- Lack of **suppliers**, lack of ability to know how to reach correct suppliers, lack of specific supplier locally, lack of data from supply chain. Two organisations' representatives said that it is difficult to know where to look for skills, stating a desire for signposting to good skills suppliers/ specialists, and reliable contractors. Two organisations stated it was difficult to find correct, specific heritage skills and suppliers in certain rural locations.

- **Scale of change**; and speed of required change that is needed

- **Technology** not yet being able to deliver net zero

- Distrust of **offsetting**

- Challenges due to the **nature of the buildings**, e.g. structurally delicate

- It was a **challenge to have the issue prioritised across all jobs/roles in-house**

- Visitor behaviour

Credit: Jim Holden/English Heritage

4. Case Studies

4.1 Church of England

As a case study, the Church of England represents:

- **Large organisation**
- **National organisation**
- **Mixture of land & range of buildings**
- **Places of Worship**

The Church of England (CofE) is a national-scale organisation that owns around 32,000 properties around the country. Properties include churches, church halls, schools and residential properties. The plans for reaching net zero were agreed in 2020, with approval at the highest level of the organisation (the Synod). The net zero target date is 2030 and the work will focus on the property portfolio of 32,000 properties and business travel. Property and land management are separate to the property side (land management has ESG - environmental, social and governance - leads).

Definition of Net Zero

The 'net zero' definition involves:

- Emissions to be less than 10% of baseline by 2030
- 'Net zero' relates to Scopes 1 and 2, and certain elements of Scope 3 (but not all).
- The plan for implementation is in three phases: the 2022-25 phase kick-starts the process, tests progress, reports and feeds back into future planning, and helps to understand risk; then second and third phases will follow from 2026-2028 and 2028-2030.
- The three-phase approach means that projects and practices will be reviewed
- Originally the carbon emissions baseline was estimated

Financial Practice, Costs & Funding Gaps

The CofE currently estimates the total cost of its net zero ambitions to be an additional £1-1.2bn, of which £190m is currently funded/ allocated. Reserves are not likely to be used to fund the gap. Savings from efficiencies as a result of net zero practices are not yet being factored into the wider financial picture (generally – although there is the occasional case study done, e.g. of electric chandelier installation).

There is a data gap in terms of data collection and analysis on the Return on Investment for Net Zero practices, which also speaks to the intersectionality of funding, skills, and other gaps in the requirements to meet Net Zero.

To reduce the funding gap, **external grant funding is being pursued**, and there are grant funding officers in the dioceses undertaking mapping exercises to identify possible funds. Partnerships with private partners (e.g. the SW Energy Hub) are also being pursued. There was some **success reported in match funding practice on a pilot and small scale**, which has demonstrated the success of this approach. Overall, the gap in funding is coming down.

Prioritisation of funds in the CofE for net zero implementation projects works in a few different ways. In some cases funding is allocated to properties with the greatest need; alongside this, 'quick wins' funding has been distributed to dioceses for them to complete easier projects first. There are funds for capacity building within the organisation, and there is a fund for pilot schemes and innovation.

Church of England

There is an **agile approach to the governance of projects** as part of the project management system, whereby the governance can approve changes to scope and costs of projects as they develop; so budgets for projects can and do change as required.

Skills for Net Zero Practices & Skills Gaps

There is a governance-driven approach to achieving net zero, with strategic-level approval of targets. There are net zero officers at a diocesan-level, who support the work undertaken at each property.

A heat pump project for churches has been identified, with a series of projects now underway (currently 132 projects). Staffing has increased from 1 to 40-50, responding to the rapid escalation in activity.

For upskilling, there is a monthly surgery where staff and volunteers can pose technical questions to people with the technical expertise. These sessions mean the organisation works together, and harnesses skills. There is an approach of describing case study projects to help others learn from them.

It was stated that every single skill set needs up-skilling, and that there are clear knowledge gaps across trade and across the organisation. There is increased demand across all departments for net zero and heritage skills.

Identified skills gaps include:

- Expertise in linking climate-related risk planning and adaptation measures into wider sustainability strategies. There is a sense that the 'toolbox' required for future-thinking is not available yet
- Volunteers may not necessarily have the skills, or the time for upskilling
- Suppliers (e.g. heating engineers installing heat pumps) do not necessarily have the required heritage-specific expertise
- In-house, the recipients of data and reports around emissions are not experts in the field

Credit: Benjamin Elliott (Unsplash.com)

Church of England

Challenges to Reaching Net Zero

A number of challenges to implementing net zero were discussed, with the main challenges identified as funding and resources. Others included:

- Moving from the expertise at the centre to the implementation by the individual Parishes
- Prioritisation and decision-making: should the 'low hanging fruit' prioritisation make way for a prioritisation of focusing on the highest emitters?
- Usage issues – such as changing habits from heating up buildings/spaces to heating up just the area where people are (heating the people, e.g. via infrared heating)
- Procurement is a huge challenge, and there can be cases of clashes in prioritisation – an example is the rollout of EV chargers, which may be a procurement (and/or organisational) priority but which would add to the carbon footprint

Best Practice at CofE

The CofE has started an initiative whereby a small number of church buildings in each region are 'demonstration' projects (2 churches in each diocese). These churches act as live demonstrations of best practice in the journey to implement net zero: staff and volunteers from other properties in the area can visit, to learn from them. This initiative is at its beginnings, with 20 churches currently funded and an aim to have 100 churches in total.

The investment portfolio of the organisation has undergone divestment, decarbonising its portfolio.

Recommendations for the Sector

A number of recommendations were articulated, including:

- There is a carbon footprint tool, with a rate of about 50% take-up in use of this. More could be done on data collection and data sharing across the organisation
- A national heritage-specific engineers' accreditation for installers of items such as heat pumps; PV panels, insulation, lighting and so on. This would enable a reduction in the current skills gap that exists in this area. Heritage sector should assert the desirability of such an accreditation to trade bodies
- There is evidence of success in use of CPD courses/training in the heritage sector; this should be expanded. Evidence of CPD accreditation by suppliers means that the sector will be able to discern reliable providers
- Relationships with suppliers can also be challenging; not least as issues (and project aims, and scope) need to be looked at holistically rather than on a product-by-product basis. Joined-up thinking could be very productive in this practice

4.2 Historic Norfolk

As a case study, Historic Norfolk (HN) represents:

- **Small organisation**
- **Independent**
- **Charity**

Historic Norfolk (founded as Norfolk Historic Buildings Trust) is a charity that protects and promotes the built heritage of Norfolk. It was founded in 1977. It is an independent charity that previously had a formal funding link with the council, but this funding arrangement no longer exists. It is run largely by volunteers (an active executive Board), with one part-time paid member of staff.

Financial practice, Costs & Funding Gaps
HN purchases heritage properties that are at risk in Norfolk, and maintains and/or refurbishes them. The organisation does not have a net zero strategy; there is no funding for this. There is no finance available for retrofitting in many cases.

However, they undertook a net zero retrofit on one property: Grade 1 listed Becket's Chapel in Wymondham, which involves its repair and an extension. This project is currently underway and is being completed in two phases.

On its purchase the Chapel was in need of maintenance and had very few facilities. HN were able to ensure it was placed on the At Risk Register, and put together a plan to open it to the public with a visitor centre and café and make it available for private hire. One aim was to make the building economically sustainable. Another aim was to have the building become a focal point for the town on the high street.

The project has included:

- Raising the roof by 120mm to allow for insulation to be added
- Underfloor insulation and utilities installed by taking up the floor
- Semi-bespoke heating chandeliers (made in France) which work in a complementary way to the underfloor heating.
- Designing an extension (for use as café, accessible toilets, visitor space) with a pitched roof to ensure the correct angles for PV panels
- Transportation of goods/materials for the project has been considered, with items from Europe driven over rather than flown
- Understanding of natural conditions, with light from the north aspect and cooling from the south – so have planned cooling and heating accordingly (no AC in fact required)
- The placing of heat pumps hidden in the pitched roof has meant no visual or acoustic imposition onto the heritage design

Phase 1 is costed at £725,000 and Phase 2 £1,500,000. Phase 1 is fully resourced, whilst for Phase 2 £100,000 is currently funded for development work. HE gave a grant of £400,000 for the repair of the Chapel. It was noted that **retrofit funding is a challenge** – for example, the recommendation to add additional glazing to the windows would come to around £100k plus VAT. There is a **need for guidance on possible funding sources** for net zero projects, e.g. infrared heating.

Credit: Dave Balcombe; Historic Norfolk

Skills for Net Zero Practices & Skills Gaps

The organisation is run by a volunteer executive board, who have expertise across a range of fields including business. As individuals, board members also have good connections with the heritage sector. Recruitment to the board has been savvy, it is populated with very active members.

HN has no fundraising staff (e.g. for grants towards net zero), and executive operations are undertaken by the board. Thanks to funding from Historic England, an independent specialist produced a retrofit report for the building, and the Trust were able to commence some of this work. The volunteers working on the project learned on the job, and it was noted that the skills gap is different in every project, depending on the building itself. Good Project Management skills were important in this context.

With regards to training it was noted that a heritage net zero course would be appreciated; as the net zero training that has been used had not been heritage-specific.

Challenges to Reaching Net Zero

The most notable challenge described was the differing and **unclear guidance** that had been given relating to the design of the Chapel extension. Although guidance had been given with recommendations for net zero retrofitting, when it came to the actual design and planning permission, relevant authorities were unsure about what to advise and gave **contradictory or unclear advice**. Advice was difficult to understand, and changeable. It was a challenge to understand what advice was significant and required change to the planning documentation; and what advice was merely a general comment or preference.

Another **challenge was with suppliers**: in some cases there were no local suppliers for specific goods, e.g. HN purchased goods from Holland and France (black roof tiles, and semi-bespoke chandeliers respectively) as there is no local equivalent.

Recommendations for the Sector

Key recommendations for net zero implementation in the heritage sector more widely from HN were therefore:

- Clear, consistent, more transparent guidance.
- Clearer guidance throughout the planning process
- NLHF and other heritage funding that includes net zero retrofitting

4.3 Peak District

As a case study, Peak District National Park represents:
- National Park Authority
- Landscapes

The Peak District National Park Authority manages the Peak District National Park through a management plan (2023-2028) in partnership with other organisations including various Wildlife Trusts and several districts and local authorities. They have a formally adopted strategy document, which has overall ambitions, objectives and aims with some relation to climate and net zero.

The asset management team is working on energy reduction projects. They also have a climate change vulnerability assessment (2021) which assesses special qualities of the national park by examining vulnerabilities and resilience. The partnership 'Moors For The Future' works with landowners and united utilities east moors partnership, along with the National Trust and the RSPB.

Skills

The skills gap was highlighted as an issue, with **skills shortages** in many areas. This was found **in both planning processes** (receiving applications that lack knowledge), **and delivery** (e.g. lack of conservation accredited architects). Key skills gaps were around historic building retrofitting and people having a combination of both heritage and sustainability skills. They highlighted the need to join up siloed thinking, by allying design and delivery.

Whilst the Peak District do not have all the disciplines needed in-house, they have set up a training academy for apprentices which acts as an umbrella for different training opportunities. They would be interested in partnering with suppliers for further up-skilling, however have had trouble finding heritage specific providers for training and apprenticeships.

In terms of procurement, there was difficulty in knowing where to look for skilled contractors beyond existing contacts and networks. They recognised a **need for improved signposting** across the sector.

Finance

The Moors For the Future initiative uses Nature for Climate funding, with mention to possibilities in European nature based funding.

Other Challenges

There was an additional difficulty in finding examples of case studies for best practice in different scenarios. Making exemplars more available through funding opportunities would be helpful.

Credit: Magda Vrabetz (Unsplash.com)

4.4. National Trust

As a case study, The National Trust represents:
- Large nationwide organisation
- Landscapes and properties
- Charity
- Landowner

The National Trust looks after over 500 sites. Their net zero approach is embedded (as opposed to having one role for sustainability), with staff having sustainability KPIs. Working groups have been set up around energy and adaptation, led by the regional director alongside operational and central staff. There are also regional environmental advisors, and specialists in decarbonisation within central teams.

The trajectory to net zero by 2030 has clear targets and timelines with a focus on offsetting through managed land. They are on target for emission reductions with a 5% year-on-year reduction in operational energy. However they foresee the next stage to be challenging in moving past 'quick wins' that were aided by the Covid-19 lockdown in scaling back operations (key properties closed to visitors, hybrid working models). Now more complex matters must be addressed, such as decarbonising of Grade 1 listed properties. They are making progress but timings will stretch. However, they have successfully removed oil boilers from one historic property, Kingston Lacy, through the use of ground source heat pumps.

Analysing climate change risk is undertaken through a map that identifies hazards by comparing current scenarios to 2050. This climate adaptation upgrading has then gone through a costing exercise (for rainwater management, drainage, surface flooding and solar shading). They also have a sustainability design tool, set up in house to support projects.

Finance

Finance is one of the biggest challenges, with the Trust needing to address other obligations beyond the net zero goal. Income is generated, in part, through a residential (let estate) portfolio, though it is estimated that 3-4 times this annual income is required to cover sustainability measures of this portfolio (on top of routine maintenance and refurbishment). **Residential properties in particular have challenges** in traditional construction, where the cost of decarbonising ranges from £50-£175 million and upgrades to the mansion estates such as extra drainage for rainfall will cost £5-£10 million across the portfolio.

With procurement, the economic modelling used does not embed life-cycle costing, which means it does not reward spending strategically, rather it focuses on spending less. The procurement model therefore does not favour sustainability projects that come at a premium financially, despite their lower carbon footprint. The NT is **working to embed more life-cycle information** into this process.

There are **opportunities for savings through improving energy efficiency** as a way to offset the costs of the projects. **However the scale of opportunity is small compared to the cost of implementation**. There are other means such as the renewable energy investment initiative which looks at offsetting the operational embodied carbon of major mansions by investing in renewable energy schemes (solar, wind power, pumps). However because a significant area of estates are letted, they would not be seeing the financial benefits (in these cases the tenant is paying bills, not the NT).

Credit: National Trust Images/Dennis Gilbert

National Trust

There are grants available, with three relevant schemes including the boiler upgrade scheme and the energy bill scheme (for retrofit/ discount) from the national government. However, these grants are very dispersed and there is too much information needed for submitting applications. Funding for individual properties is done on a smaller scale (e.g. per property or region), and whilst there is support from the centre it is down to the local Project Manager to source this.

Skills

As this is new territory, understanding complexity and approach takes time, with a current lack of understanding about what work needs to be done both across the industry and in-house. However, the NT does not identify a skills gap in heritage internally at a strategic level, and would not be keen to add an extra role to the organisation. **Greater emphasis on sharing information and lessons learnt** was considered important. They have in-house skills schemes and would be interested in technical schemes, along with having processes for retrofit qualifications.

There was difficulty in procurement with projects taking longer due to lack of skills and an issue in getting reliable, reasonably priced contractors on board. However, the NT would not be keen on certification for suppliers because it may be an additional barrier for the supply chain which is already stretched.

Heat pump installation was highlighted as a persistent issue. The NT has looked creatively to address the skills gap in suppliers - working with 'Heat Geeks' an independent organisation that started on Youtube that acts as a check a trade but for heat pumps. Within this, there is emphasis on improving in-house skills, with a focus on partnerships, where with training through organisations such as Heat Geeks, supply and procurement can learn to understand the needs and challenges between the two and training can be undertaken for up-skilling staff in-house.

Other Challenges

Legislation. There is a **lack of heritage specific information in the legislative framework**. Having a UK net zero carbon building standard that includes heritage would give a definitive statement around expectations and what targets organisations should be aiming for. This would be useful for contractors, suppliers and procurement.

Prioritisation. Due to the broadness of the field, it is **difficult to assess what projects to prioritise when**, whether they categorise as sustainability related, or refurbishment projects, and who has the ultimate say. Within sustainability projects, the question of whether priority should be towards nature based schemes, such as rewilding or if resources should be put towards decarbonising historic properties. The new ten year strategy commences in 2025, and so there is emphasis around understanding hierarchy of projects and where sustainability initiatives sit. In addition to greater evaluation, looking towards lifecycle costing, and in-house training around carbon accounting.

Monitoring. As this is new territory, existing data does not yet exist to work from. This will take another couple of years.

4.5 English Heritage

As a case study, English Heritage represents:
- Large nationwide organisation
- Landscapes and properties
- Charity
- Landowner

English Heritage (EH) has an embedded approach to net zero, with a climate and sustainability team and ongoing communication with the wider organisation. They have an existing climate action plan (2022-2025) and the development of a future environmental strategy is currently being led by the Head of Climate and Sustainability. Responsibility for individual actions sit across different parts of the organisation, with some coordinated by central teams and others implemented by local sites.

Management of climate change is an **ongoing learning process** within the organisation. Alongside action as part of a building carbon reduction programme, the charity wants to ensure a long term and key focus on sustainability to achieve their 2035 net zero target.

In terms of prioritisation and making the best use of resources, the current strategy is to focus on properties where the biggest carbon savings can be achieved for the lowest cost. The inclusion of smaller projects then increases the volume of projects delivered. The charity also has a focus on **inspiring behaviour change** in their staff and volunteers, pushing for advocacy and taking part in events such as Great Big Green Week. There is a focus on **normalising sustainable behaviour**.

The organisation is on track for their 2025 target of a 20-25% carbon reduction goal, but this is largely due to work to improve the ability to measure carbon and energy consumption through the use of installed meters.

Finance

The biggest challenge identified was financing net zero goals. Net zero implementation is not yet fully costed as it is very complex to do, but within phase one and two the funding gap would be approx £40m for scopes 1 and 2. The charity is trying to address this by looking at **partnerships with the private sector**, who might be able to provide support in kind. They are also looking to external grants to fund the gap.

It can be hard to align large decarbonisation projects with annual budgets as the former may be more substantial than available funds. The Sustainability and Finance teams are collaborating in an **attempt to increase the level of forward planning for projects**, which may enable spend to be spread across different financial years.

A **major disincentive** to decarbonisation initiatives is the **current disparity between the cost of electricity and gas**. Because electricity is more expensive than gas, it's hard to justify the switch from gas boilers to air source heat pumps (ASHP) on financial grounds as ASHPs run on electricity.

There are additional costs associated with projects that cause barriers, particularly because of the age of the properties. A key example of this is when heat pumps need to go on the roof of a property, but they cannot be put on a roof because it is not in a good enough condition.

English Heritage

Skills

No-one has decarbonised the heritage sector before, so it is new territory, with people that have net zero plans across the board likely to have not achieved them yet. It was identified that **there is a knowledge gap before there is a skills gap**, and the need for people to first acknowledge it is an issue. As it is new territory, it is hard to definitely know what skills are needed.

English Heritage expect there will be skills gaps in the heritage sector when addressing climate change, because a contractor may not have heritage expertise, or perhaps even sustainability expertise. There were **skills gaps identified around decarbonising historic buildings** and the replacement of gas oil boilers with sustainable alternatives, with the need for expertise in non-fossil fuel based heating systems.

English Heritage have found that the level of knowledge around carbon footprints is low, which can be **difficult** when wanting **to hire sustainably**. When asking about the suppliers' own footprints there is a very mixed response.

The organisation feels that **there would be power in partnerships with trade and traineeships**. They also have in-house expertise around the decarbonisation process. The charity feels that certification would need to have credible criteria and would need to be monitored in a consistent way. They are **interested in looking at innovation in the sector and more widely**.

Credit: Clive Downes/English Heritage

English Heritage

Best Practice

The **small quick wins might have less impact, but by scaling up they can make a difference.** For example, correcting flood lights which come on at the wrong time, by changing the settings on the timer, would save £400 per year at one property. When scaled up, this number is significant. These small housekeeping changes are easier to achieve, but do still require **changing behaviours.**

There is also benefit in **looking beyond the heritage sector to employ sustainability staff.** The organisation's sustainability lead came from a non-heritage background, but has a strong focus on driving momentum which highlights the value of hiring attitude above sector expertise. There is a lot of grassroots knowledge and enthusiasm within the organisation to ensuring sustainability, which can be utilised.

Other Challenges

Communication & Awareness. Advocacy and comms are a very important part of the charity's strategy. They highlighted that it was important for everyone to fully understand climate change and comprehend what is coming in the future.

Climate Risk. There is a physical risk around property vulnerability from climate change, in particular Hurst Castle, with comprehensive and ongoing monitoring being undertaken to help quantify these risks. At properties significantly affected by climate change there are efforts to communicate these impacts to the public.

Credit: Christopher Ison/English Heritage

4.6 Holkham Estate

As a Case Study, Holkham Estate represents:
- Private land owner
- Tourism sector
- Farming

Holkham Estate is a family-owned estate of 25,000 acres in Norfolk. It comprises land, including farming and forestry; property including 290 residential houses, a Grade I listed Hall, and other buildings, 14 tenant farms; a tourism site with hotel, restaurant, estate visitors and a caravan park; and a commercial arm.

Holkham has an ambitious sustainability strategy, with a series of stated ambitions and goals focusing on natural capital, carbon negative, and waste. 89% of the carbon footprint results from farming. There are 12 key projects up to 2030, including reducing diesel, sequestration, woodlands, hedgerow management, renewables usage and more. By the organisation's emissions data plotting, it is projected that net zero targets will be achieved by 2035 (the current plan has a trajectory to 2040).

Financial Practice, Costs & Funding Gaps

Holkham does not have a specific sustainability budget, instead every part of the business needs to contribute to the achieving of net zero. There are no project-specific costs (however, it was noted that cost of retrofitting properties is high: est. £120k per property). The process instead relates to changing everyday practices (more than distinct projects), e.g. for fertilisers, reducing diesel, reducing fungicides, increasing efficiencies.

The main driver for the organisation is to be a profitable business. Core business includes farming, so there is no large focus on reduction in farming. The organisation has tended not to look at external grant funding for sustainability projects, but they do receive the usual government subsidies/ grants for farming practices. There are savings generated on the running costs of electricity when shifting to net zero. Holkham uses a system of data analysis for carbon emissions where cost savings are also carbon savings.

Credit: Matt Davey (Unsplash.com)

Holkham Estate

Skills for Net Zero Practices & Skills Gaps

At Holkham sustainability is both top-down and bottom-up; it is **embedded into 'behaviours' across the organisation**. Supporting the sustainability strategy is in job descriptions. Farming originally led the way: The farming strategy was focused on sustainability before the estate-wide sustainability strategy was put in place.

The strategy was developed in-house, using support from Carbon Trust; although this was a challenge as advice was not heritage-specific, and there was a lack of data (eg. from BEMS systems). Now, there is a Sustainability manager in post and a part-time data analyst for gathering and analysing data against the baseline. It was noted that the sustainability team are young – reflecting the fact that this is a new sector. The organisation also uses external experts where needed such as consultants, estate agents, and working with the DEA on net zero farming projects, e.g. carbon measuring. They noted that **collaboration is critical**.

For training staff, a number of sources are used. IEMA's five day sustainability course with accreditation is used, with 30 employees currently accredited. Online training for new starters on sustainability is offered. A local college is used for Green Skills training, and the organisation also uses 'Fit for the Future'.

On skills gaps, overall there is not much of a skills gap to report – instead the **main issue is capacity**. There are some training gaps in skills such as electricity, biomass, water.

Apprenticeships are offered, but not always taken up; and there is a lack of young people. The team in house doesn't have training on air source heating, biomass technology etc., and this is a fast-moving industry. For some landowners terms like 'Carbon Literacy' are not helpful.

Credit: Archie Eke (Unsplash.com)

Holkham Estate

Challenges

There is a clear knowledge and data gap in Scope 3 emissions, as in some cases there have been assumptions made about suppliers' emissions.

A number of challenges were reported in reaching net zero:

- The scale of the change required, and the speed of implementation: feel a need to do more
- The rural location means they do not have easy access to a lot of suppliers, e.g. plumbers. The reality of rural life is that you need a car for access
- The science behind sequestration still feels not quite there, and the carbon markets are not properly developed yet
- Farming is a big challenge when it comes to Scope 3 emissions
- Weather can be a huge challenge, for example tourist numbers reducing due to bad weather
- Changing governments and policies is a challenge – there is no certainty in terms of legislative frameworks and requirements
- The Grade I listed fabric and the related guidance (e.g. advice against installation of PV panels)
- Have completed 'low hanging fruit', but need to shift now to measures like the PV panels
- Historic material: in some cases it means that structurally they can't take air source heat pumps (for example)
- Cost of retrofitting is high: est. £120k per property
- Land use framework: the organisation is not yet ready to reduce farming; occasionally land use is taken out of farming with private funding, but this is rare
- Data needs to be reliable, and visible. Holkham created their own metric for environmental gain

Best Practice

Marketing and communications within the organisation is important, with a day each year focused on net zero, and a day of showcasing each team's work, e.g the forestry team inviting others to come and see their work. This raises awareness internally. Holkham also has an internal staff app for posting news stories, education, and knowledge sharing. The WONDER programme is embedded into in-house teams.

Recommendations

Key recommendations for net zero implementation in the heritage sector more widely from Holkham:

- For Scope 3, it would be useful to have clearer and tighter legislation. Legislation would drive everything forward (e.g. Guidance/regulation on EPC ratings)
- Clear and consistent guidance from Historic England about installation of PV panels

4.7 Wessex Archeology

As a Case Study, Wessex Archeaology represents:

- **a large archaeological service**
- **a charity, working nationally and internationally.**

There is a Chief Sustainability Officer in place (a Director-level post), and the Executive team leads on implementing the sustainability strategy. The strategy is currently being renewed. In addition two new dedicated staff have been appointed: a procurement officer and an estates role. The organisation makes strategic choices to work on sustainable projects; but ultimately work on other projects too (i.e. clients that are undertaking developments).

Definition of net zero: Wessex Archaeology are aiming to tackle all 3 Scopes. Most emissions are in the supply chain (Scope 3), so Wessex Archaeology appointed a procurement officer to focus on sustainable procurement.

Finance

Wessex Archaeology has a sustainability budget, and a Capital Expenditure budget that includes property leases. Costs are a balancing act as part of the budgeting process, and prioritisation over expenditure is a business decision. Budgeting can be spread over financial years.

There is very little external funding available for things like PV panels or heat pumps. The main office is in a conservation area, so what can be done to the building is limited. A decision was made not to install EV chargers as they are too expensive. There is not always data available on savings generated by net zero practices; it was also noted that PV panel installation on a property in Bristol meant the lease costs went up.

Credit: Wessex Archaeology

Credit: Wessex Archaeology

Skills

In-house skills. There is a desire within Wessex Archaeology to show leadership in the field of net zero in archaeology, not least as they are a large part of the sector. The Board are given training; in fact Boards were identified as 'hard to reach' groups for sustainability expertise so this was implemented. The organisation identified skills gaps and filled them: first with the Sustainability lead, and then with a procurement officer and an estates role. Wessex Archaeology is not necessarily thinking about heritage-specific skills. It was felt that to combine sustainability expertise and heritage skills would be too much breadth for one role. The sustainability officer is from outside the heritage sector; she brings skills and expertise from outside, which includes working at sustainability implementation at scale. The procurement role was difficult to fill: not many candidates came forward with a sustainability focus, as procurement traditionally is about cost savings.
There is also new archaeology-specific Carbon Literacy training. The organisation is looking at Certification ISO14001.

External skills. There is a need to educate the supply chain. Many suppliers are small and local, and many are not on the journey to net zero yet. **Data about the supply chain** is also a problem.

In addition, there is no consistency in what clients want from the supply chain: Wessex Archaeology responds to client requirements and these vary, including on net zero, or energy requirements, or BNG, or social value. Wessex Archaeology are partners with the Supply Chain Sustainability School for training, and use Construction Line for vetting suppliers.

Wessex Archaeology uses a middleman company: 'Good Wings' – a flight booking portal that will use some of the commission via the purchase of unavoidable business flights to invest in renewable projects.

Wessex Archeology

Challenges

Good data was referenced as a challenge in a number of respects. Firstly, this is required to manage the change, but it is sometimes difficult to show progress in a moving landscape. For example - when a new large client comes on board, the carbon emissions of Wessex Archaeology correspondingly go up, despite increasing work to reduce them. The situation is complex, including with data and communication of data around emissions (also from the supply chain).

Technology is another challenge, as it has not yet caught up with net zero prioritisation, for example Wessex Archaeology use 4x4s, but there are no electric versions yet.

Culture is also important; it is imperative to convince people that net zero work should be done. In general, the heritage sector is open to this but in the construction sector there is more of a mixed and challenging picture.

For rented properties Wessex Archaeology are reliant on landlords' actions to reduce their carbon footprint; in some cases they may take this into account when deciding on where to locate. Lastly, offsetting is the 'elephant in the room' and it is still a practice with a great deal of uncertainty, lack of data and lack of transparency.

Best Practice

Wessex Archaeology use lots of **communications with staff to raise awareness**, eg. 'did you know...' messages about issues such as water use or recycling. Messaging is used to keep a positive outlook. People are able to see the impact of their actions; they can see progress.

A project for Onsite Welfare was cited: Wessex Archaeology now use solar-powered and rainwater-harvesting welfare. This means both reduced carbon emissions and it is cheaper (as there is no additional energy use payment).

Recommendations

Key recommendations for net zero implementation in the heritage sector more widely from Wessex Archaeology:

- Use of an in-house **procurement role** focusing on **sustainable procurement**
- Regulation and legislation: Wessex Archaeology complies with **regulations**, this is a real driver for action. When legislation is clear and tight it is followed and there are changes
- Heritage sector to **team up on sequestration efforts**, as a way to offset carbon across the sector in an ethical/ transparent way

Credit: Wessex Archaeology

4.8 The Landmark Trust

As a case study, the Landmark Trust is an example of:

- **property owner**
- **tourist sector**

The Landmark Trust is a small charitable organisation which seeks to rescue historic buildings and repurpose them into holiday lets. The Trust currently has circa 200 holiday let properties across the UK and around 55 commercial/residential let properties. Landmark also operates in Italy and manages Lundy Island in the Bristol Channel. The business model is such that the income derived from the holiday let business covers the routine and planned maintenance requirements of the properties. Since 1965 from when the Trust was founded, they have been rescuing and caring for historic buildings against a changing background including environmental factors.

However, seeking to make environmental improvements comes with additional costs over and above the usual maintenance, repair and improvement work required and at present the charity is struggling to ascertain firm costs for these works, be it for retrofitting or for switching from fossil fuel to a renewable energy supply. Landmark Trust would be seeking to fund these works through external funding streams once costs are better known.

In 2022 Landmark formulated an in-house **Environmental Strategy** (ES) and Carbon Management Plan, which was endorsed by the Board of Trustees. The Strategy sets out the Trust's approach to understanding, addressing and adapting to climate and environmental change. It is intended as an overarching document that spans the charity's work, identifies initiatives and undertakings which, as they develop and implement them, will help navigate through the Climate Emergency.

The ES sets out a **clear 5-point implementation plan** as follows: Energy and Carbon Management; Climate Adaptation; Recycling and Reuse; Biodiversity and Sustainable Travel. Under each of these headings, there are key targets to be achieved – some are smaller quick wins, others more long-term goals. The ES action plan is internally reviewed and revised every quarter and has been cascaded down to all tiers of the organisation for implementation.

Initially, Landmark Trust had a part-time ES Project Manager on a 2-year fixed term contract dedicated and responsible for the co-ordination and implementation of the Strategy, leading on the action plan and on embedding sustainable practices throughout the organisation. The fixed term appointment has come to an end, but the Action Plan will continue to be managed centrally, with responsibilities for delivery passed down through all staff as we view this area as part of everyone's role within Landmark and not simply the responsibility of a few.

Skills

Landmark Trust recognises that they have a **skills gap around energy sustainability and calculating heat loss** etc. The organisation has no in-house services engineers, so they are reliant on external expertise. However, seeking reliable, independent support in this area has not been easy. Most competent consultants in this field are simply too busy.

The charity found mechanical engineers familiar with renewable systems and they are working to develop schemes to help the organisation move away from a reliance on fossil fuel systems for heating and hot water systems for new and existing Landmark properties. Because the charity is seeking a holistic whole building approach, they are also working with a sustainability consultant who has expertise in assessing the airtightness of the property and providing valuable guidance on thermal improvement works which is helping with the decisions around how to undertake retrofitting of existing properties. All Landmark buildings are diverse/unique so there is not a 'one size fits all' approach, although broadly there are some general principles they are seeking to develop.

There is also a need for the surveying team to develop an understanding on heat pump technology and how the systems are designed and calculated as they are different to conventional heating and hot water systems prevalent in most of their building stock. The switchover is complex and a costly capital investment, so a clear understanding of the outputs and being able to have confidence to make informed challenges on the proposals is important to ensure the organisation is spending our charitable funds wisely.

The sustainability consultant has also been invaluable in helping with **training in-house surveyors**. She has undertaken airtightness testing and shown how to use a thermal imaging camera to identify areas of concern within various properties across the country, for example demonstrating the significant heat loss through unused chimney flues or upward draughts from ground floor timber suspended floors. Landmark Trust is planning to run a course on the importance of ventilation in historic buildings with the team early in 2025 and the team have also attended online courses run by Fit for the Future, Historic England and the SPAB.

Finance

Income is generated through the holiday let business and this generally covers operational costs including maintenance and repair costs of the properties. However, the switchover to renewables is an expense capital outlay, as the organisation has experienced with three recent projects, where they have installed Ground Source Heat Pumps of circa £200-350k. Landmark has around another 50 properties reliant on fossil-fuelled boilers for providing heating and hot water to the property. These will need to be replaced in the coming years, but option appraisals or feasibility studies have yet to be undertaken. Landmark has also made a firm **commitment that no new major refurbishment project will rely on fossil fuel technology** for heating or hot water provision, which is fully supported by the Board. However, their seeking funds for environmental improvement works is in its infancy, although many individual supporters welcome the opportunity to finance this work.

A few years ago the charity set up a **Greener Landmark Fund** on their website. Many of their long-standing supporters are keen to know what the organisation is doing and to understand the specific costs so they can provide financial support (i.e. what is the cost of installing an EV charging point to a property?). Whilst this seems a reasonable question, there is a myriad of underlying questions that need to be worked through before this can be satisfactorily answered i.e. site location and electrical load capacity etc. It may be that for new cabling, there will be associated costs i.e. an archaeologist to carry out a watching brief during the trench dig, so they are considering providing average costs.

Landmark currently does not have an in-house procurement department either to source or assess suppliers in the supply chain.

Credit: Landmark Trust

The Landmark Trust

Best Practice

Across all Landmark properties they are **encouraging Housekeeping staff to be more mindful of the temperatures within properties** and to ensure that where they have them, thermostatic radiator valves are not set too high (or too low!) aiming for around 16/20 (communal spaces/ bedrooms) balance. Many of the charity's housekeepers are keen to understand their systems in the properties and to play their part in helping with the overall energy consumption and costs. They have also welcomed having **smart meters or data loggers** in their properties to help monitor usage and temperatures. The charity also regularly reviews customer feedback to help identify properties that are deemed too cold, draughty or too hot to assess whether they can make quick improvements.

Credit: Landmark Trust

At the head office, there has been a resurgence of **recycling waste** rather than simply everything going into the commercial bin (landfill) and a garden area has been rewilded to attract bees and other important insects. The charity also encourages staff to travel by public transport where possible and/or car share for visits to existing or new Landmark sites.

In furnishings over the last 5 years or so they have installed LED lighting throughout the holiday let properties and all new curtains are thermally lined. The charity now assesses whether they need to provide a heavy curtain over entrance doorways during the winter months and in properties where they have shutters, they have been asking Housekeepers to leave them closed so that guests realise they are operational and can use them to keep out the draughts.

On Lundy Island, Landmark has achieved plastic free status and removed the need for bottled water by upgrading the water treatment plant. The island is now self-sufficient and harvesting rainwater too. There are also plans afoot to move the island away from a heavy reliance on diesel to 85% wind and solar power by 2027.

It is **mandatory for all staff to undertake online training on Environmental Sustainability** and many staff across the organisation attend updates on how the charity is performing across the 5-point implementation plan as and when there are updates.

Landmark Trust is also looking into ways of how to communicate with their guests to help nudge their behaviour whilst they are staying at Landmark properties.

Other Challenges

Approach. Landmark is a small organisation, and they have taken the view that **environmental sustainability is a responsibility for everyone in the organisation**. The Action Plan provides the framework, and the aspiration is for the organisation to achieve decarbonisation of our holiday let properties by 2045 or sooner if possible.

Clear guidance. Clear guidance around their commercial/residential let estate would be welcome. The **current EPC system does not seem fit for purpose** as it does not adequately relate to historic buildings.

Comms/Messaging. They are **navigating how to nudge guest behaviour**, particularly those that stay in their properties and simply turn the heating on full throughout the property, without say, putting on additional layers of clothing! There is a real need to re-educate the public in this area as simply turning up the heating can be detrimental to the historic fabric and its contents as well as to the planet!

Data collection, monitoring, analysis. Many of Landmark properties do not have wifi connectivity so **the organisation is in the infancy of collecting data** from many of their buildings and there is a heavy reliance on smart meters, data loggers and or guest/staff feedback survey information.

Climate Risk. Adaptability is one of the 5-point headings in the organisation's Environmental Strategy. The charity has identified 7 'high risk' sites that could be impacted by climate change, but they need to carry out site specific risk assessment, which they are struggling to do. Landmark Trust would welcome working in partnership with other organisations in understanding how they are assessing their properties and what measures they are taking to mitigate the issues identified.

Credit: Landmark Trust

5. Recommendations

5.1 Recommendations for Future Research

The case studies and findings presented here are data in themselves, but can also be viewed as 'scoping' interviews for further research, with this work acting as the gateway research for a wider project that has more time and resources.

To gain more granular data, further research could reveal more detail on a **project basis**, sourcing data directly from project managers. The project managers should have experienced the full journey of a project, from identification of need, budgeting and brief writing, to procurement, installation, and evaluation.

Another key area would be to **look closely at procurement processes** used. Understanding differences between a savings/costs-focused procurement approach and a sustainability-led procurement approach would be highly relevant.

It should be noted that data depends on the organisations themselves producing the types of information that is required. Across all the case studies, each organisation collected different types of data in different ways.

A lack of standardisation of data – or even existence of data – will continue to be a challenge. For example, in some cases the data required for setting out pipeline roadmaps, or understanding training needs, did not exist.

The research noted a series of challenges in relation to training, from lack of take-up of apprenticeship places, to a workforce that is inexperienced in the new fields of net zero implementation. Experiences across the case studies were varied. A **focus on current training and apprenticeships programmes** that are used in each organisation could provide more granular information relating to the processes, successes (best practice) and challenges experienced across the sector.

An important point raised through the research is the **need for a holistic approach to skills shortages**. Although there is a shortage of contractors with the right heritage skills, this is only one part of the picture. In order to address skills gaps, a wider approach is needed that includes; in-house teams having better training and upskilling, better data collection, and clearer guidance from government. These factors cut across organisations and point to an upskilling across all job types.

Where examples of successful practice were cited in the case study research, this often involved a form of **collaboration**: working across teams or working between supplier and client. There was an example of a successful partnership between an organisation and suppliers on training and upskilling.

Another successful practice was combining staff with separate skillsets within an organisation: rather than having staff trained in both heritage and net zero skills, **more successful examples were found when net zero experts** (who did not have heritage skills) **worked closely and in collaboration with heritage experts**.

There remains a level of uncertainty in the sector which is restricting actual demand for skills. Whilst there is a lack of **consistent guidance** and there are no clear, **standardised definitions** (including for 'net zero', 'retrofit'/ scopes to include in targets), the sector will continue to have in-built inefficiencies in working practices and uncertainty over how to develop full net zero operations.

5.2 Recommendations for HEF

A series of challenges have been listed which could form areas of interest or advocacy. A series of 'best practice' examples have been described which could point the way for other organisations.

Some key points are listed below:

- Understanding and advocating for **holistic approaches to skills shortages**: the issue is not just contractors with the right heritage skills.
- Further work on the crucial role of **procurement**, which needs to be given sustainability-related priorities and empowerment. Need supply and procurement to work together.
- **Lack of data** was a significant issue, and there is work to be done in supporting organisations to use relevant data before they plan net zero work.
- **Best practice examples** can be laid out and communicated widely.
- **Looking beyond the heritage sector** – including for staff. There were benefits seen in organisations that brought expertise in net zero in, from non-heritage backgrounds
- Look beyond UK, including with suppliers. Some **technology** may not be available in the UK, but there may be greater supply and best practice examples in Europe.
- Stressing the **importance of collaboration** between sustainability experts and heritage experts. In some cases it may not be realistic to have both skillsets at once – so the work is in how to combine both in cohesive teams with clear communication
- Advocacy for **clear, standardised definitions** (including for net zero, retrofit, Scopes); clear and consistent guidance; enforced targets from government; and clarity in the Planning process.
- **Supporting local and small suppliers**, including those who may not be able to undertake certification.

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- Historic Buildings & Places (chairing)
- Church of England
- CLA
- English Heritage
- Fit for the Future programme
- Historic England
- Historic Houses
- ICON - Institute of Conservation
- IEMA
- National Lottery Heritage Fund
- National Trust
- Natural England
- The Heritage Alliance

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Credit: National Trust Images/Joe Cornish

Glossary

Adaptation actions to adapt to the adverse impacts of climate change

Mitigation actions to reduce greenhouse gas emissions

Net zero balance between the amount of greenhouse gas (GHG) emissions and their removal from the atmosphere

Scope 1 emissions are direct emissions from resources owned and controlled by organisations (e.g. heating, or fuel for vehicles)

Scope 2 emissions come from the generation of purchased energy

Scope 3 emissions result from activities indirectly related to organisations and outside scope 1 & 2 emissions (e.g. employees' pension investments, suppliers, visitors' transport)

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Wessex Archaeology
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Peak District
Authority Plan: https://www.peakdistrict.gov.uk/looking-after/strategies-and-policies/authority-plan

Climate Change Vulnerability Assessment: https://reports.peakdistrict.gov.uk/ccva/

National Trust
Climate Change and Sustainability at the National Trust: https://www.nationaltrust.org.uk/our-cause/nature-climate/climate-change-sustainability

Historic Environment Forum

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