

<b>Institution:</b> University of Lincoln		
<b>Unit of Assessment:</b> 32 – Art and Design: History, Practice and Theory		
<b>Title of case study:</b> Enhancing Heritage Sites and the Heritage Profession through Conservation Research		
<b>Period when the underpinning research was undertaken:</b> 2014 - 2018		
<b>Details of staff conducting the underpinning research from the submitting unit:</b>		
<b>Name(s):</b>	<b>Role(s) (e.g. job title):</b>	<b>Period(s) employed by submitting HEI:</b>
CLARRICOATES Rhiannon	Senior Research Fellow	1 Sep 17 to date
CROFT Paul	Research Fellow	8 Oct 07 to date
McDONNELL Phillipa	Research Fellow	1 Sep 14 to date
<b>Period when the claimed impact occurred:</b> 2016 - 2020		
<b>Is this case study continued from a case study submitted in 2014?</b> N		
<p><b>1. Summary of the impact</b> (indicative maximum 100 words)</p> <p>Lincoln Conservation, a unit that conducts applied research, has taken part in a series of collaborations with heritage organizations that have resulted in enhancements to heritage preservation, interpretation and understanding. Contributions to a European working group have helped to develop a new professional standard, while new data about decorative schemes have contributed to processes of commemoration and memorialization. Research on the Elizabeth Tower at the Palace of Westminster (Big Ben) determined the reinstated colour scheme of the iconic clock face. At Yr Ysgwrn, research enhanced audience perception of the home of Hedd Wyn, a Welsh poet later killed at Passchendaele. At HMS Caroline, research enhanced visitor engagement with an important WW1 cruiser. The methodology used to generate this research has been disseminated through a series of RIBA events thus contributing to continuing personal and professional development within the architectural profession. Projects described below are representative of the kind of projects Lincoln Conservation have carried out since 2014.</p>		
<p><b>2. Underpinning research</b> (indicative maximum 500 words)</p> <p>Lincoln Conservation (known as 'Crick-Smith Conservation' 1997-2017) is a research unit specializing in the recovery of lost historic decorative schemes, a pivotal process in the preservation of heritage sites. Their methodology is grounded in architectural paint research (APR) and Lincoln Conservation have been instrumental in reflecting upon, disseminating and formalising this methodology. APR involves site analysis, the removal and mounting of samples, microscopic analysis and cross comparison of results. Samples are mounted in cross section in polyester resin and examined using optical microscopy under both simulated daylight and ultra-violet fluorescence. Successful analysis results in the identification of historic colour schemes, thus allowing heritage partners to recreate or retrieve historic schemes based on material evidence.</p> <p>At the Palace of Westminster, London – Lincoln Conservation used APR to investigate the original colours of Elizabeth Tower ('Big Ben'): they were commissioned to undertake research by Cliveden Conservation to analyse the decorative finishes to the exterior of the clock tower designed by Charles Barry and constructed between 1843 and 1859. Since construction, the numerals, dials and elements of the stonework have been painted: the more recent solemn appearance being markedly different to that seen in the watercolour sketches by Barry c.1856. Our heritage partner wanted to revert the clock face to its original appearance, but given its national and international importance, it was imperative that there was concrete evidence to underpin the reconstruction. Clarricoates and McDonnell analysed multiple paint samples from the site and from this developed a profile of the original scheme. The research identified six schemes of decoration, culminating in new visual representations of the decorative history of the Palace.</p>		

Yr Ysgwrn is a traditional Welsh farmhouse in the Snowdonia National Park believed to date to the 1830's and listed Grade II\*. This was the home of the poet Ellis Humphrey Evans, better known by his bardic name, Hedd Wyn, a famous Welsh language poet who was posthumously awarded the National Eisteddfod chair following his death in the battle of Passchendaele 1917. Lincoln Conservation researched the original appearance of the 'cegin' (main living room). Analysis of material evidence allowed Croft and McDonnell to identify the original, and subsequent decorative schemes: material-based evidence of Welsh middleclass interior decoration at the beginning of the 20th century. Over 26 layers of wallpaper were found in the cegin, and through a combination of material and documentary evidence, the paper pertaining to c.1917 was identified. In collaboration with Purcell architects, Snowdonia National Park Authority, Hedd Wyn's nephew Gerald Williams, and Bruce's Fine Papers, the original wallpaper was recreated: Lincoln Conservation specified which wallpaper should be conserved, worked directly with the wallpaper printers to authenticate finishes and colour values. Combined with the results of APR undertaken by Croft, Yr Ysgwrn was re-presented as it would have appeared c.1917 when Hedd Wyn last saw the property. The research was completed ready for the official opening of the site on 6 September 2017.

Lincoln Conservation was commissioned to undertake research by the National Museum of the Royal Navy to research the paint colours used on HMS Caroline (both externally and internally) at the time of the Battle of Jutland in 1916. Detailed analysis of the ship led to the retrieval of previously undetected paint samples. When combined with archival research, this analysis contributed towards an accurate restoration of the ship as she would have appeared at the Battle of Jutland. Caroline was opened as a unique visitor attraction in June 2016.

### 3. References to the research (indicative maximum of six references)

- 3.1 Rhiannon Clarricoates and Phillipa McDonnell, 'Elizabeth Tower, Westminster' research report, 2018.  
Available on request.
- 3.2 Paul Croft, 'Decorative Finishes at Yr Ysgwrn' research report for Snowdonia National Park Authority, 2017  
Available on request.
- 3.3 Paul Croft, 'HMS Caroline, Belfast, Analysis of Historic Paint Schemes (Interior and Exterior)' research report for Maytom Associates, 2014.  
Available on request.
- 3.4 Paul Croft (2020) 'Defining "Battleship Grey"', *International Journal of Regional and Local History*, 15:1, 32-47.  
<http://doi.org/10.1080/20514530.2020.1746875>
- 3.5 Phillipa McDonnell (2020) 'Architectural Paint Research and the archaeology of buildings', *Archaeological Journal* 177:1, 140-166  
<https://doi.org/10.1080/00665983.2019.1615748>

### 4. Details of the impact (indicative maximum 750 words)

At the Elizabeth Tower ('Big Ben'), the research led to the reinstatement of a historic scheme: in total, six schemes of decoration were identified, and visual representations of each scheme were produced to allow our partner to decide how best to accurately re-present the clock face (3.1, 5.1 & 5.2). This is being implemented by the main contractor and (to date) has been partially revealed to the public (5.2 & 5.3). The dramatic change from the well-known black and gold scheme to the new blue and gold design was the subject of intense public scrutiny and worldwide media coverage, including *BBC News*, *ITV News*, *Sky News*, *The Guardian*, *Express*, *Independent*, *Metro*, *Mirror*, *The Sun*, *The Times*, *Telegraph*, *Evening Standard*, *7news.com.au*, *The Indian Express*, *Asia One* (5.3). Changing the appearance of one of the most iconic buildings in the UK was potentially controversial, so it was important that accurate material analysis and robust archival research underpinned any decision taken. Lincoln Conservation's

compelling analysis, based on archival and material evidence, gave confidence to the client to make this radical decision (5.4) Documentaries on the restoration such as C4's 'Big Ben: Countdown to New Year 2018' included an interview with Rhiannon Clarricoates on the research behind the colour change (5.3). B1M's 'Inside Big Ben's Makeover' also highlighted the colour change and has had over 1.5 million views and 2,000 comments from members of the public such as "This is going to look sublime and just to think it's been generations since last renovated. We are going to see what the Victorians [sic] laid their eyes upon.", 'I had no idea it was so colorful.', 'Love the blue colour too, looks fantastic!', 'Would love to hear more about how they tracked the color blue down to historical colors. Thank you for this!! The Blue and Gold look exquisite!' (5.3). The attention it has received in the media has helped prompt widespread public discussion/debate on the colour change, with comments made such as 'Glorious! I had no idea of its true colours. Thank you.', 'A subtle yet classy change back.', 'Sensational. The cobalt blue is electrifying', 'Researchers from @UniLincoln revealed that the Big Ben's clock metalwork was a deep blue until the 1930s. When the scaffolding is removed following two more years of restoration, the icon will be back to its original shade.' (5.3).

At Yr Ysgwrn Lincoln Conservation's research uncovered and analysed the decorative history of the cegin and thus helped heritage professionals understand local traditions, described by the Head of Cultural Heritage at the Snowdonia National Park Authority (SNPA) as contributing to 'a change in the way people understand tastes and lifestyles in a rural Welsh farmhouse in the early 20th century...' and helping to 'provide a sense of place and heightened sensory awareness of Hedd Wyn's environment when he left his home for the last time' (3.2, 5.5, 5.1 & 5.2). This led to enhanced cultural preservation of a specific cultural site through improved conservation and interpretation. Identifying the original decorative schemes (paint and wallpaper) allowed an authentic recreation of the room. After the analytical phase, SNPA decided, in consultation with the architect and Hedd Wyn's surviving nephew, to commission research from Lincoln Conservation that resulted in the faithful reproduction of a "cleaned" wallpaper (5.2). The SNPA also accepted Croft's proposal to have a full chronology of the historic papers bound in a large book that is now in the public exhibition space at Yr Ysgwrn, with the bi-lingual title "Haenau o Hanes Papur Wal Yr Ysgwrn" (Layers of History Yr Ysgwrn Wallpaper), in this instance the conservation research methodology (wallpaper stratigraphy) was in a book that functioned as a heritage interpretation device. The Layers of History book allows visitors to physically engage with the chronology of the site thus enhancing their understanding of the history and heritage value of the site (5.5). The wider site serves as a memorial to those who were killed during World War One and the project as a whole contributes to processes of commemoration and memorialization. Positive responses to the restoration include testimony from Hedd Wyn's nephew: "Well, things have changed altogether here, in a way. On the whole, things are starting to settle. The wallpaper is new... now it's up, the place seems more homely and there's a fire in the hearth. It's like it's saying 'welcome'." (5.6, p.26). Snowdonia National Park's chief executive expressed the significance of the research in unveiling previously hidden heritage: "Visitors have always been fascinated by the layers upon layers of wallpaper at the cegin (kitchen). Wallpaper specialists Crick-Smith [Lincoln Conservation's former name] from the University of Lincoln, visited Yr Ysgwrn and took wallpaper and paint samples from around the house. We were all shocked when the report arrived – there was 26 layers of wallpaper in the cegin." (5.6). Croft and McDonnell were invited to the opening event, other attendees included the First Minister of Wales, the National Poet of Wales, and members of Hedd Wyn's surviving family, and many others.

HMS Caroline is one of only two extant Royal Naval vessels from World War One and the only survivor of the Battle of Jutland, the largest naval battle of the conflict. With the help of a National Lottery Heritage Fund grant, the ship was opened as a visitor attraction in Belfast's Titanic Quarter in time for the centenary celebration of the Battle of Jutland, in June 2016. Croft's research demonstrated that the term 'Battleship Grey' was used much earlier than previously thought and showed that the grey paint used on Royal Navy World War One vessels was not standardised (as suggested in current literature), but varied considerably (3.3, 3.4 and 5.1). The research defined the precise shade of grey used on HMS Caroline at the Battle of Jutland in 1916 and to the ship's repainting in this colour in 2015 (5.2). The contemporaneous appearance

of the interior spaces was redefined as a result of the research. The ship is now open as a visitor attraction and the public are able to experience the authentic atmosphere on board. HMS Caroline now serves as a thought provoking and tangible reminder of the sacrifices made by sailors during the First World War. A testimonial from the Deputy Executive Director of Museum Operations stated that the research 'helped to create a truly authentic immersive experience of life on board a warship' which in turn 'enhanced the learning experience and enquiring minds of visiting school children and provided much thought and reflection for all visitors' (5.7). Captain John Rees OBE, Chief of Staff and Chairman of HMS Caroline Project Board stated that: 'Thanks to what we have found on HMS Caroline, we are able to review the entire colour history of the ship and accurately depict the paint schemes Caroline was painted in over 100 years.' (5.8, Royal Navy Website). Positive responses from visitors include the comments: 'The boat is completely unrecognizable from the last time I visited her about 10 years ago, and the company behind her restoration work has done a marvelous [sic] job'; 'Truly amazing restoration of this 100 year old war cruiser. It's an actual piece of living history, something you can touch and feel today'; 'Having lived nearby, I had often seen Caroline before the restoration and it looked more like it would end its days were [sic] so many Royal Navy ships do, in the scrap yard. Arriving at the free car park beside the ship on the quayside, it looked magnificent!' (5.8).

### **Delivery of Continued Professional Development**

Between January 2019 and March 2020, Lincoln Conservation delivered seminars based on their research to architects authorized by the Royal Institute of British Architects (RIBA), which aimed to improve architects' understanding of the value of conservation research (5.9). This was stimulated by the professional experience of Lincoln Conservation staff which demonstrated that conservation can be perceived as a hindrance. They aimed to demonstrate that, if incorporated early in a project, conservation research and analysis can open up new possibilities for heritage architects. 28 seminars were delivered Pre-Covid. Feedback from the seminars (provided and sampled by RIBA) contains ample evidence that architects found the seminars 'interesting', 'useful' and 'relevant' and would consider using conservation research services in the future (5.9).

Post Covid-19, Lincoln Conservation delivered a series of online CPD webinars based on their research. These were conducted independent of RIBA and saw 175 delegates attend from a range of sectors including conservation, heritage, historic buildings and museums, architecture, archaeology, building surveyors and construction firms (5.9). 73% of those who provided feedback said that their participation in the CPD had changed their awareness of, or attitude towards, the importance of the process of conservation and/or digital applications in planning and carrying out their future work (5.9). Of those 40% said that because of what they had learnt in the webinars they would now consult with conservation experts earlier in the project, 36% said they would now budget for conservation work from the start of the project, and 23% said they now consider conservation as a key part of the process (5.9). In their feedback participants made comments such as 'I now have a greater awareness of the requirements during conservation work, which will help me when consulting with experts and also considering what should go into a budget for such work.', '[I now have a] Better understanding about toxic detection devices and wall papers and historic fabric hidden behind later cladding.', 'I am now considering the use of digital scanning with some of the properties where access is not possible.' (5.9)

Lincoln Conservation have also been instrumental in the formalization of APR through participation in Working Group 13 of the Technical Committee of the European Committee for Standardization. This group is in the final stages of writing a European Standard for 'Finishes of Built Heritage – Investigation and Documentation' which once ratified, will automatically become the British Standard. McDonnell is one of four UK members of this group and the professional standard is in final draft stage (5.10).

### **5. Sources to corroborate the impact** (indicative maximum of 10 references)

5.1 Paint samples for each restoration of Elizabeth Tower, Big Ben, Yr Ysgwrn and HMS Caroline. Available on request.

- 5.2 Before and after photographs of restoration of Elizabeth Tower, Big Ben, Yr Ysgwrn and HMS Caroline. Available on request.
- 5.3 Elizabeth Tower, Big Ben Restoration – Selected Media and Social Media. Including: ‘Big Ben: Countdown to New Year’, Channel 4 documentary filmed by ITN Productions, broadcast 30/12/2018, featuring Rhiannon Clarricoates (Lincoln Conservation); Public discussion on YouTube and Twitter. More available on request.
- 5.4 Elizabeth Tower, Big Ben Restoration - Testimonial from Senior Project Leader, Strategic Estates, UK Parliament.
- 5.5 Yr Ysgwrn Restoration – Testimonial from the Head of Cultural Heritage for Snowdonia National Park Authority.
- 5.6 Yr Ysgwrn Restoration – Selected Media and Social Media. Including: ‘Hedd Wyn: The Lost War Poet’, *BBC Four*, broadcast 12/11/2017  
[https://www.youtube.com/watch?v=vjrXy2FOUoA&ab\\_channel=PoliticsbyRebuttal](https://www.youtube.com/watch?v=vjrXy2FOUoA&ab_channel=PoliticsbyRebuttal); First Minister to officially open Hedd Wyn’s restored historic home’, *North Wales Live*, 6th September 2017.
- 5.7 HMS Caroline Restoration – Testimonial from the Deputy Executive Director of Museum Operations, The National Museum of the Royal Navy.
- 5.8 HMS Caroline Restoration – Selected Media and Social Media. Including Royal Navy Website; Selected Trip Advisor Visitor Reviews from the public since it was reopened following the restoration: [https://www.tripadvisor.co.uk/Attraction\\_Review-g186470-d8389769-Reviews-HMS\\_Caroline-Belfast\\_Northern\\_Ireland.html](https://www.tripadvisor.co.uk/Attraction_Review-g186470-d8389769-Reviews-HMS_Caroline-Belfast_Northern_Ireland.html); Facebook Reviews from the public on HMS Caroline’s Facebook Page - All following the restoration [https://www.facebook.com/hmscaroline/reviews/?ref=page\\_internal](https://www.facebook.com/hmscaroline/reviews/?ref=page_internal) More available on request.
- 5.9 Continued Professional Development (CPD) Courses - Including RIBA CPD Provider’s Network Quality Assurance Documents post-participation course feedback forms; details of independent CPD events and feedback forms:  
<http://www.lincolnconservation.co.uk/training/online-webinars-2020/>. CPD Workshop PowerPoints available on request.
- 5.10 Working Group 13 of the Technical Committee of the European Committee for Standardization documents.