AUSTRALIAN RESEARCH COUNCIL
Linkage Projects
Proposal for Funding Commencing in 2019

LP

PROJECT ID: LP190100900

First Investigator: A/Prof Tanya Evans

Admin Org: Macquarie University

Total number of sheets contained in this Proposal: 156

Part A - Administrative Summary (LP190100900)

A1. Application Title

(Provide a short title. (No more than 75 characters approximately ten words).)

History, heritage and environmental change in a deindustrialised landscape

A2. Person Participant Summary

(Add all people participating in this application as a Chief Investigator or Partner Investigator. A Chief Investigator must: not be undertaking a Higher Degree by Research during the project; reside predominantly in Australia for the Project Activity Period; and be an employee for at least 0.2 FTE at an Eligible Organisation, or be a holder of an honorary academic appointment (see sections 6.26, 6.27, 6.28, 6.33, 6.34 and 18 of the grant guidelines) at an Eligible Organisation. Note that a person's RMS email address must be used to invite them to participate in this application. Refer to the Instructions to Applicants for further information.)

Number	Name	Participant Type	Current Organisation(s)	Relevant Organisation
1	A/Prof Tanya Evans	Chief Investigator	Macquarie University	Macquarie University
2	Prof Lucy Taksa	Chief Investigator	Macquarie University	Macquarie University
3	A/Prof Shawn Ross	Chief Investigator	Macquarie University	Macquarie University
4	Dr Susan Lupack	Chief Investigator	Macquarie University	Macquarie University
5	Dr Penelope Crook	Chief Investigator	La Trobe University	La Trobe University
6	Ms Fiona Leslie	Partner Investigator	MTS HERITAGE	MS FIONA LESLIE
7	Dr Rebecca Parkes	Partner Investigator	Lantern Heritage Pty Ltd	LANTERN HERITAGE PTY LTD
8	Prof Steven High	Partner Investigator	Concordia University, Canada	Concordia University, Canada

A3. Organisation Participant Summary

(Add all organisations participating in this application. Refer to the Instructions to Applicants for further information.)

Number	Name	Participant Type
1	Macquarie University	Administering Organisation
2	La Trobe University	Other Eligible Organisation
3	BLUE MOUNTAINS WORLD HERITAGE INSTITUTE LIMITED	Partner Organisation
4	NPWS	Partner Organisation
5	LANTERN HERITAGE PTY LTD	Partner Organisation
6	MTS HERITAGE	Partner Organisation
7	Concordia University, Canada	Other Organisation

A4. Application Summary

(Provide an Application Summary (which is used by the Minister to consider the application), focusing on the aims, significance, expected outcomes and benefit of this project. Write the Application Summary simply, clearly and in plain English. If the application is successful, the Application Summary is used to give the general community an understanding of the research. Avoid the use of acronyms, quotation marks and upper case characters. (No more than 750 characters, approximately 100 words))

As the first collaborative and multidisciplinary, scholarly and community-based study of a forgotten shale-mining settlement in the environmentally and culturally significant Jamison Valley, this project aims to advance knowledge and enable cross-generational engagement with the history and heritage of an industrial landscape, thereby improving our understanding of the long-term impact of deindustrialisation. By combining archaeological, archival and oral evidence the project aims to provide new insights into everyday working and family life, community, gender, transiency and migration that can contribute to conservation of this site and its industrial heritage, cultural heritage tourism and education at a time of environmental change.

A5. List the objectives of the proposed project

(List each objective separately by clicking 'add answer' to add the next objective. This information will be used for future reporting purposes if this application is funded. (No more than 500 characters, approximately 70 words per objective).
(This question must be answered))

Objective

Reconstruct, analyse, and interpret working, family and community life in the Ruined Castle shale mining village 1880-1914, by combining archival, documentary, oral, photographic, and material evidence from library, archival and personal collections and use collaborative practice-based public history research with diverse stakeholders to harness deindustrialisation for new forms of memorialisation, education and heritage tourism in the Blue Mountains.

Objective

Collect, record, and analyse new material evidence through archaeological survey and excavation in and around the Ruined Castle mining settlements, and combine it with legacy data from our pilot research. This work will result in a comprehensive digital heritage inventory, applications for heritage listing, and heritage management plans, articulating the significance of this mining landscape.

Objective

Deploy and assess ‘best practice’ digital methods (including digital data capture and processing of archaeological, oral, and textual data) to support dissemination of comprehensive datasets using appropriate repositories and digital tools that can be employed for academic research and used by POs for heritage management purposes.

Objective

Produce both ‘traditional’ public-facing historical accounts as well as multimedia digital content (incorporating documentary, oral, and material sources), and make these accessible to a wide audience, including the local community, Australian and international tourists, and an online audience. Delivery of multimedia content will be accomplished using an innovative platform for the management and delivery of heritage content. This platform will be ‘generalised’ for reuse by POs at other sites.

Objective

Engage ageing lifelong-learners inside and outside the academy, who are passionate about local, labour, community, family history, and industrial heritage, enabling their meaningful contribution to the project and its capacity to promote intergenerational learning by school children and tertiary students.

A6. National Interest Test Statement

(Outline the extent to which the research contributes to Australia’s national interest through its potential to have economic, commercial, environmental, social or cultural benefits to the Australian community. Write Your description of national interest simply, clearly and in plain English. (No more than 1125 characters, approximately 150 words).)

2020 provides an unparalleled opportunity to work with our partners National Parks and the Blue Mountains World Heritage Institute (BMWHI) to produce a test case assessing the impact of brutal bushfires on valuable heritage sites, while also providing resources for industrial heritage conservation, education and cultural heritage tourism in the context of immense environmental change for the local community. By producing new knowledge about Jamison Valley shale mining communities and past and current landscapes, this project will benefit scholars, heritage managers, local community members, students, lifelong learners and other end-users. Enhanced knowledge of the area's material and intangible culture resulting from collaborative research and innovative outcomes, including traditional and multimedia digital resources, will add social and economic value to Australia through contribution to heritage conservation, education and cultural tourism that engages with local, labour, community and family history and attracts new visitors to one of Australia's most popular tourist destinations in the Blue Mountains.

A7. Is this application similar to a previously submitted unsuccessful application in the LP19 round?

(The ARC would consider an application to be similar if the aims and methodology of the Project Description and participants have not substantially changed.)

No

A8. Provide the application ID and detail how this application differs from the previous application(s).

(For each of the unsuccessful application submitted in the LP19 round, please enter the application ID and describe how the current application differs from the previously submitted application(s). (No more than 750 characters (approximately 100 words))

Part B - Classifications and Other Statistical Information (LP190100900)

B1. Does this application fall within one of the Science and Research Priorities?

Yes

Science and Research Priority	Practical Research Challenge
Environmental change	Options for responding and adapting to the impacts of environmental change on biological systems, urban and rural communities and industry.

B2. Field of Research (FOR)

(Select up to three classification codes that relate to the application. Note that the percentages must total 100.)

Code	Percentage
210303 - Australian History (excl. Aboriginal and Torres Strait Islander History)	34
210202 - Heritage and Cultural Conservation	33
210108 - Historical Archaeology (incl. Industrial Archaeology)	33

B3. Socio-Economic Objective (SEO-08)

(Select up to three classification codes that relate to your application. Note that the percentages must total 100.)

Code	Percentage
950503 - Understanding Australia's Past	34
950304 - Conserving Intangible Cultural Heritage	33
950303 - Conserving Collections and Movable Cultural Heritage	33

B4. Interdisciplinary Research

(This is a 'Yes' or 'No' question. If you select 'Yes' two additional questions will be enabled:
1. Specify the ways in which the research is interdisciplinary by selecting one or more of the options below.
2. Indicate the nature of the interdisciplinary research involved. (No more than 375 characters (approximately 50 words))

Does this application involve interdisciplinary research?

Yes

Specify the ways in which the research is interdisciplinary by selecting one or more of the options below.

Investigatory Team
Methodology
Design

Indicate the nature of the interdisciplinary research involved. (No more than 375 characters, approximately 50 words)

The team includes specialists in archaeology, history, and environmental studies. We propose to use a range of archaeological and historical methods (survey, excavation, archival research, interviews, etc.). Project design aims to combine these approaches to understand the past but avoid pitfalls of 'confirming' historical accounts with material evidence (or vice versa).

B5. Does the proposed research involve international collaboration?

(This is a 'Yes' or 'No' question. If you select 'Yes' two additional questions will be enabled:
1. Specify the nature of the proposed international collaboration by selecting one or more of the options below.
2. Specify the countries which are involved in the international collaboration.)

Yes

B6. What is the nature of the proposed international collaboration activities?

(Select all options from the drop-down list which apply to this application by clicking on the 'Add' button each time you select an option.)

Correspondence: eg email; telephone; or video-conference

B7. If the proposed research involves international collaboration, specify the country/ies involved

(Commence typing in the search box and select from the drop-down list the name of the country/ies of collaborators who will be involved in the proposed project. Note that Australia is not to be listed and is not available to be selected from the drop-down list.)

Canada

B8. How many PhD, Masters and Honours places will be filled as a result of this project?

(The ARC is capturing the number of Research Students that would be involved in this application if it is funded. Enter the number of student places (full-time equivalent) that will be filled as a result of this project.)
Number of Research Student Places (FTE) - PhD

1

Number of Research Student Places (FTE) - Masters

1

Number of Research Student Places (FTE) - Honours

0

Part C - Project Description (LP190100900)

C1. Project Description

(Upload a Project Description as detailed in the Instructions to Applicants and in the required format. Ensure that the Project Description responds to the Assessment Criteria listed in the grant guidelines. (No more than ten A4 pages))

Uploaded PDF file follows on next page.

PROJECT TITLE: **History, heritage and environmental change in a deindustrialised landscape**

AIMS AND BACKGROUND: At a place called Ruined Castle in the rugged Jamison Valley near Katoomba in New South Wales (NSW), lie the neglected remains of a shale-mining village. Archaeological elements identified during a pilot study undertaken in 2018 include 20 structures, attesting to habitation between 1880 and 1914. These preliminary results demonstrate the potential insights offered by a comprehensive, in-depth study of the site's tangible and intangible cultural heritage. Recent bushfires at Ruined Castle make this research both timely and urgent (SMH 13.12.19). As such, 2020 provides a unique opportunity to work with our partners - the National Parks and Wildlife Service (NPWS), the Blue Mountains World Heritage Institute (BMWHI), and two NSW-based heritage consultancies - to produce a test case assessing the impact of bushfires on heritage sites, while also providing resources for industrial heritage conservation, education and cultural heritage tourism in the context of environmental change for the local community.

The overarching goal of this project is to advance scholarly and cross-generational knowledge about everyday life in a relatively isolated industrial community and the long-term impact of its deindustrialisation and ruination by giving flesh and voice to the people who inhabited and laboured in this place. To fulfil this goal, our multi-disciplinary, collaborative scholarly and community-based inquiry connects identified and as-yet-undiscovered archaeological evidence with intangible heritage contained in historical sources to tease out interconnections between work, family, community, gender, transiency and migration over time. To investigate these links, our team proposes to collect and synthesise archival records, oral evidence, archaeological remains and memorabilia held by members of the local community. We will translate the evidence not solely into datasets and scholarly publications, but also documentary and multimedia stories, heritage listing applications with management plans, accessible narratives and multimedia content for walking tours, school excursion kits, and online exhibits and other public-facing resources, furthered by development of a software platform to facilitate content delivery for educational purposes and tourism. Such outputs can make a significant contribution to conservation of industrial heritage and cultural heritage tourism thereby helping our Partner Organisations' (POs) fulfil their heritage responsibilities and public outreach needs, while also producing educational content for other stakeholders and end-users, including community members, tourists, and school children.

To this end, the proposed study of this shale-mining settlement and its demise, is comprised of 5 discrete yet interrelated 'packages' that seek to fulfil the following aims:

1. Reconstruct, analyse, and interpret working, family and community life in the Ruined Castle shale mining village 1880-1914, by combining archival, documentary, oral, photographic, and material evidence from library, archival and personal collections and use collaborative practice-based public history research with diverse stakeholders to harness deindustrialisation for new forms of memorialisation, education and heritage tourism in the Blue Mountains.
2. Collect, record, and analyse new material evidence through archaeological survey and excavation in and around the Ruined Castle mining settlements, and combine it with legacy data from our pilot study to produce a comprehensive digital heritage inventory, applications for heritage listing, and heritage management plans that can evidence the archaeological significance of this mining landscape.
3. Deploy and assess 'best practice' digital methods (including digital data capture and processing of archaeological, oral, and textual data) to support dissemination of comprehensive datasets using appropriate repositories and digital tools that can be employed for academic research and used by POs for heritage management purposes.
4. Produce both 'traditional' historical accounts, as well as multimedia digital content (incorporating documentary, oral, and material sources), and make these accessible to a wide audience, including the local community, Australian and international tourists, and an online audience through the use of an innovative platform for the management and delivery of heritage content that can be 'generalised' for reuse by POs at other sites with which they are engaged.
5. Engage ageing lifelong-learners inside and outside the academy, who are passionate about local, social, community and family history, and industrial and environmental heritage to facilitate their contribution to the project and ensure its capacity to promote intergenerational learning by school children and tertiary students.

Background: Torbanite (also known as kerosene shale, boghead or oil shale) deposits were first discovered in NSW in the early 1800s. Torbanite is used to produce gas for lighting and oil. Exploitation of deposits expanded around the world after 1850. Oil was first commercially extracted from Australian shale in 1865 by the Pioneer Kerosene Works at American Creek (Wollongong district). The discovery of shale at Joadja (Southern Highlands, NSW) in 1874 prompted the formation of the Australian Kerosene Oil and Mineral Company (AKO&M) in 1878, and Joadja became the largest and best-known oil-shale mining operation in Australia. By the turn of the 20th century, Australia was recognised as having the richest oil shale deposits in the world (Carne 1903; Jack 1995).

In 1880, oil shale was identified by John Britty North at Ruined Castle and in 1882 North commissioned prospecting work. The Katoomba Coal and Shale Company was formed in 1885. By 1889, 10 tunnels had been opened into the deposit, about 30 men were employed at the mine, and North had installed an aerial ropeway to haul shale across the valley. A financial crisis in September 1889 temporarily closed the mines, which were then leased to AKO&M. The 60 miners working there in 1893 were cut to 40 by 1896 and the mine closed in 1897. In 1903, it briefly reopened (Edgar 1974; Pells and Hammon 2009) but the Ruined Castle mines and associated settlements were abandoned by 1905. The land was left in 'a desolate mess', which took years to recover (Pell and Hammon 2009).

Although historical and archaeological research conducted on early mines and mining settlements across Australia has identified the nature of 19th- and early-20th-century mining settlements (e.g., Carter 2001; Comber 1995; Fleming 2016; Lawrence 1995, 2000; McGowan 2004, 2007, 2010; Quirk 2008; Tybussek 2015), to date minimal attention has been given to shale mining in Australia. Jack's (1995) investigation of Joadja is the only significant exception, but it focused on industrial remains rather than habitations. Little is known of Ruined Castle's mining community or its social history (Pells and Hammon 2009). Research undertaken at Kiandra provides a useful comparison to Ruined Castle (e.g., Smith and Smith 1995; Smith 1997, 2003; Gant-Thompson 2008). Gant-Thompson examined European and Chinese miners' huts to identify architectural trends and, importantly for our project, differentiated between small, transient dwellings and sustained settlement featuring bigger dwellings and more diverse artefact assemblages. Also relevant are studies that highlight gender, including Tybussek's (2015) on Kiandra and Lawrence's (2000) on Dolly Creek.

In 2018, a pilot project was conducted at Ruined Castle by the BMWHI and a number of this proposal's Investigators and POs (Parkes et al. 2018) to survey three small areas near the Ruined Castle mine. This archeological survey inventoried over 250 surface features, artefact scatters, and isolated finds, including structural elements like stone platforms and drilled boulders, iron hearths, glass and ceramic fragments, and refuse or latrine pits both close to the mines and farther downslope into the Jamison Valley. A preliminary survey of documentary sources in Trove was also undertaken, as well as in the collections of the Blue Mountains Library's Local Studies Section and at the Blue Mountain Historical Society. This preliminary historical research identified miners' names, as well as the background and subsequent movements of several miners and their families and other potential sources in the NSW Bicentennial Oral History Collection and the Blue Mountains Library's 'Speaking of the Past' oral history archive. The pilot demonstrated the potential of the area for further archaeological and historical research of benefit to the local community and for addressing the National Science and Research Priority focused on environmental change.

Our proposed project offers to fulfil this potential by undertaking an in-depth investigation that combines additional archaeological survey and excavation with available documentary, oral and material sources mentioned above. For additional insights, court and public inquiry records relating to mining accidents and legal disputes will be examined, following the fruitful study of mining accident court transcripts in the USA (Trettin 1990), which can illuminate various dimensions of mining work and miners' living conditions. Together with interviews and focus groups with members of the local community, including descendants of those who lived in the shale mining community, these sources provide an untapped vein of memories related to this now-deindustrialised landscape.

The Ruined Castle landscape is a prime example of deindustrialisation and 'ruination', related subjects that have attracted 'deeply interdisciplinary' attention from 'literary and cultural studies scholars, labour historians, economists, industrial anthropologists, geographers, and others' (Strangleman et al. 2013: 11). Coal-mining communities have featured in studies of deindustrialisation, plant closures and ruination (Byrne and Doyle 2004; Dicks 2000; Orange 2008; Strangleman 2018; Vall 2018). However, most have focused on developments in the late-20th and early-21st centuries. According to Strangleman et al., (2013: 7) 'more careful attention needs to be brought to bear on the cultural significance of industrial change over time, including on how individuals and communities reinterpret deindustrialisation through the lens of memory'. To this end, many studies in this field have drawn on oral history methods to explore relationships between memory, place, community, and identity. Here the notion of the landscape looms large. For Emery, 'Memories of work and community before the collieries closed are embedded within … coalfield landscapes' (2018: 78; cf. Linkon 2018). While the literature references the material landscape, features and artefacts, relating them to memory, it has rarely incorporated archaeological scholarship, which has its own discourse on collapse and ruination (e.g., Fowles 2015). By contrast, this multidisciplinary project aims to integrate these approaches by drawing on investigator expertise in archaeology, history, the study of work, deindustrialisation and industrial heritage. Our project assumes that (1) understanding of cultural landscapes needs to draw on artefacts, monuments, sites and memory narratives; (2) that '[n]arratives and material culture are both equally tools of memory' and (3) that memory narratives can 'enhance archaeological interpretations of place' (Sinamai 2019: 148, 154-155).

INVESTIGATORS:

The project team consists of Australian historians (CIs Evans, Taksa), archaeologists (CIs Ross, Lupack, Crook; PIs Leslie, Parkes) and an internationally renowned historian of deindustrialization and ruination (PI High). Taksa and High have expertise with oral history and industrial heritage, while Ross and Lupack are also historians. In addition, Ross, Crook, Taksa and High have digital expertise. The team builds on a track record of collaborative research including the pilot project in 2018 (Parkes et al. 2018). The pilot project extended two established collaborations: (1) Crook, Ross, and Leslie investigated remains of the aerial ropeway used to transport shale across the Jamison Valley to Katoomba from 1889 to 1892 (Crook et al. 2015); (2) the Field Acquired Information Management Systems (FAIMS) digital infrastructure project (developer of the FAIMS Mobile field data collection platform) directed by Ross and involving Crook and Parkes (Ballsun-Stanton et al. 2018; Ross et al. 2013). The pilot project team, moreover, has been enhanced by the addition of Taksa and High. Taksa's deep knowledge of the changing industrial landscape draws on her studies of work, gender and migration, oral history, deindustrialisation and translating historical sources into video and digital media (A59800343, C59917627, A00103327; DP140100424 and DP190102778; http://www.repstats.info). Taksa has contributed to numerous books edited by PI High, an internationally renowned Canadian award-winning scholar of deindustrialization, oral history, memory and place with

extensive experience in online digital story-telling, radio programming, audio walks, and development of pedagogical materials. High co-founded and directed the Concordia University's Centre for Oral History and Digital Storytelling (2006-16), and as a continuing member will enable the team to engage with this Centre's research infrastructure and expertise. Together, the team has the historical, archaeological, heritage management and digital expertise required to successfully execute the project.

CI Evans will coordinate the historical aspects of the project, involving especially CI Taksa and PI High. She will direct community focus groups, collect existing oral histories, conduct additional interviews, analyse data, manage workshops with research participants and project team members, contribute digital content and lead academic and popular dissemination. **HDR Supervision:** Evans has five current HDR students and four successful completions. **Collaborative Research:** Evans has a long track record of contributing to networks of collaborative research involving charities, philanthropic organisations, and NGOs in Britain and Australia, including family, local, and community historians and involving her students. Evans has established national and international public history partnerships with academic and public historians. **Time and Capacity:** Evans will contribute 0.15 FTE in Year 1, 0.2 FTE in Year 2 and 0.4 FTE in Year 3 (an average of 0.25 FTE).

CI Taksa will oversee archival historical research relating to work and working life, collaborate with Evans on focus groups and interviews and supervision of RAs. Drawing on her family reconstructions of Eveleigh railway employees for ARC funded projects and experience in transforming documentary and oral sources into digital and video media (ARC C59917627), Taksa will contribute to the reconstruction, analysis, and interpretation of familial, work-related and community relationships and collaborate with CI Ross and PI High on the digital aspects of the project. **HDR Supervision:** Taksa has had 13 PhD completions, is currently Principal Supervisor of one student and Associate Supervisor for two others. **Research Mentoring and Training:** Taksa has established mentoring schemes at UNSW and Macquarie for ECRs and MCR women and the ECR Support Scheme she set up as ADR in 2015 had an embedded mentoring scheme. Taksa is currently mentoring 1 DECRA Fellow and two postdoctoral fellows in her Centre for Workforce Futures (CWF). **Collaborative Research:** Taksa has collaborated with heritage consultants, government bodies, history organisations, film and other media producers since 1983. She will work with PI High to extend the project's international reach through his Centre for Oral History and Digital Storytelling at Concordia University. **Time and Capacity**: Taksa is on an administrative and research work pattern as CWF co-Director. She will contribute 0.2 FTE to this project.

CI Ross will coordinate the project's archaeological and digital components, working with CIs Lupack and Crook and PIs Parkes and Leslie to organise fieldwork and training with BMWHI and NPWS. Ross will lead the deployment of digital infrastructure to collect and manage data and promote use of best practice in digital approaches (with Crook), lead sociotechnical evaluation of digital approaches, and support Crook's 'product ownership' during development of the digital content delivery platform. Ross will co-supervise any HDR students associated with this project who incorporate digital methods into their research. **HDR supervision**: Ross has had three HDR completions and currently supervises one HDR student in archaeology. **Research Mentoring and Training**: He has helped train over 100 student and community volunteers during archaeological fieldwork, several of whom have gone on to careers in archaeology. **Collaborative research:** Ross has coordinated large, successful, multidisciplinary projects including the Tundzha Regional Archaeology Project, Bulgaria, which involved two local museums, the Institute of Archaeology, and other partners (LP0989901), and participated in research and infrastructure development led by others (LE150100081; LP170100050). Ross also co-directs the FAIMS project, which has delivered field data systems to over 30 projects (LE140100151). **Time and capacity**: Ross will dedicate 0.2 FTE to this project.

CI Crook is the project's artefact specialist and a digital archaeologist. She will develop the artefact recording approach (with CI Lupack), support PIs Parkes and Leslie during survey and excavation to identify and record artefacts, supervise the cataloguing of artefacts, and advise about their conservation and storage. She will also assist CI Ross with data management and analysis, help ensure implementation of good digital practice, contribute to socio-technical research around digital practice, and act as primary 'product owner' for development of the digital content delivery platform. **HDR Supervision:** Crook currently co-supervises an HDR student studying archaeological textiles. **Research Mentoring and Training:** Crook has run archaeological field laboratories during summer seasons at Port Arthur (2007, 2008) and at a commercial archaeological site in Sydney (2009). She has trained and mentored RAs on post-excavation projects and in the study of historic trade catalogues. **Collaborative Research**: Crook has collaborated across academia and industry beginning as a heritage consultant in the 1990s and continuing to this day. **Time and Capacity**: Crook will dedicate 0.2 FTE to this project.

CI Lupack will assist the other archaeological Investigators with research design and implementation, student training prior to fieldwork, and student supervision during fieldwork. She will also support CI Crook with artefact processing, and contribute to academic publications and public-facing outputs, particularly digital content. **Research Mentoring and Training**: Lupack has mentored students during fieldwork in Greece, some of whom started as undergraduates, continued as postgraduates, and now work in field archaeology. **Collaborative Research**: Lupack co-directed the Eastern Boeotia Archaeological Project in Greece, which required coordinated research with her Canadian, American, and Greek colleagues. She is currently working on a cross-faculty collaborative project at Macquarie involving industry partners to develop a web

platform for clustered 2D image management, display, and manipulation. **Time and Capacity**: Lupack will dedicate 0.1 FTE to this project.

PI Leslie is the Primary Excavation Director for the project, supported by Secondary Excavation Director PI Parkes. Together with Parkes, Leslie will prepare the Archaeological Research Design (ARD) and Excavation Permit application under S.140 of the Heritage Act, 1977. One or both of these PIs will be present at all times to supervise the excavation. She will also help develop the content delivery application and evaluate its potential use at commercial projects. Once the excavation component of the Project is complete, Leslie, Parkes, and CI Crook will prepare the Excavation Report to satisfy S.140 permit conditions and assist with the preparation of heritage listings nominations and publications. **Research Mentoring and Training**: PI Leslie has considerable informal training experience, with 10 years of mentoring and managing staff in the field and office. Leslie will help other investigators teach archaeological excavation techniques to undergraduate and postgraduate students. **Time and Capacity**: Leslie will commit 0.075 FTE to this project, concentrated around fieldwork.

PI Parkes will work with CIs Ross, Lupack, and Crook and PI Leslie to plan and execute the archaeological aspects of the project. She will help develop field methodologies, lead archaeological surveys, and will be Secondary Excavation Director. Parkes will contribute to research publications and, with Crook and Leslie, prepare survey and excavation reports, significance assessments, heritage listing applications, and management plans. She will also assist with community engagement and development of community outputs like publications and digital content for online exhibitions and self-guided tours. **Research Mentoring and Training**: She has trained, mentored, and supervised professional staff and ANU students and has taught field techniques to undergraduate and postgraduate students. **Time and Capacity**: Parkes will commit 0.11 FTE to the project, concentrated around fieldwork.

PI High will provide support, advice and expertise to the project team across archival, oral, industrial and public history, including walking tours and participatory storytelling (High et al. 2013) and the digitisation and dissemination of oral histories and intangible cultural heritage (High 2010). He has extensive experience of working with communities experiencing the effects of industrial transformation and deindustrialisation (High and Lewis 2007). High will provide ongoing email and videoconference support to the project team, and visit to Australia for three weeks in Year 1 (travel funded by DP200100633) to work with other Investigators on the project. **Time and Capacity**: High will commit 0.06 FTE to the project, focusing on research design, analysis of evidence and outputs.

A **Research Assistant** (history), Dr Anne Coote, will be employed across all three years (0.4 FTE Year 1; 0.2 FTE Years 2-3). Coote is a well-regarded public historian who undertook valuable archival research during the pilot project. She will continue this research and help CIs Evans and Taksa with the digitisation and organisation of archival data, the conduct of interviews and focus groups, and the triangulation of the documentary and oral evidence with artefacts and memorabilia from local families. She will also construct a database of names and family trees. A second-year **Masters of Research** student supported by a scholarship at Macquarie will also support the historical research of Evans, Taksa, and Coote (see also F2). A **PhD student** supported by a scholarship at Macquarie supervised by Evans and Taksa and/or Ross (as appropriate to the focus of the research). S/he will write a thesis on collaborative history projects and how family historians engage with local and community history and archaeological heritage (see also F2).

SIGNIFICANCE AND INNOVATION:

This project's conceptual and methodological innovation is underpinned by its cross-disciplinary team of CIs and PIs who have expertise in a range of disciplines and sub-disciplines in the fields of archaeology, history and heritage and who have a track record in drawing on the study of culture, gender, geography, memory and sociology, providing a firm conceptual, empirical and methodological foundation for this project and exciting opportunities for collaborative work.

This project will establish an important model for collaboration amongst a team of multidisciplinary scholars, industry, government, not-for-profit organisations and members of the local community to co-create historical knowledge and translate it for long-term impact. Community engagement with local history and place has played a critical role in the formation of this country's identity, and its significance is growing: twenty years ago there were about 1,000 local historical societies across Australia with about 50,000 members (Davison 1998); today that number has reached 100,000 (https://www.history.org.au/). This project will respond to that increasing interest and further promote the significance and relevance of local history to Australians while encouraging intergenerational exchange.

Through its multidisciplinary approach, this project offers to significantly advance knowledge in Australian social, family, and local history, industrial archaeology, deindustrialisation and their intersections. Specifically, its integrative conceptualization of landscape, deindustrialisation, ruination and memory is framed by 'the conceptual portmanteau' of 'memoryscape', which not only links together 'memory and landscape' but also 'effectively renders the idea of place and remembrance as interdependent' (De Nardi and High, 2019: 117). While recognizing the distinction between industrial ruins and 'industrial ruination as a lived process' (Mah, 2012: 9), we assume that: 'Sites and processes of industrial ruination are deeply connected to the past and the memory contained within it, as they are physical reminders of industrial production and decline, and of the lives connected to them' (Mah, 2012: 15). Accordingly, to analyse 'the complex relationships between deindustrialization and industrial ruins', we approach the landscape as 'an ensemble of material and social practises' (Mah 2012: 9, 12) and we adopt Ingold's notion of taskscape as 'an array of related activities' (1993: 158), which in its embodied form reflects 'a pattern of activities "collapsed" into an array of features' that is 'populated with beings who are themselves

agents, and who reciprocally "act back" in the process of their own dwelling' such that 'the taskscape exists not just as activity but as interactivity' (Ingold, 1993: 162-163). From this perspective, we approach deindustrialisation as a continuous process in which 'People and communities are shaped by their histories—by experience, by memory, and by the way the economic and social practices of the past frame the structures, ideas, and values that influence...lives long after those practices have ceased to be productive' (Linkon 2014: 1 cited in Strangleman, 2018: 31). By identifying how Ruined Castle's landscape and taskscape 'bear the stamp' of the 'social networks, local institutions, as well as attitudes and cultural practices' (Linkon 2014: 1 cited in Strangleman, 2018: 31) during its period as a shale-mining village and after abandonment, our project will extend understanding of the social impact of deindustrialisation and changing environments.

This integrative conceptual framing of Ruined Castle is supported by methodological innovation that draws on and integrates archeological and historical methods to investigate and synthesise a wide range of sources, draw out connections between tangible and intangible cultural heritage and, in turn, throw light on connections between the past and the present of a largely forgotten place of ruination. Finally, by integrating tangible and intangible heritage, the project will develop participatory and digital tools and multimedia content for what Butler (2007) refers to as 'memoryscapes' and 'soundscapes', that offer new opportunities for reuse in situ and broader engagement by heritage professionals, policymakers, local residents, tourists and visitors, and young and older learners. To operationalise these innovative dimensions of the project and to facilitate its integrative approach, the 5 aims outlined earlier are addressed through 5 specific packages.

APPROACH AND TRAINING:

Approach. The project encompasses five inter-connected packages as follows:

- **Package 1:** Historical reconstruction of taskscapes of everyday life and relationships in the Jamison Valley, c. 1880-1914 (addresses Aim 1).
- **Package 2**: Archaeological reconstruction in and around the Ruined Castle mining landscape (Aim 2).
- **Package 3:** Creation of a digital repository of archeological, textual and oral datasets and digital tools for academic research, heritage management and educational purposes. Assessment of digital tools and methods. (Aim 3).
- **Package 4:** Production of historical narratives of Ruined Castle's past and present for scholarly dissemination and multimedia digital formats for wider audiences (Aim 4).
- **Package 5**: Participatory engagement to enable the development of new uses at Ruined Castle and to promote local renewal and intergenerational learning (Aim 5).

Although these 5 packages are elaborated separately, in operational terms they rely on intersecting activities in line with our approach to ruination, memoryscapes, and taskscapes, as is outlined below.

Packages 1, 4 and 5 rely on archival research on work activities, familial and community relationships, and household and working life in the Jamison Valley taskscape c. 1880–1914. Research for **Package 1** involves the analysis of newspapers, testimonies contained in court records, letters, diaries, maps, plans, photographs, and objects in libraries, archives and personal collections of locals' families. Conceptually, the work with family and community historians will use Bourdieu's theoretical framework of habitus and cultural capital to reveal how family historians produce knowledge about social history that has a significant impact on individuals and society. Family historians who learn how to become social historians reap the benefits of cultural capital (Evans 2018). The research relating to work, working life and community, will utilise the framework developed by Taksa (2000), which emphasized that people are not simply bound together by the places in which they live and work but also by employment and kinship, shared identities and interests. In connecting structural, spatial and subjective elements of community, the project draws on Lefebrve's (1993) conceptualization of lived space, where 'users' and 'inhabitants' engage in everyday activities and social practices in concrete public and private settings, including permanent and temporary places of residence, work and recreation. The approach to subjective dimensions of community and lived experience is framed by the scholarship on memory and its relationship to history, where the two are construed as 'entangled' (Sturken 1997: 5), 'dialectically related' (Samuel 1996: x), and part of a cumulative process (Jansen 2007: 961) 'conducted amidst the ruins of earlier recollection' (Jansen 2007: 961) and conveyed through a range of 'vehicles of memory' (Confino 1997: 1386). The 'vehicles' to be used to build up the temporally and spatially multiple memoryscapes of Ruined Castle's local and family histories include both material and cultural heritage sources: oral evidence captured in archival and other documentary sources, interviews and focus groups, and the archeological remains of mining activities in the study areas. In line with recent scholarship in history, historical geography, and heritage, the data collected from documentary, oral and material culture sources will be synthesised using what Butler (2007) referred to as 'practice-based research method' to explore how industrial activity, deindustrialisation, and ruination can be harnessed for new forms of placemaking and memorialisation (for **Packages 4 and 5**). In this way, the project will contribute to scholarship on the impact of deindustrialisation on places and emotional connections to place, producing new multilayered memoryscapes. Collaboration and shared authority with community, local and family historians in the co-creation of historical knowledge will explore experiences and memories of mining work, community life and the memorialisation of Ruined Castle and its environs through stories and memorabilia handed down through the generations. The interviews and focus groups will be conducted using proven oral history methods and with appropriate ethics clearances and procedures. Volunteers will also be recruited from these communities to help construct the database of family trees. Australian family and local historians ('Troveites') are

renowned for similar crowd-sourced history projects (Evans 2018). The recording approach includes capture of metadata about interviews, focus groups, documents, and objects using FAIMS Mobile software (see 'Investigators' above), high-quality recording of interviews and focus groups (following NSW State Library guidelines), scanning / photographing and digitisation of documents, and technical photography of objects to produce a digital archive. Digital content (e.g., in Trove) will be linked where persistent identifiers are available, or copied into the project's digital archive (copyright permitting). These sources will be synthesized to produce walking tours and soundscapes.

Package 2 employs proven archaeological approaches to reconstruct the Ruined Castle mining landscape including: Remote sensing based on a LiDAR survey of the Ruined Castle environs to produce a detailed understanding of the surface morphology below the forest canopy. The resulting digital terrain model will serve as a base map and assist with the identification of artificial features, supplemented by vertical and oblique aerial photography from a helicopter arranged by NPWS. Surface survey will be an independent research method as well as a means of locating potential locations for subsequent excavations. Building on the methodology of the pilot project, the survey aims for 'total coverage' (a Mediterranean approach uncommon in Australia), to document areas of both presence and absence of materials. Although gridded survey is precluded by the terrain and vegetation, small teams of Investigators and students will survey transects that are as contiguous as possible. Teams will record artefact scatters, features, special finds, empty areas, and unsurveyed areas. Artefacts will be recorded in situ. Recent, severe bushfires in the Ruined Castle area will provide an opportunity to assess the impact of fire on the remains. By re-surveying areas investigated during the pilot project, we will be able to assess (1) how much more material has been exposed by the fires' removal of vegetation, and (2) how much damage has been done to the remains recorded in 2018 before the fires. The results of this re-surveying will then be used to inform planned fieldwork. For example, if we find that fires have exposed previously hidden features, we will accelerate our survey program to to take advantage of the reduced vegetation.

The digital components of **Packages 3 and 4** seek to promote transparency and data reuse through Data capture using FAIMS Mobile for field data recording (archaeology) and metadata capture (oral and archival research). Searches of online sources will also be recorded and documents captured, as search results often prove ephemeral. Other best practices for research transparency will include: use of code for statistical, geospatial, and textual analysis wherever possible; preference for open-source tools; maintenance of data provenance and version control (Perkel 2018; Stewart Lowndes et al. 2017). These practices combine to allow the creation and publication of comprehensive, well-documented datasets that meet 'Findable, Accessible, Interoperable, and Reusable' (FAIR) data standards (Wilkinson et al. 2016). Datasets will be published in appropriate repositories, respecting ethical and copyright limitations. Previous experience with digital scholarship varies amongst the investigators on this project, creating an opportunity to evaluate the uptake of impact of research technology through a study of attitudes, expectations, and practices among researchers (from students to project Investigators) via surveys and interviews (Tenopir et al. 2015), followed by field observations assessing how digital technologies are used during, and impact, field research (Borgman, Wallis, and Mayernik 2012), including comparison of digital approaches to traditional field recording in a 'Strengths, Weaknesses, Opportunities, Threats' analysis (Wagtendonk and De Jeu 2007). Many scholars in a range of disciplines will benefit from this data. Australia's academic community has much to learn about the potential of digital projects like these when so many researchers remain ignorant of the necessary skills, expertise and resources required as well as the potential outcomes and benefits. Quality field and artefact photography, high production values for audio recording, and rich, reusable data will underpin the creation of public-facing multimedia content. Finally, a prototype platform for delivery of public-facing content will be developed with Intersect Australia Ltd., including a web application designed to manage and store digital content and a cross-platform mobile application for users to interact with and display that content (including offline). This platform represents a generalised solution that can be reused across many projects and sites by POs and beyond. Software development will use Intersect's usual agile approach with CI Crook as product owner (see Part F1) (**Package 4**).

Packages 4 and **5** will leverage our multidisciplinary research and build on examples of heritage walking tours developed for deindustrialised locales around the world (Butler 2007). To add additional layers to the memoryscape, the project will expose the voices of those who once inhabited, worked and struggled around Ruined Castle by producing sound recordings of oral evidence contained in archival court and inquiry transcripts (Trettin 1990). These voices will provide those who participate in the walking tours we will produce with 'different temporal and spatial presents' and 'a plural and multilayered impression of place' (Butler 2007: 369). The fact that the landscape was described as 'desolate' in the early 20th century, but now lies in a eucalypt forest designated as a World Heritage Area, adds an additional dimension to this discourse and our focus on environmental change. This content will be delivered using a prototype platform for delivery of tangible and intangible heritage information for cultural tourism, education, and community engagement – a key outcome for all four POs and an unmet need in academic, industry and government research. Conceptually, the archaeological research is exploratory and place-specific, driven by the requirements of heritage management and fundamental research questions about the nature of the mining settlements and their inhabitants. It will use comparisons with settlements like Kiandra and Dolly's Creek to identify which dwellings were permanent versus transitory, which were occupied by families versus single men, which might have been commercial versus residential, and the national and ethnic identities of the community members.

The results of the survey (including from the pilot project) will inform the archaeological excavation program. The scope, approach and excavation methods will be documented in an Archaeological Research Design prepared by PI Leslie

and PI Parkes. PI Leslie will apply for the required permit and direct excavations. Excavations will target a range of features identified through survey (e.g., habitations, latrines / refuse pits, etc.) to address specific research questions about the mining settlement, its inhabitants and communal life. They will complement survey results regarding the extent, function and chronology of features. Detailed archaeological recording and excavation of features (including hearths, floor surfaces, post holes and latrines / refuse pits) and the analysis of artefacts recovered from these features will confirm the nature and extent of more permanent communal structures and spaces versus more transient temporary structures occupied by individuals or families. Excavated soil will be sieved. After excavation, trenches will be backfilled and a management plan and excavation report drafted. Artefacts identified during survey will be recorded in situ using the EAMC database schema and vocabularies (Crook & Murray 2006), as will artefacts recovered during excavation. Recovered artefacts will be curated by NPWS, with some loaned to the Macquarie Museum for exhibition. Recording will include in-field digital data capture of structured, geospatial and free text data using customised FAIMS Mobile software. Digital content will be managed and disseminated as described below and under 'Data Management' (**Package 3**).

To effectively recover the human experience of life at Ruined Castle (**Packages 4 and 5**), the historical and archaeological research conducted for **Packages 1 and 2** will be combined. Following the model elaborated in Grace Karskens' historical-archaeological study 'Inside the Rocks' (1999), we will ask: what kind of settlement was Ruined Castle in terms of class / cultural profile, gender, and standards of living? Were these people a close-knit community, striving against the odds for working-class respectability? Or was it a community of poverty, deprivation and rough pleasures? How were its inhabitants affected by the 1890s depression and strikes, Federation and national progress and prosperity, White Australia and egalitarianism? To ensure a nuanced analysis of intersections between landscape and gender, attention will be given to identifying the gendered dimensions of work and family life in the Ruined Castle taskscape by exploring the paradoxical ways in which traditional industrial masculinity remains both visibly and invisibly influential in historical representations and memories of deindustrialised settings (Taksa, 2019) where 'masculinity literally "goes without saying"' (Salzinger 2004: 15).
Training: The higher degree Masters of Research and PhD student will be engaged on projects that integrate **packages 1, 4 and 5** following Butler's pedagogical approach to 'memoryscape' development as a means of providing collaborative forms of research training and mentoring, particularly 'through multimedia engagements' with the community (Butler, 2019). Hence, training will consist not simply in developing cross-disciplinary research skills but also in translating research data into formats accessible for wider audiences in the form of soundscapes for walking tours and heritage management policies and strategies. This training will also include joint conference presentations to academics and partner organisations. Archaeological fieldwork will be conducted as a field school and train an average of 10 undergraduate and postgraduate students from participating universities per year in archaeological survey, excavation, artefact analysis, digital methods and associated skills. Members of the community may also volunteer for archaeological fieldwork, and training in historical methods will be available for community participants to enhance their ability to collaborate with this project. The combined extensive experience of CIs and PI High provides exceptional research training and mentoring opportunities to the project's MRes and PhD students and our Research Assistant.

Project timeline	
Sep 2020 - Sep 2022	Archival history research ongoing; 5 history focus groups each year in Springwood Library and libraries throughout the Blue Mountains; oral history interviews ongoing at the sites listed above (ethics approval has already been granted by MQ[LT6] Project ID 5259), dissemination ongoing throughout the Blue Mountains and in Sydney and internationally. CIs Evans, Taksa and PI High
Sep 2020 - Sep 2022	2 weeks archaeological fieldwork every September and April: aerial LIDAR and survey in Year 1; excavation and artefact processing Years 2-3. CIs Ross, Crook, Lupack, PIs Leslie, Parkes
June 2021	1st Interim report (journal article); prepare data and analysis to date facilitated following a project team meeting to be held at MQ.
Oct 2021 - Mar 2022	Development and testing of content delivery platform; release v0.1 in March. CIs Ross, Crook
June 2022	2nd Interim report (journal article); prepare data and analysis to date facilitated following a project team meeting to be held at MQ.
July-Aug 2022	Complete revisions of content delivery platform, release prototype (v0.2). CIs Ross, Crook
Dec 2022	Deliver field data capture applications to POs. CIs Ross, Crook, PIs Leslie, Parkes
Jan-Jun 2023	Final scholarly publications; public-facing publication; heritage listing application; heritage management plan; dataset publication; digital content (platform populated).

FEASIBILITY: The project's design builds upon a pilot study that indicated that documentary and oral source material exists, and provides a knowledge-base informing the requested budget and timelines. Project design also incorporates: (1) complementary expertise of team members enabling the successful execution of the multidisciplinary research described above; (2) the experience of all Investigators, who have each managed large-scale research projects and collaboration with other scholars, industry, and community organisations; (3) PO involvement in and co-investment, ensuring the alignment of interests, the feasibility of archaeological and heritage research, and the translation of the research into assets for the benefit of educational, community, and tourist end-users. The project will be governed by a Steering Committee consisting of all Investigators plus two representatives from BMWHI and one from NPWS; this committee will monitor progress and ensure delivery of project objectives and outcomes.

Appropriate research environments contribute to the project's feasibility. MQ and LTU both have wide-ranging strengths in history and archaeology. All universities and POs have a history of collaboration, either through the FAIMS Project or on pilot research in the Jamison Valley. Macquarie's Archaeological Field Laboratory and the FAIMS Project (along with Lantern Heritage and Mountains Heritage) will provide equipment necessary to complete this project. As a result, equipment and infrastructure expenses are minimal. MQ and LTU, moreover, have the capacity to provide necessary technical support enabling the creation, analysis and curation of digital data (led by CI Ross with support from CI Crook). The Alveo Virtual Lab for Human Communications Science at Macquarie has expertise and infrastructure for research involving oral sources, and will provide tools for managing and analysing text and audio. MQ has access to all other required computational infrastructure (Cloudstor data storage and NCI Tenjin cloud compute), as well as an institutional account with Open Science Framework, which serves as a landing page and portal for research projects. MQ is also the home of three Research Centres that can provide a supportive research environment for the project and its multidisciplinary team. The Applied History Centre, of which Evans is the Director and Ross the Co-Director, will allow the team to network and research with the world's leading scholars on family history, community, local and public history. Macquarie's Centre for Ancient Cultural Heritage and the Environment (CACHE), of wich CIs Ross and Lupack are members, also contributes to a supportive environment. The Centre for Workforce Futures of which Taksa is Director, includes scholars of work, labour, employment, and gender who hold honorary executive positions with the Australian Society for the Study of Labour History and the Academic Association of Historians in Australian and New Zealand Business Schools. Macquarie's Museum will provide a venue for an exhibition in the newly rebuilt Arts Precinct (see 'Communication of Results'). Finally, Macquarie's Professional and Community Engagement (PACE) program encourages students to complete an internship or volunteer work as part of their degree, and its presence will help recruit student volunteers.

BENEFIT: This project will directly support POs in their heritage management and public outreach missions by providing resources for Australian and international visitors. It will produce diverse educational products that benefit researchers, school children, tertiary students, and ageing lifelong learners, by engaging them in the production of and/or access to historical knowledge of the Blue Mountains. As such it can rescue and revitalise a 'lost' site, one that has been largely forgotten, despite the fact that thousands of visitors walk through it annually without any appreciation of its industrial heritage. As noted earlier, this site has recently been affected by serious bushfires, and in line with the focus of national research priorities on environmental change, this project can provide an unparalleled opportunity to work with our partners National Parks and the Blue Mountains World Heritage Institute to produce a test case assessing the impact of NSW's increasingly severe bushfires on valuable heritage sites invorming policy in NSW, across Australia and internationally.

The project's innovative multidisciplinary historical and archaeological research, combined with digital approaches that facilitate effective recording, management, interpretation, and communication of tangible and intangible heritage directly address significant issues for our POs. First, production of a comprehensive digital inventory of archaeological material in the study area will contribute to heritage listing applications and management plans, allowing Parks and BMWHI to meet their conservation obligations and fulfill their missions of preservation and management. The project will also contribute to community engagement, intergenerational learning and heritage tourism through the creation of multimedia content for memoryscape and soundscape walking tours and online exhibits. Production of customised field-data capture solutions for Lantern Heritage and Mountain Heritage will address the manifest shortcomings of paper-based and ad hoc field-data collection, improving the quality and efficiency of fieldwork and yield content. Finally, the application of best practice digital approaches improve research transparency, efficiency, and scalability, as well as encouraging (re)use of data both by other researchers and the public. Indeed, this project's digital approaches to historical and archaeological research, and for heritage software development, provide a model for Australia and internationally. The creation of multimedia content for education, outreach, and tourism and the development of a reusable platform to manage and deliver that content, which includes a mobile application, will enable tourists to explore the cultural heritage of Ruined Castle and also benefit NPWS and the BMWHI. The project provides great value for money because technologies developed for this platform will help to solve the problem of expensive and unsustainable bespoke software for on-site cultural tourism and online tours and exhibits not only in relation to Ruined Castle, but more widely in the Blue Mountains, and on other projects conducted by our POs. Development costs have been minimised by coordination with a recently announced Australian Research Data Commons Platforms grant won by the FAIMS Project and led by CIs Ross and Crook (see F1). Community outcomes from archaeological and heritage projects traditionally involve one-off open days and / or printed media. By contrast, key advantages of our project's proposed

digital resources include: (1) broader promotion of and accessibility to research results, with the ability to explore information interactively; (2) availability of results and interpretations for visitors before, during and after a visit or, in the case of individuals and groups unable to access remote locations, via online virtual tours; (3) school access to on-demand content relevant to curricula and students capabilities. In a world where mobile devices are increasingly becoming the dominant means of access to information, this project demonstrates how university researchers and heritage firms can meet community engagement and public dissemination requirements of cultural heritage projects in a cost-effective way, while also increasing visitor engagement with place. These approaches help private and government organisations responsible for heritage to meaningfully promote heritage research and management outcomes, and potentially raise additional funds for site management through increased traffic and fees.

There is much potential for public spaces throughout Australia to benefit from this example connecting the past and present through the documentation of cultural heritage. A database of names and digital family trees of the inhabitants of Ruined Castle will benefit the descendants of Ruined Castle inhabitants and enhance global genealogical research as well as providing a case study of community and academic collaboration. Ancestry.com has collaborated with Evans on previous research projects and it is likely they will facilitate further dissemination.

COMMUNICATION OF RESULTS: Academic outputs for other researchers include (1) thematic articles on community, local and family history, the material culture of de/industrialisation and the memorialisation of industrial heritage sites and their communities which will be submitted to Australian Archaeology, International Journal of Heritage Studies, Historical Archeology, World Archaeology, The Public Historian, History Australia, Labour History, the Journal of the Royal Australian Historical Society, Gender and Society, and American and British history journals; (2) annual archaeological reports in Australasian Historical Archaeology, as for the pilot project (Parkes et al 2018); (3) digital archaeology outcomes will be submitted to the Journal of Archaeological Method and Theory or Archaeological Prospection and the content delivery software platform will be published as a software article in Digital Humanities Quarterly or the Journal of Cultural Heritage; (4) a final, multidisciplinary synthesis of project outcomes in an edited volume published with a university or quality commercial press; (5) published, comprehensive, digital datasets including archival documents (licenses permitting), other historical materials, recordings and (de-identified) transcripts of interviews and focus groups, archaeological data (de-located if necessary), and data pertaining to other aspects of the project (see 'Management of Data'). All CIs will also present on research at international and national conferences.

Outputs for our Partner Organisations and other stakeholders will include (1) comprehensive digital heritage inventories; (2) applications for local or state heritage listing; (3) heritage management plans for BMWHI and NPWS; (4) reports or white papers for industry partners on the value of digital fieldwork; (5) customisations of FAIMS Mobile data capture software for use by Lantern Heritage and Mountains Heritage; (6) a platform to deliver multimedia content to mobile devices at this site and elsewhere, which will allow reuse and will be promoted to the heritage sector as a solution to the shared problem of delivering results of commercial heritage work to the public. All POs have at least one representative on the project's Steering Committee, which will review progress and outputs at least twice a year during the project.

The team is committed to the production of outputs for the broader community, including through workshops, lectures, video and radio presentations uploaded on the Macquarie Centre for Applied History's website, promoted globally via the International Federation of Public History and the Centre for Workforce Futures website. The Museum at Macquarie will host a co-curated exhibition of the project's artefacts and outcomes. The most innovative public output will be multimedia content delivered via the platform developed for this project, including georeferenced maps, photographs, audio recordings and walking tours, documents and artefacts. The mobile application will display this data based on proximity, or according to a pre-set order triggered by location or by the user, allowing interactive on-site walking tours or exhibits that can be viewed at home and available for download. Additional dissemination will be possible through the production of a descendants' heritage register, and a school excursion kit.

MANAGEMENT OF DATA: Much historical data used in this project is held by institutions or archives and is readily available. If it is available digitally it will be linked or copied (as licencing permits). If it is only available in hard copy, it will be digitised and made available as licencing permits. Other data will include digital audio recordings (interviews and focus groups from historical and digital practice research); survey results from digital practice research; digital scans or photographs of documents, photographic prints, and objects held by private individuals; archaeological data (including structured, multimedia, geospatial, and free text from survey, excavation, and artefact processing); the raw data and processed results of LiDAR; researchers' notes and correspondence. The total volume of data is expected to be approximately 10TB, and some will be sensitive (e.g., identifiable personal data). Data collection and management will comply with relevant codes of conduct; ethics approvals will be sought where required.Archaeological data and metadata associated with interviews and focus groups will be captured using FAIMS Mobile. Photograph and audio recording will be to archival standards (in quality and format). 'Active' data will be stored on a Cloudstor 'group drive' accessible to all Investigators (Macquarie has 500TB of Cloudstor storage). Statistical, geospatial, and text analysis will be conducted using code wherever possible (in RStudio with R markdown or Python with Jupyter notebooks) online using NCI's Tenjin cloud computing environment (access provided by Macquarie). The Alveo Virtual Lab for Human Communications Science will be used for the transcription and analysis of interviews and focus groups. Non-sensitive data, de-identified or aggregated personal data, and archaeological data (de-located at the discretion

of NPWS) will be published in appropriate Australia-based repositories: Alveo and/or the NSW State Library for interview and focus group recordings and transcripts; OpenContext for archaeological and object data. Datasets in disparate locations can be connected, documented, and selectively presented to the public using Open Science Framework (Macquarie is an institutional subscriber), providing a single portal for project data. OSF also provides native storage for any data not housed in other repositories. All data will be FAIR-compliant: stored in open formats, well documented, assigned a persistent identifier, and provided with explicit licensing (CC-By 4.0 wherever possible). Software produced by the project will be open source (licensed GPLv3).

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