

**Institution:** University of Glasgow

**Unit of Assessment:** 15

### **1. Unit context and structure, research and impact strategy**

Archaeology at the University of Glasgow is characterised by a commitment to excellent research which makes a significant contribution to society beyond academia. Our shared commitment to 'engaged archaeology' and to maximising the social value of our archaeological practice and research makes us unique. We are world leaders in Scottish archaeology and heritage, and we have an international reputation for the work of our three research clusters (material culture, landscape and digital archaeology).

The six objectives laid out in our 2014 Environment Statement were to: (1) develop our collaborations within and beyond the university; (2) develop our expertise in landscape policy and practice; (3) enhance our research support; (4) grow our postgraduate and postdoctoral community; (5) develop our staff profile and outputs; and (6) take advantage of organisational change within the university.

This document charts how much we have exceeded these aims, both by developing our ambitions (e.g. significantly broadening the scope of our expertise in landscape) and by seizing new opportunities (e.g. Digital Archaeology). With 12.2 FTE Category A staff (headcount 11) and 17.9 FTE research, teaching and technical staff (headcount 21), we are a relatively small unit, and have faced up to some significant challenges in the wake of a disappointing performance in REF 2014. We have worked hard to develop an inclusive and supportive staff research strategy, so that everyone feels that they own both the problems and the solutions, and that they are supported in working communally to achieve research excellence. Monthly research meetings and regular away days have enabled all members of staff to share in developing an inclusive and collegiate research strategy. A key approach is that all of these efforts should be sustainable: we are explicitly working to produce excellence and impact on a long-term basis.

The highlights of this sustained growth in confidence and productiveness since 2014 include four major fieldwork monographs, a new prominence in the fields of environmental and digital archaeology, and high-profile impact projects in Iraq and Scotland. We have generated £1,951,055 in new research income, and published 22 books, 128 journal articles, and 110 chapters in books and conference proceedings.

To build on this, we have agreed on these ambitious strategic aims for 2020–2026, to be achieved by high-profile publications, major funded research projects, and wide-ranging collaborations and partnerships:

#### Strategic Aims 2020–2026

1. Enhance our core strengths in prehistoric and historic material culture and landscape, particularly in Scotland, north-west Europe, the Mediterranean and the Near East, achieving an international reputation for innovation in these areas through high-impact research projects and for leading an active and integrated community of researchers, PGR students and practitioners.
2. Build an innovative community of researchers who will take a world leading role in advancing critical and creative approaches to Digital and Computational Archaeology, particularly in the fields of big data and machine learning, digital creativity, immersive media, and digital imaging and sensing.

3. Develop world-leading research and facilities in archaeological science, specifically the archaeology of the environment, the study of materials, and the synergies between them, in collaboration with partners across the University and the wider heritage science sector.
4. Enhance the vitality of our research community through external awards and developing existing and new relationships with external partners from the third sector, government and business, bringing in dynamic early career researchers and PhD students.
5. Contribute actively to the development of equitable and socially responsible practice in archaeology by participating in debates and actions within academia, government and society, playing a leading role in the extension of archaeological practice beyond its traditional disciplinary and social boundaries.

Archaeology is one of six subjects in the School of Humanities (along with Celtic & Gaelic, Classics, History, Information Studies and Philosophy). Humanities is one of four schools in the College of Arts, and Arts is one of four Colleges in the University. As we show in Section 4, we make extensive use of the opportunities for interdisciplinary collaboration offered by this structure.

### **Research Clusters**

A key part of our 2016–21 research strategy was to re-energise our research clusters, with the aims of generating mutual support and motivation, facilitating both long-term and blue-skies research projects, and stimulating new and stronger outputs and grant applications. All members of staff belong to at least one Research Cluster, though many of our publications show very productive crossover and synergies between them. We consider the diversity of our research specialisations a real strength, particularly as we combine them with broader critical understandings of the creation and exploitation of archaeological narratives. Conflict Archaeology, included in REF 2014, has now moved to the History UoA, though there is still considerable collaboration and crossover.

Material Culture. Our long-standing research in this area encompasses empirical and theory-based investigations of the production, consumption, meaning and collecting of material culture. This builds upon the internationally important collections in The Hunterian and Glasgow Museums, including the new state-of-the-art Kelvin Hall facility, and collaborates with a wide range of laboratories, public bodies and museums. Expertise in glass, lithics, pigments, pottery, textiles, weapons and pottery is supported by facilities such as our new Microscopy laboratory, and by regular meetings discussing work in progress and exploring new equipment. Plans to establish a Scottish Centre for Research on Archaeological Materials in the next four years (Section 4) aim to provide a vehicle through which to drive innovation in the field of material culture studies.

Landscape. The interdisciplinary study of how humans have shaped, and are shaped by, the natural and built environments has long connected our work. Following the departure of a landscape archaeologist in 2016, we revitalised this research cluster by moving away from the policy aspects emphasised in our REF 2014 statement to a more holistic view of landscape theory and practice. Complementary methodologies and research questions have allowed us to work productively in a range of locations from the Zagros Mountains to Scandinavia, and to explore different scales, spaces and periods. Our projects include experiential approaches and psychogeography, monumentality and landscape, systematic survey combined with social theory, spatial archaeometry, and the integrated analysis of large environmental data sets from local to continental scales. We run a monthly landscape reading group, with participants

including PGR students and colleagues from the Scottish Universities Environmental Research Centre.

Digital Archaeology. This has emerged during the current REF period, building on longstanding work by one researcher, and developed through the appointments of two more. We work across the arts and sciences, drawing upon the latest developments in digital technology and media. Our projects include immersive media and archaeological storytelling, digital creativity, remote sensing and survey, international database projects, digital imaging, and critical approaches to digital knowledge creation. We work in collaboration with partners from a range of disciplinary backgrounds and from the scientific, creative and cultural industries. We hold regular meetings as a part of the College of Arts 'Im/material' network (Section 4).



*Image 1: Digital Gabii Project work including experimenting with excavation recording methods.*

### Engaged Archaeology

Cutting across all three research clusters, our shared commitment to Engaged Archaeology makes us unique. Our research, practice and collaborations explore how archaeology can be beneficial to society, through engagements with the heritage and education sectors, policy makers, the general public and local communities, and citizen scientists. This commitment creates a clear route towards impact, demonstrated by our thirteen national and international impact projects in addition to our two Impact Case Studies (Section 4). Our work not only delivers Knowledge Exchange and impact: it strives to lead the way in researching how they can be best achieved.

This research, experimentation and publication supports a much wider commitment to and understanding of designing and delivering effective, impactful research, through co-production with a wide range of collaborators. This is evidenced in our collaboration with Historic Environment Scotland in developing Scotland's Archaeology Strategy, our wide-ranging contributions to the Scottish Archaeological Research Framework, our high-profile impact work in Iraqi Kurdistan, and our leadership in a range of other national and international KE and impact projects (Section 4). We make informed and critical contributions to controversial and highly visible public debates such as the use of prehistory and aDNA to support nationalist narratives. Our record and reputation for engaged archaeology was acknowledged explicitly by the Cabinet Secretary for Culture in the Scottish Parliament on 19 February 2020.





*Image 2: Engaged Archaeology on the 'Faifley Rocks' project: PI, local schoolchildren, UoG student, and local MSP on a rock art panel, summer 2019, as published in the Clydebank Post, 4 July 2019.*

### **Open Research**

Our unit of assessment strongly supports Open Access and Open Science initiatives, and the University signed the Concordat on Open Research Data in 2018. Open scholarship represents not just values we share but key issues that we research and publish on, particularly in relation to digital media, data and analytical code. Publishing freely accessible outputs is also an important vehicle for the achievement of our 'engaged archaeology' strategic aim.

The effect of this strategy can be seen in the rapidly growing percentage of our publications that are Open Access, which has grown from 23% in 2014 to 86% in 2020 (and from 35% to 87% for articles specifically). We have acquired funding for 15 Gold Open Access journal articles, and our rate of non-compliance in our submitted output is zero. We have published Open Access monographs, for example *Kinetic Landscapes* (2015), *Gabii Excavations* (all five volumes will be Open Access digital monographs; the first appeared in 2016); and all four SERF monographs, including the two published in this review period. All of our Category A staff have ORCiDs, and we use our repository, academic social media, the press and other social media to raise awareness of our work.

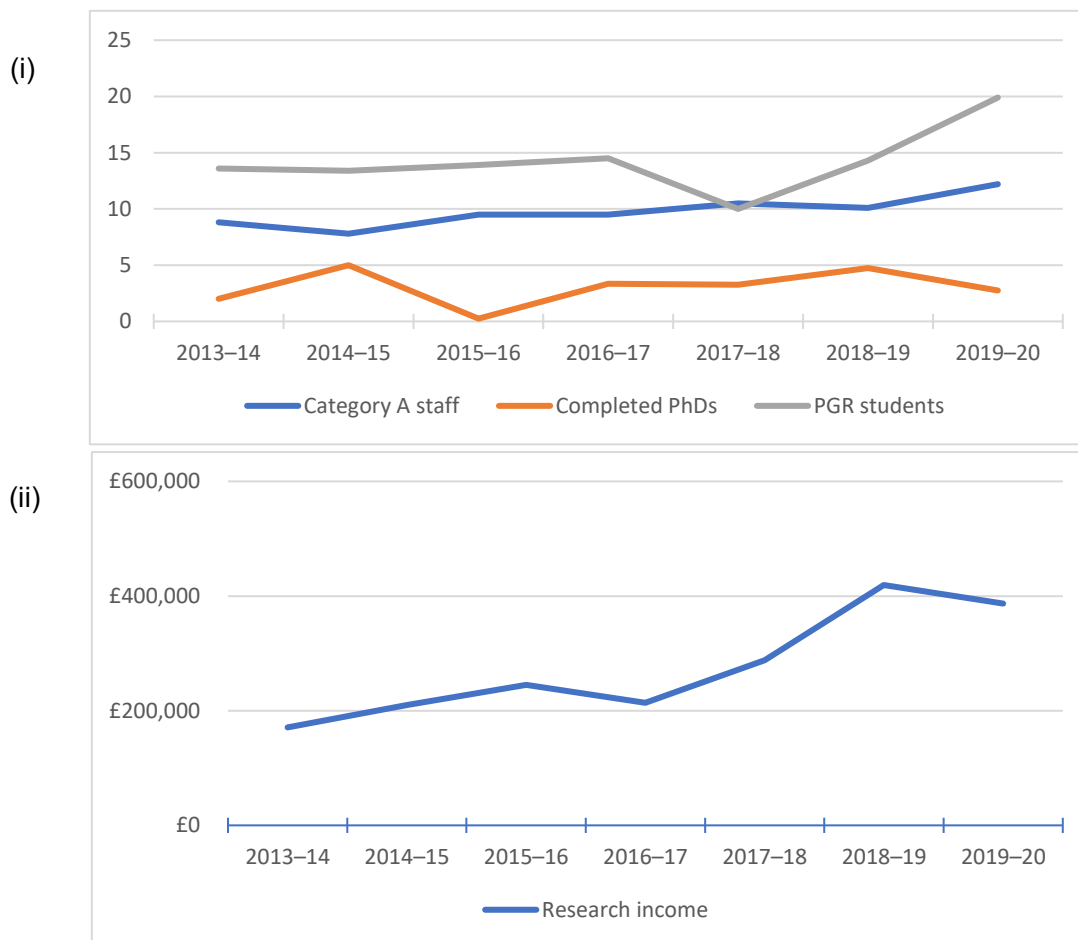
### **Impact**

An essential element of our strategy is to promote and sustain the practice of impactful research, as demonstrated in our commitment to 'engaged archaeology' (above) and in the wide range of significant social impacts delivered in collaboration with the public sector and community groups (Section 4). The university's commitment to supporting this work is demonstrated in £8590 awarded by their KE fund for four projects led by three different members of staff. In 2018 we used one of these grants to employ a post-doctoral researcher with highly relevant skills and experience to collate impact data and support work on our two Impact Case Studies. We used this experience to feed into School and College plans to provide ongoing support of this kind: this initiative was so successful that our researcher is now in post as the College of Arts Impact Officer.

Impact and its relationship to the underpinning research are discussed explicitly in annual Performance and Development Reviews, and impact is a criterion for promotion. We allow research leave and shorter periods of teaching replacement to support impact (we did this to support both the PIs of our Impact Case Studies), and provide equipment, lab space and student help for impact activities. Demonstrating best practice is an important part of our strategy. We have regular research seminars on impact topics (including a dedicated series of impact seminars in 2019), and all staff have had considerable exposure to our [high-profile work at Govan](#), including holding a Research Away Day there.

**2. People**

At the census date we had 12.2 FTE Category A staff (headcount 14), plus 1.3 FTE Research staff, 2.0 FTE technical staff, and 2.4 FTE lecturers in Learning, Teaching and Scholarship, representing a total staff of 17.9 FTE (headcount 21). This represents a significant increase during the REF cycle, during which we balanced two Category A staff departures by making five new Category A staff appointments. This process has significantly improved our gender balance to 48% women by FTE, and our ten early career colleagues have brought palpable enthusiasm and vitality to our community. At the census date 43% of our Category A staff were lecturers/research fellows (headcount 6), 50% senior lecturers (7), and 7% professorial (1).



Graph 1: (i) Staff (FTE), PhDs and PGR students (by supervisory load), and (ii) funding awards.

**Staffing Strategy**

The core aim of our 2016–21 Research Strategy was to develop our staff structure and expertise by new appointments. This was driven by a focus on our Research Clusters, and the need to bring vitality and sustainability to each of them. Actions to improve our gender balance and, therefore, the inclusivity and range of our research, have included working proactively to encourage applications from women, using the Athena Swan bronze award logo, and ensuring gender balance on appointment panels, each member of which completed unconscious bias training. Three out of the five Category A appointments we made were women.

The first need was to achieve critical mass and sustainability in our long-standing and mature thematic areas of expertise identified in our research strategy. We made two appointments in Material Culture (textiles; Viking material culture) and one in Landscape (spatial archaeometry). The second need was to develop our two emerging areas of excellence: Engaged Archaeology and Digital Archaeology. We have made two appointments to Digital Archaeology (the same spatial archaeometry lecturer, and a specialist in creative and critical knowledge production).

Our third need was to address a long decline in Archaeological Science, which threatened the sustainability of our teaching, research output and grant capture. We made this an explicit part of our strategy in 2016, and appointed a Senior Lecturer in 2020 to lead this vital aspect of our work on a sustainable pathway to excellence. This appointment is already giving us significant progress in the major redevelopment of lab infrastructure (Section 3).

**Staff Support and Development**

The university formally supports staff through annual Performance and Development Reviews (PDRs), promotion, Recognition and Reward for exceptional performance, and a comprehensive range of CPD workshops and training programmes. Both Archaeology and the School of Humanities strongly support colleagues' aspirations for promotion. Since August 2013 there have been three promotions to Grade 8, two to Grade 9, and one to Reader. These consisted of one man and five women and constituted a 100% success rate.

In keeping with the University's Staffing Strategy and Staff Development, the School of Humanities' 2015 Strategic Plan prioritised staff motivation and support, aiming at celebrating success, enabling development, and listening to and acting on staff concerns. This is being delivered through expanded mentoring, realistic setting of objectives in PDRs, and supporting mental and physical wellbeing. Within archaeology we have had a series of discussions on topics such as resilience, 'slow scholarship' and sustainable scholarship, much of it driven by research by one of our colleagues.

In principle, every Category A member of staff gets one semester of College-supported research leave after seven semesters, though because of staff shortages in the first part of the review period this was not always possible to achieve. We now plan out every staff member's research leave up to five years ahead, with the stipulation that it is used explicitly to achieve our strategic aims. During the review period, seven Category A staff had research leave of one semester (including two early career colleagues), and an additional four won funding for one-year research leave (Section 3).

A major component of our 2016–21 strategy was to develop new ways of supporting staff in producing excellent research. Since 2017 staff have been strongly encouraged to submit key article drafts and book proposals to the REF Champion and other experienced staff for detailed feedback. The REF Champion, Research Convenor and Head of Subject have regular discussions with colleagues on how to maximise the quality of research output, including the choice of which publications to invest significant time in. Since 2016 we have developed a collective time allocation strategy, to protect weekly research days and juggle blocks of teaching to create longer periods for research during term-time.

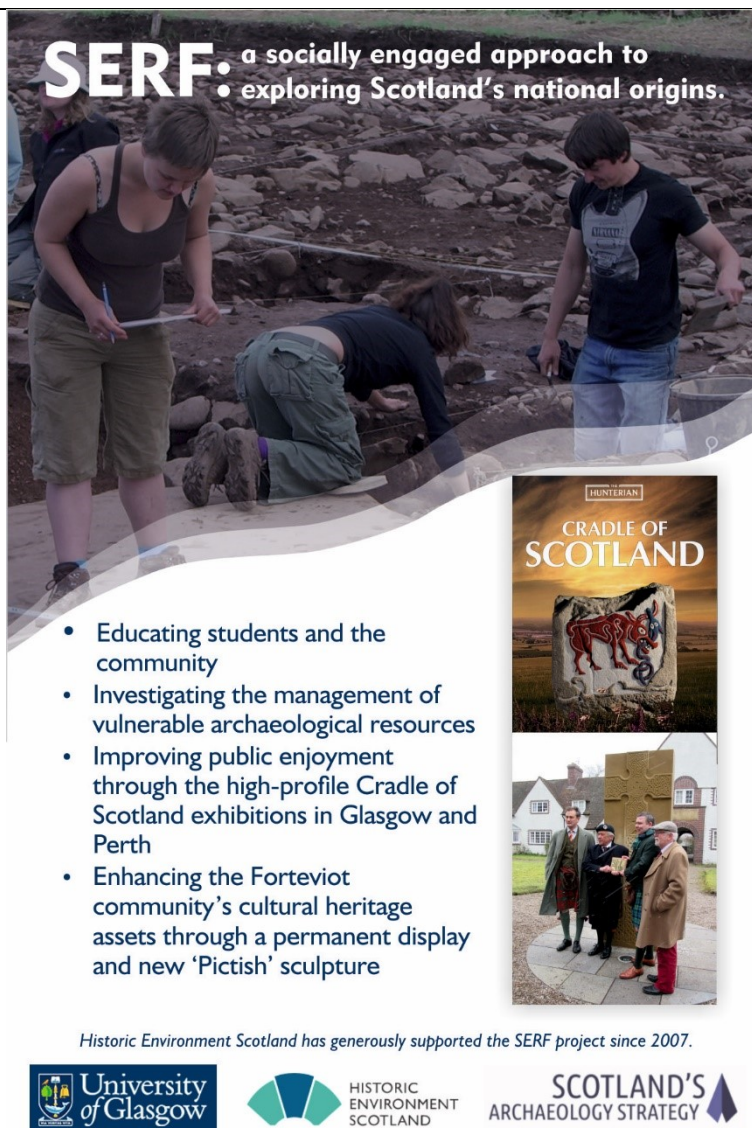
The College of Arts Research Office offers administrative support, particularly on grant finances, and we draw extensively on the wide-ranging expertise provided by ArtsLab's application review service. School and College provide funding for teaching cover for staff working on large applications, such as for a major successful application to the AHRC on 'Unwrapping the Galloway Hoard' (due to start after the REF census date). Since August 2013, School and College have given 41 research incentivisation grants worth £52,241.

Both ArtsLab and the University's 'Researcher Development for Staff' programme provide training sessions, e.g. in managing research projects, internationalisation and networking. ArtsLab hosts thematic networks to stimulate internal and external collaboration: we co-lead their College-wide 'Digital Cultural Heritage' and 'Immersive Experiences' networks, collaborating with colleagues from Information Studies, Music, Philosophy and Psychology. The REF Champion benefited greatly from taking the University's Senior Research Leadership Programme. We view exchanges and secondments as highly beneficial for staff development, and our staff have had visiting fellowships with Brown University, Dumbarton Oaks, Universities of Aarhus and Bourgogne, and University at Buffalo.

The University supports colleagues reaching the end of their career by approving phased retirements. In 2019/20 we had three such colleagues on 0.2 FTE contracts, completing the publication of valuable research projects and continuing their greatly valued research mentoring, while continuing to offer specialised teaching.

One measure of the success of our strategy in supporting our staff on a sustainable basis is our productiveness in producing major fieldwork monographs that are the culmination of years of sustained research and collaboration. Examples include Bay of Firth Neolithic project, Orkney (2016); Cide Archaeological Project, Turkey (2015); Dùn Èistean excavations, Lewis (2015); Gabii excavations, Italy (2017); Strathearn Environs and Rural Forteviot (2 volumes, 2020); and Tawahin excavations, Jordan (2017).







**SERF:** a socially engaged approach to exploring Scotland's national origins.

- Educating students and the community
- Investigating the management of vulnerable archaeological resources
- Improving public enjoyment through the high-profile Cradle of Scotland exhibitions in Glasgow and Perth
- Enhancing the Forteviot community's cultural heritage assets through a permanent display and new 'Pictish' sculpture

Historic Environment Scotland has generously supported the SERF project since 2007.





*Image 3: SERF, a socially engaged approach to exploring Scotland's national origins.*

### Early Career Staff

All but one of our new appointments in this REF period have been early career. This has been a deliberate strategy to enhance the vitality of our research and increase our capacity to develop new areas and take advantages of new opportunities (e.g. Digital Archaeology). The University's Early Career Development Programme (ECDP) provides training and mentorship, giving our three ECDP staff significantly less teaching in their first two years and supporting them through to promotion to Senior Lecturer. As well as their ECDP mentor, a mentor within Archaeology helps with discipline-specific processes and resources, and the Head of Archaeology gives coaching on career development, resilience and personal effectiveness. One colleague has participated in the Aurora leadership programme, and ECR staff are favoured in applications to the School of Humanities' research incentivisation fund.

We work hard to integrate early career staff into our research structure and professional community, and ensure that all staff have opportunities for leadership. An ECR colleague developed our very successful 'Tasty Thoughts' work-in-progress seminar programme, and runs it jointly with a PhD student. Our Research Cluster reading groups are led by three ECR staff, two women and one man.



**Post-Doctoral Researchers**

At the census date we had 1.8 FTE research fellows, and during the REF period we have had an additional 4.2 FTE research fellows, plus 1.5 FTE post-doctoral research assistants. Funding has come from the British Academy (1), Historic Environment Scotland/Lord Kelvin Adam Smith (LKAS) leadership fellowship (1), Marie Curie Individual Fellowship (2), Scottish Graduate School of Arts and Humanities (1), and the Swiss National Science Foundation (1).

Within the framework of the Concordat to Support the Career Development of Researchers, we support all our early career researchers, not just those in Category A, in their personal development and in building their career, not least by winning fellowships and positions for them. All our researchers have a mentor in addition to their formal PI/supervisor, participate in College and University training workshops, and have opportunities for teaching and other experience useful for career development. One marker of our success in this is that in the review period three post-doctoral fellows won their fellowships during temporary teaching positions with us.

**Research Students**

Our strategy for research students is: to integrate new students within the Archaeology research community as a whole; to maximise the alignment of topics with staff research; and to support our students in their career development, personal effectiveness and wellbeing.

All research students have at least two supervisors, which also allows us to supervise across disciplines (Celtic & Gaelic, Earth Sciences, Geography, History) and external institutions (Glasgow School of Art Digital Design Studio, Historic Environment Scotland, National Museums of Scotland, Universities of Edinburgh and Lausanne). We support our students through six-monthly review panels, where two non-supervisory staff members review the student's progress and provide additional support. Supervisors undertake formal training every four years provided by the College Graduate School.

Training in research skills, including generating impact and career development, is provided by the College Graduate School and by the Scottish Graduate School for the Arts and Humanities (SGSAH). We lead SGSAH's Discipline+ Catalyst for Archaeology and Classics, providing an annual training programme across 16 member HEIs. We supplement this with our continually-renewed 'Research and Professional Skills' course for Masters and first-year research students. A workshop on 'Planning, Resilience and Deep Work' in 2019 furthered our ambitions to support student wellbeing and personal effectiveness, and following positive feedback we developed it into a summer school session for SGSAH in 2020.

With the support of the Graduate School, research students organise a range of initiatives, including Scottish Archaeological Forum conferences, one of which has just been published, and sessions at Theoretical Archaeology Group conferences. To continue our support after graduation we offer all our PhD graduates the status of Research Affiliate, giving them a University email address and library access.

In October 2018 we reviewed our support for PGR students by a qualitative questionnaire, followed up by staff-student discussions. Student descriptions of the quality of supervision and wider support were extremely positive, commenting on staff concern for students' intellectual development, wellbeing and mental health, and on the accessibility of staff.

Student Awards Category	2013–14	2014–15	2015–16	2016–17	2017–18	2018–19	2019–20
PGR students	13.6	13.4	13.9	14.5	10.0	14.3	19.9
PhD students	10.4	12.1	10.5	10.5	8.3	8.7	13.7
PhDs awarded	2	6	0.3	3.3	3.3	4.8	2.8
PhDs awarded to women	1	3.0	0.3	2.0	2.0	3.8	1.8

*Table 1: PGR students and doctoral degrees awarded (calculated by supervisory load). Of the 21.4 degrees awarded (26 headcount), 64% were awarded to women and 31% to men; 19% were awarded to 'young' students and 81% to 'mature' students (HESA categories).*

In 2017 we identified that a key challenge was to increase PGR numbers, especially international students, and implemented these initiatives:

- We run annual PhD recruitment events, paying for travel and holding a day of student presentations and informal discussion. We then support the best of them in applying for scholarships. Two such events have resulted in five additional students, two funded by the AHRC and two by College of Arts scholarships.
- Following student consultation, we implemented a mentoring scheme in which current PhD students are trained to be mentors for Masters students wishing to do PhDs.
- With College of Arts funding, we exhibited in 2019 and 2020 at the Society for American Archaeology and Archaeological Institute of America/Society for Classical Studies conferences, to recruit PhD students from North America.
- We secured a university LKAS interdisciplinary PhD scholarship with Earth Sciences and two AHRC Collaborative Doctoral Partnerships with Historic Environment Scotland.
- We realigned our taught postgraduate programmes with our research specialisms, particularly by developing new MSc's in Archaeology (Landscape) and Archaeology (Digital), complementing our well-established MSc in Material Culture and Artefact Studies. We use these to recruit PhD students.

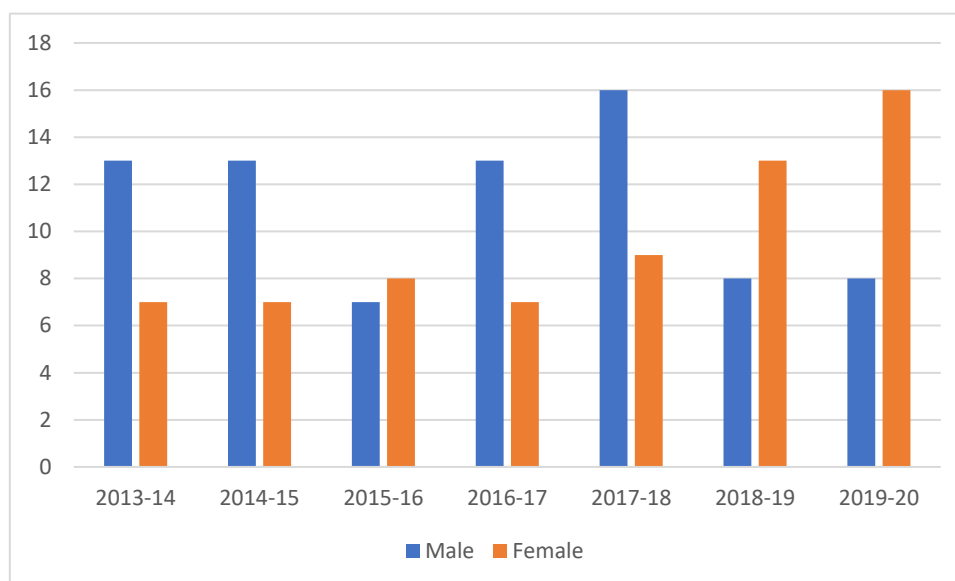
### **Fostering our Research Community**

A key aim of our 2016–21 research strategy was to address many of the problems apparent in our REF 2014 submission by building staff motivation and confidence – a factor that is hard to measure but, in our experience, very real and significant. The most critical implementation of this strategy was to develop a range of opportunities for staff discussion, stimulation and mutual support. These activities have also made it much easier to integrate new colleagues into our research community.

In 2016–17 we experimented with 'buddy groups' of 4–5 members drawn from all research specialisations. While useful for mutual encouragement, they did not transform our research practice. So we organised reading groups by Research Cluster, to promote stimulating discussion of key publications and encourage co-reading of each others' drafts. Meetings are attractive to PhD students and research fellows, and have facilitated stronger ties with external colleagues, e.g. from the Scottish Universities Environmental Research Centre. A monthly writing group provides informal peer support for publications in progress.

Our weekly research seminars have long been active, well-attended and productive. Since January 2018 we have experimented with semester-long themes based on our Research Clusters, to stimulate sharing of ideas and mutual support, and to bring top researchers in our

areas of excellence to Glasgow. We explicitly set out to improve the gender balance of the speakers: our success is demonstrated in the graph below. We have experimented with new formats, for example conversations across disciplines or across the theory/data divide, and have invited speakers to run workshops for postgraduate students.



*Graph 2: Research seminars: Gender balance of invited seminar speakers between 2013 and 2020.*

Following an initiative by an ECR colleague, we run a successful series of lunchtime work-in-progress seminars called Tasty Thoughts. These offer a supportive environment for staff and PGR researchers to present new ideas and receive feedback on research in progress. Attendance by staff from other subjects within the university reinforces the networks being developed by individual projects and by our role in leading SGSAA's Discipline+ Catalyst in Archaeology and Classics. Between November 2017 and April 2020, the speakers consisted of 27 women and 20 men, with 27 from Archaeology, 11 from elsewhere in the university, and 8 from other universities and agencies.

### **Equality and Diversity**

We have worked hard to increase the diversity of our staff and research students, and by doing so to broaden the scope, perspectives and insights of our research. In 2013/14, our Category A staff were 28% female by FTE (25% by headcount). Thanks to our new appointments, this has improved to 48% female by FTE (43% by headcount). Of our 17.9 FTE (headcount 21) research, teaching and technical staff in 2019/20, 10.5 FTE (headcount 12) are women.

We contributed to the successful School of Humanities Athena SWAN bronze award in 2017, and are working towards a silver award. Actions include encouraging and supporting women to apply for promotion; reflecting on uptake of training opportunities and proportions of administrative work carried out by women; and supporting colleagues returning from maternity and adoption leave. 93% of our staff have done Equality and Diversity training, and we pay particular attention to gender balance and diversity in our speakers for our seminar series and for keynote speakers for conferences we organise. The British Association of Near Eastern Archaeologists conference held in Glasgow in 2017, for example, had a woman keynote speaker for the first time in four years. In 2020 we made it a policy not to accept invitations to panels that have no women on them, and to engage with national debates on best practice.

We support staff with caring responsibilities by allowing flexible working hours, concentrating our teaching between 10am and 4pm, and holding our weekly research seminar during working hours. We support two of our lecturers who have disabilities with specialised equipment and consumables, and provide wider support through one of our colleagues serving as School Disability Officer.

While the PGR gender figures in the table above show a good balance, within archaeology generally there is often a much lower proportion of women who have open-ended academic contracts. So the key issue in terms of gender and wider equality and diversity, as we see it, is supporting *all* our PhD graduates in getting experience and training – for example through teaching opportunities and high-profile post-doctoral fellowships.

51% of our PhDs awarded have been to UK students, 32% to other EU, and 17% to Overseas (mainly North America). We have long been working on decolonising our curriculum, and post-colonial theory plays an important part in our theoretical expertise, proving popular with PGR students. Our Impact projects in Cyprus and Iraq explicitly follow the principles of co-produced research and the sharing of resources for the benefit of local communities (Section 4). In Iraq we have supplemented local training of antiquities officials by bringing two of them to Glasgow for additional training and experience, and in 2019 we hosted a visiting lecturer from Georgia.

Our submitted output was chosen based on scoring by at least two members of the UoA's scoring committee, all of whom have done Unconscious Bias Training, with a third member (normally the REF Champion) chairing the discussion to agree any disputed scores. 12 out of 31 submitted output are by women, in line with the 48% women in Category A staff.

### 3. Income, infrastructure and facilities

Our 2016–21 strategy aims not just to increase grant capture but also to diversify it in terms of grant holders, making it more sustainable in the longer term. We aim to strike a balance between small grants that enable a range of specific fieldwork and impact projects, medium-sized grants that support individuals in writing books, and large collaborative grants that enable long-term innovative projects.

#### Research Income Strategy

- to encourage grant applications that directly support our Strategic Aims 2020–2026, e.g. by prioritising resources such as teaching buyout.
- to encourage collaborative applications, both within and outside the Unit, in order to spread the workload and broaden the disciplinary and interdisciplinary expertise.
- to engage a wide range of staff with developing successful grant applications, particularly by supplementing College support structures with informal reading of each others' applications.
- to appoint new staff who show an excellent track record or potential in winning major funding.
- to support ECRs in applying for smaller grants and building up track records towards larger funding initiatives.

The success of this strategy is demonstrated by the very clear upwards trajectory of both numbers of staff applying and the sums obtained. Sixteen individuals won at least one grant during the review period, six of them winning over £100,000. 26% of research income was won



by women and 74% by men. 69% was won by Grade 9 staff, as opposed to 20% by our one professor and 11% by Grade 8 staff.

Financial Year	Research income	No. of Cat. A staff holding an award	% of Cat. A staff holding an award
2013–14	£173,379	5	63%
2014–15	£216,002	3	38%
2015–16	£244,890	3	33%
2016–17	£214,032	7	70%
2017–18	£288,293	7	64%
2018–19	£422,638	7	54%
2019–20	£391,820	9	64%
<b>Totals</b>	<b>£1,951,055</b>	--	--

*Table 2: Grant capture 2013–14 to 2019–20, showing a 79% increase on our REF 2014 research income of £1,090,000.*

Research councils and other government bodies make up 53% of our total research income, including £194,719 for the 'Archaeological Practice and Heritage Protection in the Kurdistan Region of Iraq' project from the British Council Cultural Protection Fund, and £336,996 for 'Strathearn Environs and Royal Forteviot' (SERF) from Historic Environment Scotland (HES). 21% of research income has come from EU government bodies, particularly two Marie Curie Individual Fellowships, and 5% comes from North American sources; these are the result of our attempts to diversify the sources of our funding. We have been awarded five research leave grants: a British Academy mid-career fellowship; a Leverhulme International Fellowship; an Alexander von Humboldt fellowship; and two year-long teaching buyouts from HES.

### **Infrastructure and Facilities**

We have a suite of 19 offices for all our academic staff, and two seminar rooms under our local control, making it easy to hold research meetings. Postgraduate research students have a large shared room with 12 desks and two quiet rooms for writing-up students, as well as access to College Graduate School study spaces. In 2014, we converted a small office into a staff room with basic catering facilities. Such communal spaces contribute strongly to the research environment by providing venues for meetings such as reading and writing groups, allowing informal discussion of research in progress and opportunities for supportive interactions between staff.

Glasgow University Library has an excellent archaeology collection relating to our geographical and period expertise and our three Research Clusters, and we have 3,000 volumes in a specialist library on Scottish and Medieval archaeology. We have a large archive of past projects and materials for research and teaching projects, which we use for student projects and the publication of legacy projects.

In 2018, as we advertised for a new senior lecturer in Archaeological Science, we began a five-year strategic programme of laboratory redevelopment, in line with our Strategic Aims 2020–2026 (Section 1). By July 2020, we had made the following progress:

1. Microscopy Laboratory, with new high and low power microscopes for research and teaching and four portable Dinolite microscopes.

2. Digital Archaeology Laboratory, with eight VR-ready graphics workstations, a Reflectance Transformation Imaging Dome, and a range of Virtual and Mixed Reality hardware.
3. Photography studio for research and teaching, with new cameras, lenses and equipment.
4. Flotation facility for the extraction of biological remains.
5. Palaeoenvironmental Laboratories (clean and dirty) with reference collections of fossil and modern insect remains, pollen, plant remains, extraction facilities and research grade microscopes.

By 2022, we aim to have upgraded our big teaching and research lab and our Human Remains lab, supporting a major revitalisation of our Archaeological Science. This will be bolstered by the planned establishment of the Scottish Centre for Research on Archaeological Materials to foster collaborative research and driving innovation in Materials and Environmental Science.

As a relatively small unit, we use our wider connections to supplement what we can provide in house; these connections will allow us to significantly expand research capacity within the wider area of archaeological science over the coming period. The following partnerships are proving essential to the growth and sustainability of our research in Archaeological Science; they are particularly effective when supported by substantial collaborative research funding, which we are working to develop:

1. Kelvin Hall. The first phase of this state-of-the-art facility of The Hunterian Museum opened in 2018, and its second phase is under development. We are extending our close teaching collaboration and use of their laboratory facilities into significant research collaboration on collections and materials.
2. Scottish Universities Environmental Research Centre. We collaborate in teaching and research, and are developing a framework for access to their radiocarbon dating and isotope analysis facilities. We provide desk space and support for their PhD students.
3. Earth Sciences. We share our building with them, and have access to their thin sectioning, SEM, micro-CT scanner, and residue analysis and lipid biomarker facilities. We had a joint PhD student and collaborate on publications and grant applications.
4. Particle Physics Experiment. We are collaborating with the PPE Development Team to design a suite of portable non-destructive analytical technologies and interpretive software.
5. Technical Art History. We are collaborating on the development of shared research facilities, most recently a new pXRF, and laboratories.
6. Scottish Palaeoenvironmental and Archaeological Science Network. We and the University of St. Andrews established this in January 2020 to bring researchers from across Scotland together to develop new collaborations and projects, and share expertise and equipment.

Since 2013/14, we have purchased and maintained equipment to a value of £73, 616 (not including laboratory redevelopment). This has allowed us to maintain three total stations (one replaced during the review period), three differential GPS units, seven geophysics systems, two drones, and a range of cameras and microscopes.

We are investing in the training and development of our Laboratory and Field Technician and our Illustrator, who are essential for the support and integration of our teaching and research practice, from preparation of publications and support of lab analysis to the field school and our other field projects.

#### 4. Collaboration and contribution to the research base, economy and society

As a relatively small unit, developing effective collaboration and partnership is central to developing fresh ideas and expertise and making our research sustainable. Expanding and invigorating our external partnerships has been a key part of our 2016–21 research strategy. This is not limited to other academics: we have much to learn (and much to give) from national heritage agencies and government departments, the heritage and creative industries, museums, schools, and the widest possible range of community groups. During the review period, we have worked hard to gain a reputation for being collaborative and welcoming. The fruits of this strategy can be seen in the wide range of dynamic and productive collaborations documented below.

##### Collaboration

Major collaborative fieldwork and research projects are fundamental to the way in which we generate new data and insights and contribute to the development of our discipline and society more widely. Since 2013 we have participated in 28 research and field projects (not including networks) in 13 countries across Europe, the Mediterranean and the Middle East. Examples of major collaborative projects that we lead are:

- DataArc. This cyberinfrastructure development project integrates data from archaeology, the palaeoenvironment, palaeoclimate modelling, and history, with 35 researchers from Greenland, Iceland, Sweden, the UK and the US.
- Digital Narratives in Archaeological Research. We lead this investigation of immersive media within museums, with partners at the University of York (Theatre, Film and Television, Digital Creativity Labs and Electronics) and York Museums Trust.
- Kourion's Amathous Gate Cemetery, Cyprus. The publication phase of the excavations at this Roman-period cemetery has 27 collaborators from 12 countries, including Australia, Belgium, Canada, Cyprus, Italy, Poland, and the US.
- Strathearn Environs and Royal Forteviot, Scotland ('SERF'; publication phase). Academic collaborators include seven from other universities and colleges, ten from Historic Environment Scotland, four from National Museums of Scotland, and nine from commercial archaeological units.



Image 4: Digital Narratives in Archaeological Research.

Interdisciplinary collaboration plays a crucial role across all of our Research Clusters, bringing stimulation, breadth and diversity to our output. The emerging collaborations supporting our redevelopment of Archaeological Science are explained in Section 3. We have strong collaborative relationships within the University, expressed in joint publications and successful grant applications with Celtic and Gaelic (e.g. Iona Research Group), Computer Science (e.g. Immersive Media), Earth Sciences (e.g. residue analysis) and History (e.g. Archaeology of Seaweed). We use our weekly Research Seminars to bring in speakers, collaborators, and potential collaborators from other disciplines, including anthropology, dendrochronology, digital media, environmental science, climate science and place-name studies.

Collaborations beyond academia have been crucial for bringing new vitality to our research and impact. We have consolidated and expanded our already close relationship with our key partner Historic Environment Scotland (HES), through our 10-year SERF project, our collaboration with them in developing 'Scotland's Archaeology Strategy' (one of our Impact Case Studies), and our engagement with their national and regional Scottish Frameworks for Archaeological Research. We have co-authored six publications, won two Collaborative Doctoral Partnership PhD studentships together, appointed a joint HES/University of Glasgow research fellow, and co-organised a Royal Society of Edinburgh-funded workshop series on Contemporary Archaeology in Scotland. Staff contribute to the management of HES projects by sitting on their advisory groups (e.g. Scotland's Rock Art). Another measure of our close relationship is that their staff (including the Head of Archaeology) includes seven of our PhD graduates.

Engaging with a broad range of museums is essential for our research and impact in Material Culture. Our key partner is The Hunterian, which we engage with through using its research and teaching facilities at Kelvin Hall and through sitting on each other's appointment committees. We have a Memorandum of Understanding with Glasgow Life for developing future projects. We jointly supervise a PhD student with the National Museums of Scotland, and together we have won a major award from the AHRC (to start after the census date). Three of our PhD graduates are on their curatorial staff. We are actively developing closer links with the Smithsonian Institution through contributing to the University's Smithsonian International Partnership working group, including setting up a range of visits and events in 2019–20. We collaborate on publications and funded projects with the British Museum, Moesgaard Museum in Denmark, National Museums of Kenya, Natural History Museum, Perth Museum and Art Gallery, Tromsø University Museum, and York Museums Trust, and have contributed to and advised on the redevelopment of the Slemani and Garmian Civilisations Museums in Iraq and Kilmartin Museum in Scotland.

We have collaborated on publications, grant applications, fieldwork and student placements with ten commercial archaeology units and five heritage trusts across Scotland, England and Ireland, including Historic England and the National Trust for Scotland. In many cases this has enabled us to collaborate in developing new policies and procedures, e.g. dealing with Viking burials (AOC Archaeology) and the development of immersive experiences in exhibition design practices (York Museums Trust). At an international level, we collaborate with the Erbil, Slemani and Garmian Directorates of Antiquities in Iraq, the French Forestry Service, and the Departments of Antiquities and Forests in Cyprus.



Much of this international and interdisciplinary collaboration is furthered by our leadership and co-leadership of formal funded international networks and working groups, including these:

- COST-Arkwork. This COST-action brings together the multidisciplinary work of researchers in the field of archaeological knowledge production and use.
- Im/material Network. This interdisciplinary UK-wide network brings together researchers working at the intersection of mixed reality and material culture (e.g. from architecture, computer science, games industry, architecture companies, digital arts).
- Manifesto for Medieval Archaeology in Europe. Led by us, the European Association of Archaeologists is developing a new manifesto for Medieval Archaeology across Europe.
- Neolithic Studies Group. This holds bi-annual meetings and publishes a respected series of edited volumes on the Neolithic across Europe.
- PAGES Land6K working group. One of our staff is Global Land Use co-coordinator and Europe lead for land use for this interdisciplinary research network on global land use history, working with a community of scholars from across every continent.
- Training & Research in Archaeological Interpretation of Lidar implements knowledge exchange with heritage managers across Europe.

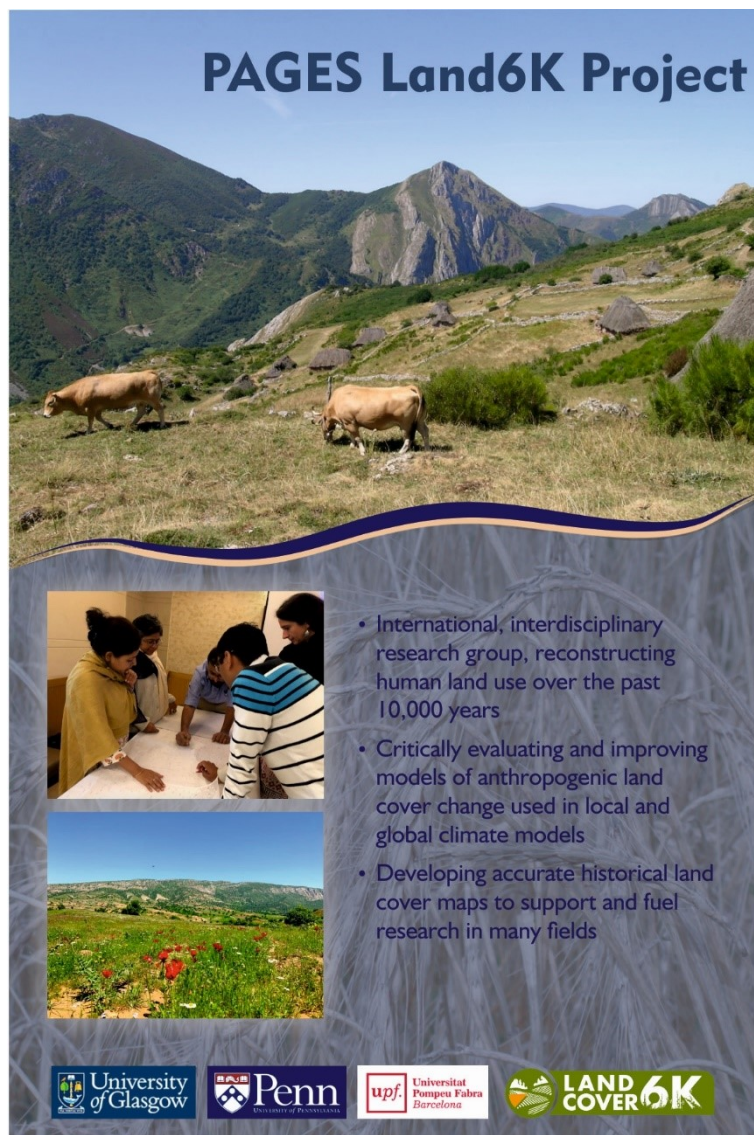


Image 5: PAGES Land6K Project.

As individual scholars we have developed active collaborative relationships with other Archaeology and cognate departments within the UK and internationally. Since August 2013, we have co-authored articles and held joint funding with colleagues from 26 universities in the UK, 26 in the rest of Europe, 25 in North America, and eight in the rest of the world. These ongoing collaborations include major research networks, funded projects and specific fieldwork and impact projects, and have generated almost all of the books submitted as part of our output.

#### **Contribution to the Discipline and Research Base**

In line with university strategy and promotion criteria, we support staff in engaging with a range of contributions to the discipline, nationally and internationally. During the review period, we have organised 17 conferences and workshops, including those of the European Association of Archaeologists and British Association of Near Eastern Archaeologists, both in Glasgow; organised 37 sessions at other international conferences; and given 16 keynote lectures. We have served on 19 editorial boards and five boards of trustees for heritage bodies.

Three of us have sat on the AHRC peer review panel, and one of us is a member of the NERC Radiocarbon Committee. We have served on another 12 national and international funding review panels, including the American Schools of Oriental Research, the Academy of Finland, the Carnegie Trust for the Universities of Scotland, Marie Curie Fellowships, and the National Science Foundation. One of our staff served for eight years as President of the International Union for Quaternary Research Humans and Biosphere Commission, and another as Chair of the Scottish Strategic Archaeology Committee, 2013–2019.

#### **Contribution to Society**

Engaged archaeology is an ethos we all share. This belief in the value of archaeology to society is also fundamental to our teaching, for example in our first year core course 'Archaeology in the Modern World', and through integrating public engagement and impact into our three-week Honours field school.

To deliver all these contributions to communities and societies systematically, reliably and sustainably requires supporting our staff in their impact activities (Section 2). We work closely with the College of Arts Impact team on a range of research/impact projects, not just the current Impact Case Studies. This supports our aim of making our impact sustainable, ongoing and spread across a wide range of staff. We also share this experience with others, for example when our Impact Champion organised a session on impact for the School of Humanities in 2019.

Our two Impact Case Studies are only the most fully developed of a range of projects that are already delivering clear impact, thanks to the long research and high-quality data that underpin these activities, and to the success of our 'Engaged Archaeology' strategic aim. These thirteen projects were led by nine different staff members, demonstrating the wide staff engagement with impact. They are all being carefully managed as pathways towards the achievement of our research and impact goals, as stated in our Strategic Aims 2020–26 (Section 1).

Project	Funder	Knowledge Exchange and Impact	Underpinning research
Archaeological Practice and Heritage Protection in Iraqi Kurdistan	British Council Cultural Protection Fund	Training Iraqi Antiquities officials; co-developing a cultural heritage strategy; curriculum change; children's rooms and education materials in two museums; cultural heritage emergency response.	Sirwan Regional Project
Build 'n' Burn	Eneco UK, National Trust for Scotland, York Archaeological Trust	New forms of PE through fire festivals, replica monuments, experimental archaeology and co-designed educational activities.	Prehistoric monuments in Scotland (e.g. SERF); innovation in PE
Cultural Chemistry	Historic Environment Scotland	Designing and delivering teaching packages to Chemistry pupils; encouraging them to explore careers in Heritage Science.	Materials Science; Roman Scotland
Faifley Rocks	Being Human Festival, Society of Antiquaries of Scotland	Working with local stakeholders to deliver skills training, participation in heritage fieldwork, school resources and public art.	Project and field school on Cochno Stone and Faifley rock art sites
Gameful Design	Scottish Graduate School of the Arts & Humanities	Working with community heritage groups in Edinburgh to co-develop a prototype app for engaging visitors with Greyfriars Kirkyard.	Digital media and public engagement
Immersive Media	AHRC	Creating immersive media exhibitions (footfall of c. 85,000 people). Training materials for Museums Development Yorkshire and Museum Futures Training Programme.	Immersive media in museum exhibitions
Materialities of Dementia	Partnership with NHS Greater Glasgow & Clyde	Developing links with Alzheimer Scotland and the Dementia Research Network, investigating the role of artefacts in patient care.	Materialities of dementia
Pathways to Heritage	Marie Curie Independent Fellowship	Participative research on local heritage in Nikitari village, Cyprus, co-designed with the community.	Troodos Archaeological & Environmental Research Project; landscape heritage.
People and society	None	Course and resources developed with teachers for the Curriculum for Excellence, focusing on evidence-based activities and decision making.	Urban prehistory
Rediscovering the Antonine Wall	Heritage Lottery Fund	Designing and delivering community projects to enhance engagement with the Antonine Wall.	Roman Scotland; community heritage.

Project	Funder	Knowledge Exchange and Impact	Underpinning research
Teaching resources	Education Scotland	Two projects preparing teaching materials on prehistoric monuments and religion, and on the Vikings in Scotland	Prehistoric monuments in Scotland; Vikings in Scotland
Wildscapes	HLF	Recommendations on ecological resilience to Natural England and regional policy makers; substantial citizen science	Wetland environments

Table 3: Impact projects and underpinning research (not including our two Impact Case Studies).



Image 6: Collaboration between two of our impact projects: ‘Immersive Media’ designed the headset and VR technology; ‘Archaeological Practice and Heritage Protection in the Kurdistan Region of Iraq’ designed and produced the new museum space and held the engagement event.