

Institution: University of Reading
Unit of Assessment:15: Archaeology
<p>1. Unit context and structure, research and impact strategy</p> <p>a) Overview and Context</p> <p>Reading has strengthened its long-standing reputation for world-leading research over the REF2021 cycle by retaining and nurturing an outstanding cohort of research leaders, transforming its internal research structures and investing in new strategic appointments. We have significantly expanded and diversified grant capture, enhanced our global profile, and effected a step-change in the quality and range of impact activities. Through collaborative interdisciplinary scholarship and ambitious programmes of field- and lab-based archaeology, our research agenda addresses fundamental questions of human existence and current global challenges.</p> <p>The University of Reading supports Archaeology's distinctive identity as a bridge between the Humanities and the Sciences. The Unit is situated within the School of Archaeology, Geography and Environmental Science (SAGES), playing an active role in the University's Heritage & Creativity (H&C) Research Theme, comprising nine Arts & Humanities subjects led by Gilchrist (Archaeology) as Research Dean. Archaeology also interacts with two other interdisciplinary Research Themes: Environment; and Agriculture, Food & Health. Research strategy and governance within the Unit is managed through a Research Committee, chaired by the Research Division Leader (RDL), and comprising the Head of Department, the Chairs of Research Clusters and the Director of Postgraduate Research (PGR). Strategic direction is monitored through annual Operational Plans, prepared in consultation with the H&C Research Dean with oversight from the University Committee for Research and Innovation.</p> <p>b) Research and Impact Strategy</p> <p>Strategy over the current assessment period has been guided by three objectives articulated in our REF2014 statement: i) to sustain large-scale, interdisciplinary investigation of issues of the human past that speak to contemporary social and environmental concerns; ii) to support innovative research within and beyond our research themes; and iii) to develop impact and outreach for all research. We have performed strongly in all three areas of activity, measured by: i) a significant increase in grant capture from a diversified range of sources (Section 3); ii) an increase in the range and scale of collaborations, unlocked through major funded research projects and noteworthy success with international mobility/network initiatives (Section 1b and 3); and iii) a step-change in the scope and depth of impact and public engagement (Section 1c and Section 4).</p> <p>Archaeology has pursued a dynamic and reflective period of development over this REF period fulfilling our stated ambition to 'integrate social and scientific approaches to globally significant research issues' (REF 2014). Through an inclusive and bottom-up process of group discussion, we have reconfigured our research into three new Research Clusters (RCs) that harness our strengths and distinctiveness within the discipline: Landscape, Climate and Lived Environment (LCLE); Diet, Health and Life Course (DHLC); and Objects, Materials and People (OMP). RCs link to discrete areas of research activity and include nested sub-themes that are outward-looking and strongly interdisciplinary. Membership of RCs is open, self-selecting and spans core staff, ECRs, PGRs and PGTs, generating an inclusive research culture.</p> <p><u>Landscape, Climate & Lived Environment</u></p> <p><i>Human-environment interactions:</i> We have evolved this theme by investing in Latin America as a new geographic focus underpinned by sustained grant capture and multi-institutional international partnerships. The transfer of Mayle from Environmental Science to the Archaeology Research Division consolidates his research on human-climate-environment relationships in tropical ecosystems (Landscapes of Southern Brazil (LSB)/Human Environment Relationships in pre-Columbian Amazonia (HERCA) projects) with Branch's research providing deep-time perspectives on climate resilience and food production in the Peruvian Andes (AHRC; GCRF). This has been accompanied by an increased emphasis on palaeoclimate techniques and perspectives across LCLE. We have enhanced and applied scientific methodologies (Fleitmann) and investigated with new levels of subtlety how prehistoric populations adapted to abrupt climate events in the British Isles (Mithen, Branch), and southwest Asia (Fleitmann, R Matthews and W</p>

Matthews). We chart **human-climate-environment interactions** over continental and transnational scales, exemplified by Pluskowski's research on the ecological dynamics of conquest and colonisation in medieval Europe (ERC Baltic Crusades Project (BCP); AHRC ['Landscapes of \(Re-\) Conquest Project \(LRCP\)](#) and Hosfield's research on patterns of hominin dispersal (AHRC Network).

Neolithisation; transformations in human society: This focus has been strengthened and consolidated by sustained programmes of field research, analysis and publication at Wadi Faynan 16, Jordan (Mithen), and four Epipalaeolithic-Neolithic sites in the Iraq/Iran border region investigated within the Central Zagros Archaeological Project (CZAP, R and W Matthews, AHRC, [ERC AdG 'Middle East Neolithic Transition Integrated Community Approaches - MENTICA'](#)). These projects provide exceptional geographical coverage for the cradle of Neolithic civilisation and highly complementary results for understanding the **human-animal-plant interactions** involved in the emergence of the earliest sedentary communities. Our research on the Mesolithic-Neolithic transition of Britain has been similarly impactful by unlocking new sources of archaeological data from neglected and liminal landscapes. This includes key work on the Atlantic islands of western Britain (Garrow AHRC ['Stepping Stones'](#)), Islay and Mull (Mithen) which bring **maritime connectivity to the fore of the research agenda**, aligning with Bell's investigations of Neolithic landscapes between Avebury and Stonehenge (AHRC ['Vale of Pewsey Project'](#)) and Garrow's pioneering study of crannogs in Neolithic Scotland (AHRC ['Neolithic Crannogs Project'](#)).

Landscapes and built environments of human engagement: This sub-theme is distinguished by innovations in data recovery, interpretation and synthesis. **One of the most ambitious 'grey literature' projects undertaken in British archaeology**, Fulford's [Rural Settlement of Roman Britain](#) (RSRB, Leverhulme) has redefined understanding of regional diversity in Roman rural lifeways, agriculture and economy, complementing ongoing research at Silchester as a unique case study for the Iron Age-Roman urban transition (Creighton, Fulford). Working at the interface of scientific and social approaches, W. Matthews' (CZAP, MENTICA) micromorphological analysis of Neolithic building sequences from the Fertile Crescent elucidates **community structures, resilience and sustainability** within the earliest sedentary societies. Reading's strong cohort of medieval archaeologists enhances this sub-theme through complementary investigation of **landscapes of religious transformation**. Thomas's major AHRC-funded excavations at [Lyminge](#) and Gilchrist's re-evaluation of [Glastonbury Abbey](#) unlock rich diachronic datasets to reconstruct changing trajectories of cult and belief, while Pluskowski's comparative study of medieval castle landscapes (EBC and LRC projects) illuminates religious hybridity and resilience at multi-cultural frontiers.

Diet, Health and Life Course

The lived experience of ageing: Our research has prioritised **adolescence** as an understudied dimension of life course studies. Building upon her expertise in child palaeopathology, Lewis has pioneered **new osteological techniques** for assessing pubertal development in skeletal remains, applying them within an interdisciplinary framework to transform understanding of the experiences of youth in the past. This is complemented by a focus on early infancy, including Hosfield's research on infant dependency and parenting in early hominin communities and the groundbreaking osteological study of foetal and perinatal individuals by British Academy Fellow Hodson, who joined us after the census date.

Mobility and migration: In bridging our three RCs, this sub-theme acts as a key focus for interdisciplinary collaboration. Bell has articulated a new agenda in the study of prehistoric mobility through application of novel scientific methods for recording and dating routeways situated within a cross-cultural comparative framework centred on the human experience of [movement](#). Müldner applies state-of-the-art isotope chemistry to draw together insights on diet, mobility and **cultural identity** in relation to interdisciplinary research on migrant communities in Roman Britain and the dynamics of food supply networks (AHRC 'Exeter: A Place in Time' and HERCA projects).

Practices of death and burial: A long-standing reputational strength, Reading continues to make a distinctive contribution to this domain. Harnessing large multi-scalar datasets, Garrow ([AHRC Grave Goods](#)) and Fulford (RLRB) have delivered a benchmark in understanding of **regional and chronological complexity in burial practices** in later Prehistoric and Roman Britain. By maximising high-resolution site-based datasets from Wadi Faynan 16, Jordan (Mithen), CZAP/MENTICA sites, Iraq-Iran (R. Matthews and W. Matthews), and East Anglian barrow

cemeteries (Garrow), we have also advanced understanding of the **agency of the dead** in structuring commemorative and communal strategies.

Objects, Materials and People

Cultural diversity and social identity: Integrating large-scale datasets and theoretically informed frameworks, Reading has advanced its leadership in artefactual approaches to the Roman world, driven by Eckardt's research on personal objects and identity in Roman Britain, and complemented by the artefactual characterisation of rural communities embedded in Fulford's RSRB Project. We have progressed the **material culture of literacy** into a key sub-theme, encompassing Eckardt's empire-wide investigation of the social contexts of Roman inkwells (British Academy Mid-Career Fellowship) and R. Matthews and Richardson's innovative pXRF analysis of Mesopotamian clay bureaucratic artefacts. The real-world relevance of our artefact research has been significantly enhanced by Cant's work on the role of objects and aesthetics in the **negotiation of indigenous identities** in Mexico.

Object lives and flows: Our capacity in this area has been transformed by Bray's innovative work on prehistoric and Roman metal and glass recycling which brings a new **materials science** dimension to our artefactual research. We have also opened up new horizons on the nuances of **depositional practice**, driven by Eckardt's '[Roman River Finds' Project](#) (Leverhulme) and fine-grained interpretations of object biography provided by Garrow's 'Grave Goods' project.

A defining feature of the REF period that transcends the activities of RCs is our strong commitment to [Open Research](#), harmonising with Reading's vision to 'nourish a culture and practice of transparency and reproducibility in research'. Supported by the University's Open Access fund, we have been early adopters in the move to publishing major monographs on an OA model (Gilchrist: Glastonbury Abbey; Sacred Heritage; Mithen: 'Wadi Faynan 16'; R. and W. Matthews: CZAP). We have been proactive in exploiting ADS and other repositories to make research data openly available (Glastonbury Abbey Archive Project and Follow-on for Impact, Roman Inkwells, Stepping Stones to the Neolithic, Silchester Mapping Project; CZAP) and as a highly effective means of unlocking grey literature (RSRB Project). With some 43,867 downloads to date and over 250k page visits, the [archive](#) of the latter is consistently one of the top 5 accessed resources hosted by ADS. Additionally, several of our flagship research projects (Silchester, Glastonbury Abbey, Lyninge) use the Integrated Archaeological Data Base (IADB) as an open digital platform for managing excavation data.

c. Impact Strategy

Our impact is defined by **deep, sustained and meaningful relationships with stakeholders** in ways that profoundly change their practice. This depth of collaboration unites our case studies (Glastonbury and Iraq Heritage) with a rich portfolio of other impact work conducted across the Unit (Figure 2, Section 4). Much of our impact is situated within long-term schemes of research embedded within local communities and sustained partnerships with museums, commercial organisations and public institutions. For example, **enduring stakeholder relationships** underpin Bell's 29-year programme of research into the prehistory of the Severn Estuary, the results of which have revitalised the prehistory gallery of Newport Museum and the Newport Wetlands National Nature Reserve Interpretation Centre, coordinated through his engagement with the [HLF-funded Living Levels Project](#). We have developed **innovative ways to co-produce research and impact through fieldwork**. [Excavations at Dunyvaig](#) (Islay) operate within a wider research and public engagement initiative delivered through 'Islay Heritage', a charity set up by the island's residents and Mithen. Since the conclusion of the AHRC-funded excavations at Lyninge (2012-15), Thomas has worked in close partnership with local stakeholders to maximise impact. This has culminated in an HLF-funded project with the Parochial Church Council '[Pathways to the Past](#)' (2019-20) that has reinvigorated a key part of the village's early Christian heritage through the targeted re-excavation and redisplay of one of the earliest masonry churches in the UK. **Strong engagement with the UK commercial archaeology sector** forms a prominent strand of our impact work, both in relation to enhancing field techniques (Fulford RSRB project) and post-excavation analysis, including a [CiFA training workshop](#) led by Lewis that delivered the latest methods for age, sex and puberty assessment in child remains (2019).

Impact has been a major strategic priority for Archaeology in this REF cycle supported by an Impact Champion (Eckardt) who acts as principal point of liaison with the University's central

Impact team. We have been proactive in gaining **external funding to maximise impact** (Branch, 2018 GCRF 'Food production and climate resilience in Peru'; R. Matthews, 2018 DCMS Cultural Protection Fund 'Iraqi Museums SmartWater' project; AHRC Follow-on-Funding: Gilchrist, 2015 Glastonbury Abbey AHRC FLF; Mithen, 2018 WF16, 2020 Bedouin Women; Garrow, 2020 Boundary Objects). Impact is nurtured through dedicated support from the University's **Building Outstanding Impact Support Programme (BOISP)** which has disbursed £30k to Archaeology over the assessment period. Through a structured programme of workshops we have empowered staff at all career stages to develop impact agendas, including our ECR community, exemplified by ECR Banerjea's British Academy '[All Along the Watchtowers Project](#)' which mobilises environmental archaeology to enhance the heritage management of medieval castles.

d. Forward Strategy

Our forward strategy focuses on: i) sustaining the strength and vitality of our RCs to advance global research agendas; ii) enhancing our archaeological science capability by embedding materials science in key areas of activity; iii) expanding the intellectual breadth and contemporary relevance of our research by harnessing anthropological approaches; iv) strengthening our ECR community with a greater number and range of independent fellowships; v) diversifying sources of PGR funding; and vi) sustaining highly impactful research by nurturing long-term relationships with stakeholders, both new and established.

One of the key drivers for our 5-year strategy is the **University of Reading/British Museum institutional partnership**. This unique venture was established in 2018 to develop research collaborations in advance of the opening in 2023 of the British Museum's Archaeological Research Collection, based at the University of Reading's Thames Valley Science Park. A framework for collaborative research has been developed and facilitated by senior research leaders at both institutions (Gilchrist and JD Hill from the BM). Collaborative research opportunities are supported by a joint BM/Reading development fund and a 3-year Senior Research Fellowship in materials science (Bray), funded through a major award from Reading's Research Endowment Trust Fund and mentored by the BM's Director of Scientific Research, Carl Heron. Early successes include an AHRC-funded project to complement a major exhibition on Stonehenge (PI Wilkin, BM; Co-I Garrow, Reading). We will seek to maximise opportunities by: i) nurturing major collaborative funding proposals that link together expertise and infrastructure at both institutions and strengthen interactions between Archaeology and other disciplines at Reading; ii) placing innovative materials science at the heart of the partnership to enhance our archaeological science capability, by seeking ECR funding for Bray; iii) developing high quality CDA proposals to enhance PGR recruitment.

We have **rejuvenated research leadership** over the REF period with a team of energetic role models — Thomas as RDL, Eckardt as Impact Champion, Lewis as science lead and Garrow and Bray as enablers for the BM partnership — who will drive forward our ambitious research and impact strategy over the next 5 years.

Current major funded research projects (CZAP/MENTICA, HERCA, LRC, Neolithic Crannogs, Roman River Finds) will deliver a sustained flow of outputs and impact of outstanding quality over the next 2-3 years. We will also seek to catalyse new collaborative research and funding applications during this period harnessing the strengths and expertise of our RCs, supported by the University's research themes.

2. People

a. Staffing Strategy and Staff Development

Our unit is committed to sustaining a highly collegiate, supportive and inclusive environment for researchers at all levels, from students to professoriate, an ethos that has helped SAGES to secure a **Silver Athena SWAN Award in two successive assessments within the REF2021 period (2015 and 2019)**.

Staff developments and appointments: Staff retention over the REF period has been strong, demonstrating our success in recognising and nurturing talent via the SAGES Personal Titles Committee, which reviews all members of the School, irrespective of career stage, to encourage participation in the promotions process and to put appropriate mentorship in place. This is

exemplified by **Garrow's rapid promotion from Lecturer to Professor (2013-19)**, with a further two staff being promoted from Lecturer to Associate Professor (Müldner and Pluskowski), and four from Associate Professor to Professor (Branch, Eckardt, Lewis, and Mayle). The REF period has seen the full retirement of Bradley (2014) and Astill (2016), who continue to make active contributions to the research environment of the Unit as Emeritus Professors. Fulford and Bell have moved on to part-time contracts as part of our commitment to flexible working; Fleitmann (2019) and Leary (2018) have moved to other universities.

Our staffing strategy is driven by international research excellence and maximising the distinctive strengths of our research community. We have been proactive in responding to internal opportunities, securing the transfer of Mayle from Environmental Science to Archaeology (Research Division) as Chair in Tropical Palaeoecology (2017) to strengthen leadership in archaeological science. The appointment of ECRs Bray and Cant has significantly energised our OMP RC; together with four (female) independent research fellows (EU Marie Curie: Caval, Dempsey and Portillo; British Academy: Hodson), this has contributed to a more sustainable and balanced staff profile. ECR support funded centrally though the University has been vital in sustaining research activity of Archaeology staff in major leadership roles (Branch, Gilchrist and Mithen), while the continued expansion of independent fellows is a strategic priority for the future.

Support for research and personal development: We implement the University's annual Personal Research Planning (PRP) process to support the research aspirations of individual staff and to evolve bottom-up strategy. This operates in tandem with Performance Development Review (PDR), with a minimum allocation of 20% for staff to undertake research activities as a proportion of their overall workload. Additionally, Archaeology supports an internal **Study Leave Scheme** which aims to ensure that Category A staff have one term in nine, in addition to more ad hoc 'light' teaching and admin terms. We have been proactive in obtaining periods of externally-funded leave to progress substantive pieces of research, both stand-alone (Creighton: Leverhulme Major Fellowship; Eckardt: British Academy Mid-Career Fellowship) and embedded within major funded projects (R. Matthews ERC/MENTICA; Garrow AHRC Grave Goods), augmented by the University's Research 2020 Fellowship Scheme (Müldner, 2018). The **BM/Reading development fund** has made an important contribution, providing Garrow with a 3-month period of leave to co-author the catalogue for the forthcoming BM *World of Stonehenge* exhibition (2019: £10k) and catalysing collaborative research, including an international 'Palaeofire' workshop led by Hosfield and Ashton (2019: £2.4k). We support the research and research management skills of staff performing internal leadership roles by engaging fully in University initiatives such as the [Academic Leadership Programme](#) (2018: Thomas, RDL) and Resilience training (2016: Creighton, HoD).

At the heart of our research culture is a vibrant and diverse community of ECRs. Over the current REF cycle this has comprised 18 PDRAs linked to major funded projects (8 AHRC, 7 Leverhulme, 3 ERC) with a further 14 working on sustained programmes of research funded through charitable and other sources (e.g. Silchester Environs Project, Islay Field School). We provide equality of opportunity for ECRs by integrating them fully within Departmental, School and University mechanisms. All incoming staff receive formal induction and training in research protocols as part of the [SAGES mentoring programme](#), including familiarisation with the [Local Concordat for Research staff](#) to embed them in the University [Code of Good Practice](#). We have improved the process for mentoring ECRs by implementing a school-wide '[buddy system](#)' covering the first 6 months of employment and mentorship is now overseen by a single member of staff (Müldner) to ensure consistency of provision. Internal mentor and PRP meetings for ECRs (the latter compulsory for Grade 7 and opt-in for Grade 6) employ the [Vitae Researcher Development](#) framework as a tool for considering the wider dimensions of professional development.

Our commitment to nurturing ECRs is exemplified by the [Annual Integrated Microscopy Approaches in Archaeobotany Workshop](#) led by ECRs Banerjea, Barnett, Portillo, Cardenas, and Young with significant PGR input. Subsidised through SAGES and bringing together a global cohort of academic specialists and commercial archaeologists, two of the workshops (2016-17) have been published as special issues of *Environmental Archaeology* with more volumes in the pipeline. Similarly, the 24th Annual Theoretical Roman Archaeology Conference (Reading 2014) was led and brought to swift publication in 2015 by ECRs Brindle, Allen, Durham and Smith. Overall, some **46 peer-reviewed publications** were written collaboratively with ECRs over the REF period. Our success in accelerating the careers of ECRs is demonstrated by a host of **key**

appointments: prestigious posts at leading Universities (Bendrey, Edinburgh Lectureship; Lodwick, All Souls, Oxford; Dempsey, Government of Ireland Postdoctoral Fellow, Galway), and senior posts within heritage organisations (Brown: Senior Environmental Archaeologist at Wessex Archaeology; Smith: Head of Post-Excavation at Headland Archaeology; Green: Head of Post-Excavation at Context One). Seven of our former ECRs continue to make formal active contributions to our research culture as Visiting Fellows.

b. Support, Training and Supervision of PGR students

We foster intellectual curiosity and rigorous research skills from the earliest stages, actively investing in future generations of outstanding scholars. This is demonstrated by our proactive engagement with Reading's distinctive [Undergraduate Research Opportunity Programme](#), which has led to **18 funded placements** during the REF2021 period, contributing to a stream of talented young researchers who have subsequently embarked on higher degree programmes at Reading and other leading universities (e.g. Cambridge, Oxford) or careers in the heritage sector (e.g. Somerset Rural Life Museum).

PGR students are critical to the vitality and sustainability of our research environment. During the census period 50.9 **FPE PGR** students were awarded PhDs in the Unit, up from 38.4 in REF2014 and 28.5 in RAE2008, a clear upward trajectory despite relatively stable staffing numbers. The Unit currently hosts 36 PGR students. Of the PhDs awarded, seven were attached to major funded projects (CZAP, Silchester, Lyminge), 16 were funded by AHRC studentships, including three Collaborative Doctoral Awards, and nine were self-funded. **We have been extremely successful in winning scholarships through the AHRC South West and Wales Doctoral Training Programme, with 14 full awards in the current cohort** with leadership from W. Matthews as the University DTP co-ordinator 2015-18. Within this scheme and its successor, AHRC SWW DTP2, Reading Archaeology continues to develop shared research agendas across the Arts and Humanities, focused on collaborative PGR training with partners in nine other HEIs in the SWW region, and non-HEI partners including the British School at Rome, Cotswold Archaeology, Historic England and National Trust South West.

PGRs do not just contribute to our research culture, but actively shape it. They are fully integrated into the activities of our RCs and we have created the position of PGR representative on our Research Committee. PGRs set research agendas by leading reading groups (e.g. a series devoted to medieval social archaeology), and organising themed seminar series (e.g. Autumn 2017: Environmental Archaeologies) and international workshops (2018: Puberty Symposium led by DHLG PGRs McGovern and Valme which attracted 40 European participants from academic and commercial sectors; 2019 Society for Medieval Archaeology PGR Symposium led by Widell). PGRs make a vital contribution to funded research projects and have **co-authored 18 peer-reviewed publications** with our Cat A staff over the current REF period.

A Departmental Director of PGR Studies (R. Matthews) and a School Director of PGR Studies (Müldner, Mithen) oversee induction and research training in consultation with supervisors and panel chairs supported by Reading's highly acclaimed [Graduate School](#). New students are assigned a 'buddy' from the 2nd-year PGR cohort with whom they can consult informally. EU and International PGR students are assigned a [STaR International Mentor](#) to assist with adjusting to life at Reading, including support to enhance academic language skills and writing. We monitor PGR progress through an Advisory Panel comprising a Chair and supervisors, with meetings every six months, in addition to regular supervisions, in line with the University Code of Practice on Research Students. Supervisory conduct is steered by the [Good Practice Guide for Supervising PhDs](#) and the [Good Practice Guide for Monitoring and Assessing Progress of PGR Students](#). A confirmation of PhD status review is held in the second year (FT students), based on a substantial piece of written work and a formal presentation. We have a strong representation of part-time students for whom equivalent provisions are made, and additional support is provided for PGR students with families.

PGR professional development and core training is supplied through the [Reading Researcher Development Programme \(RRDP\)](#), to develop intellectual abilities, personal effectiveness, research governance, and engagement and impact. We enhance this compulsory provision by running an annual '**Life after a PhD**' Workshop and through proactive facilitation of **high-quality professional placements**, 11 of which have been secured for AHRC DTP students over the REF

period, leading to jobs with the PAS (Da Lima and Fittock), the DCMS (Weetch) and commercial units (Humphries).

c. Equality and Diversity

Archaeology at Reading fosters an inclusive and supportive research environment by championing the values of mutual respect, ethical integrity and equality represented in the University's Equal Opportunities policy, promoted locally through the **SAGES Wellbeing, Diversity and Equality Committee** and its '[Working Sagely](#)' policy. We were at the heart of the School's two successful Silver Athena SWAN (AS) Awards, providing sustained staff and ECR input (5 in each of the self-assessment teams) and as a source of best practice for diversity and inclusion. As Director of the Archaeology Field School, Clarke in collaboration with PGRs, has led an annual **Social Inclusion in Fieldwork** workshop which has recently tackled issues of gender, mental health, and disability as part of the wider SAGES '[Creating Confidence: Enabled Fieldwork Project](#)'. We have also been agile in realigning our practices on AS recommendations, for example by scheduling our seminar series at an earlier time to benefit those with caring responsibilities and on flexible working.

Colleagues in all job categories display significant resilience and collegiality. **100% responded that they felt their manager 'respected and valued them'** and that 'the leadership team manages and leads the department well' in the 2018 University Staff Survey. Gender balance for Category A staff within Archaeology (11/6 M/F) compares favourably with the rest of the School and there has been a significant increase in women amongst our professoriate, rising from 1 in 2014 to 3 in 2020, all of whom hold significant leadership roles (HoD, Science Lead, Research Dean). Lewis, W. Matthews and Müldner have benefitted from personal coaching delivered through the [Aurora and Springboard](#) initiatives and the promotion of Eckardt and Lewis to Chairs was enabled by sustained mentorship from Gilchrist. Women are well represented in our ECR community with a gender representation of 69%/31% F/M over the REF period. Two senior members of Archaeology are self-declared LBGT+, and with a broader number of LBGT+ Allies represented at Cat A, ECR and PGR levels, we are **fully engaged in the University's [LBGT+ Network](#) and related initiatives**.

We strive to achieve a **diverse and inclusive representation of speakers** in our termly research seminars; the nine speakers featured in our autumn 2019 programme sponsored by DHLC were all women in science spanning different levels of academic seniority. We are proud to host visiting researchers from Iraq, Iran, Turkey, Peru and China, including a female Leverhulme Visiting Professor, Guiyun Jin, Shandong (2018-19).

We are proactive in **advancing equality and diversity agendas within the wider discipline**. In her role as editor of *Britannia*, Eckardt has spearheaded a move to broaden the journal's profile informed by a review of the gender, professional status and nationality of past contributors. Gilchrist acts as a powerful advocate for gender equality in archaeology through keynote presentations ('Is gender still relevant?' conference sponsored by the British Academy in 2014) and through ECR mentorship, including working with Marie Curie Fellow Dempsey (2017-19) to **re-energise feminist critiques in medieval archaeology**.

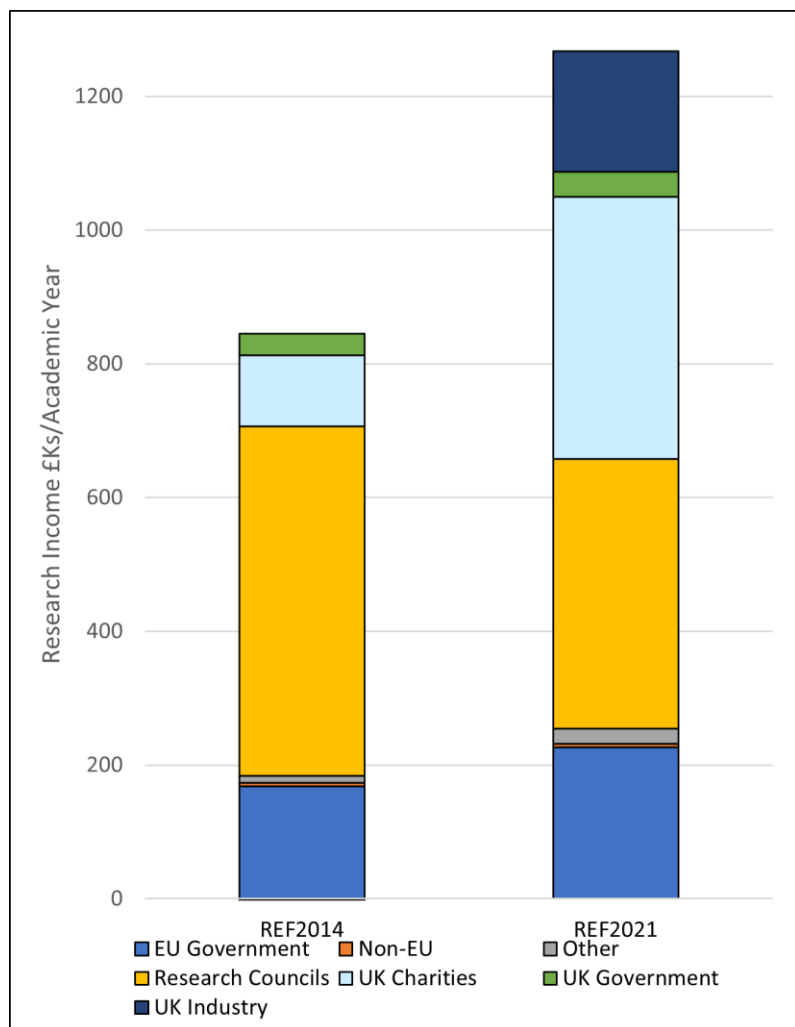
In accordance with the University's REF 2021 Code of Practice, all members of staff involved in the Archaeology submission (UoA Lead, RDL, HoD, Impact Champion) have completed the University D&I and unconscious bias training. Our output portfolio has been selected entirely based on quality, as determined by subject relevance, through a combination of self and peer review, underpinned by a centralised Outputs Support System (ROSS). All staff involved in peer review, either as anonymous reviewers and/or part of research committee processes, have had unconscious bias training delivered on a school-wide basis. The University's interim Equality Impact Assessment (2020) and bias analysis (2021) identified no statistically significant differences for protected characteristics in our selection.

3. Income, infrastructure and facilities

a. Income and Strategy

There has been a significant increase in the value of research awards won in REF 2021 compared to REF 2014, rising from £900K to £1.3M annually over the two periods. We have been able to

grow research income within an increasingly competitive environment by diversifying funding sources as a key strategic objective (Figure 1).



A growth in EU funding has been critical to this success, resulting in a 34% increase in annualised research income. This is headed by our first ERC Advanced Grant (MENTICA, €2.5m, R Matthews), accompanied by three Marie Curie Fellowships which demonstrate the attraction of Reading to emerging European researchers. We have been proactive in widening capture from UK Charities with £1.87m - a third of our income total (not including the Leverhulme Trust) - deriving from a mosaic of 12 organisations. These sources are vital for sustaining our flagship excavation projects (Silchester, Islay), providing continuity in staff support and infrastructure to drive forward analysis and publication. Other significant income over the REF period derives from the operation of our in-house environmental consultancy, **QUEST** (over £500k), and alignment of our research with Historic England and Historic Environment Scotland research agendas (£73k).

Figure 1. Comparison of annualised research income

Concurrently, we have sustained very strong performance with the AHRC and the Leverhulme Trust, particularly their Standard Grant Schemes. We have achieved six awards from the AHRC (Vale of Pewsey, Landscapes of Southern Brazil, HERCA, Grave Goods, People and Birds in the Southern Levant, and Landscapes of (Re)Conquest), a further two involving significant CI involvement from Reading staff (Exeter: A Place in Time, Neolithic Crannogs), accompanied by three major awards from the Leverhulme Trust (Round Mounds, RSRB, and Roman River Finds). Grant income from our core funders has also grown in diversity during the current REF period, with multiple successes in international mobility/network schemes (British Academy: Branch, R. Matthews and Mithen; AHRC Networking scheme: Hosfield and Thomas) and three prestigious Fellowships (Bell, Leverhulme Emeritus Fellowship; Creighton: Leverhulme Major Fellowship; Eckardt; BA Mid-Career Fellowship).

Our strategy is to maximise external income by enhancing support mechanisms for all staff. **Grant capture is well distributed within the Unit with 44% (7) Cat A staff holding grants of £250k+ and 69% (11) of £100k+.** We have implemented more rigorous internal peer-review procedures over the REF period, enabled through the tighter structure of our RCs. Feedback on applications is now routinely provided at proof-of-concept stage as part of research cluster presentations, followed by rigorous feedback on proposal drafts supplied by the RDL and at least one senior member of the relevant RC. We hold mock interviews for applicants shortlisted for ERC, the Wellcome Trust and other schemes, with input from senior academics in other Units, and have also benefited from the launch in 2018 of an institutional Grant Development College for the H&C Theme. Smaller sums of seedcorn funding channelled through the SAGES Research

Fund and the H&C Theme have played an important role in the development of proof-of-concept work underpinning successful applications (e.g. HERCA, MENTICA), while also providing opportunities for ECRs to partake in our grant-winning culture. **The exploitation of collaborative research facilities** has been a significant feature of the current REF period. The value of stand-alone applications to NERC Facilities (Radiocarbon and Isotope Geosciences Laboratory (NIGL)) and Diamond Light Source is well in excess of £250k, with further significant collaboration embedded within funded research projects (Exeter: A Place in Time).

b. Infrastructure and Facilities

Our archaeological research is underpinned by [dedicated research laboratories](#), comprising 23 preparation and analytical laboratories, overseen by academics and supported by 10.5 FTE Technical staff. Additionally, we utilise a wide range of analytical equipment in the School and the nearby Chemical Analysis Facility that provides free facilities for proof-of-concept projects (CAF: www.reading.ac.uk/caf/). Since 2014, we have invested £478,842 in new equipment, and upgraded our laboratories (bioarchaeology, microscopy, radiography, material science) to advance archaeological research. Our unique partnership with the British Museum gives us access to their world-leading facilities in archaeological science.

Our **Geochemistry and Isotope** suite (lead: Müldner) includes instruments to analyse carbon and nitrogen in solid samples (a Sercon Elemental Analyser coupled to Europa 20-20 IRMS), carbonate carbon-oxygen analysis (ThermoFisher Scientific Delta Conflo IV with GasBench II), and hydrogen and oxygen in water (Picarro L2120-I Isotopic Water Analyser -WS-CRDS). Our mass spectrometry facilities have been significantly enhanced through continued investment from SAGES and the University. Two key acquisitions since the previous assessment period are maintained as part of a shared platform in CAF: a Thermo-Fisher GC-C- Delta V Plus IRMS (£91k, 2014) for the analysis of compound specific isotopes; and a Thermo-Fisher Delta V Advantage Isotope Ratio Mass Spectrometer with capabilities for multi-isotope (CNSOH) analysis of solid, liquid and trace gas samples (£249k, 2018). Combined with the third Delta V Advantage, which is coupled to a Gas Bench II for CO isotope analysis of carbonates, the IRMS suite in CAF is a world-class facility. These facilities supported four major research projects: AHRC Exeter: A Place in Time; AHRC LRC; AHRC CZAP; and ERC MENTICA, in addition to providing pilot data for projects in development (Pluskowski, EBC; Lewis, AHRC).

Our **Tropical Palaeoecology** laboratory (lead: Mayle) houses one of the most extensive South American pollen reference collections in the world – with over 2000 species from rainforest, dry forest, and savannah ecosystems. Here we are developing a South American phytolith reference slide collection, which currently has ca. 100 specimens. This is a vital resource for tropical palaeoecological research projects – by UG/PGR students, PDRAs, and academic staff – and is available to visiting academics in the UK and overseas (e.g. Brazil). Two major projects funded through AHRC-FAPESP: ‘LSB’ (Mayle) and HERCA (Mayle, Müldner) are supported by this laboratory.

In our **Sedimentology and Micromorphology** suite (lead: W. Matthews) we undertake in-depth high-resolution soil micromorphology, particle size analysis, peat humification and organic matter determinations. We have an extensive range of microscopes, including an ESEM with EDX and WDS spectrometers, infrared and Raman microscopy and spectroscopy, photomicrography, and image analysis (using Leica photomicrography and image analysis software). We have a dedicated laboratory to drill calcite materials (stalagmites, mollusca, shells, teeth) and developed a preparation line and workflow (£10k) for extraction of stalagmite fluid inclusion water using a Picarro CRDS. Recent purchases include two precisions slicers: a Buehler Abrasimet 250 and Isomet 4000 (£14k) and cutting and abrasive saws (£34k). These facilities support research outputs and three major research projects: ERC MENTICA (R and W Matthews), AHRC LRC (Pluskowski) and British Academy ‘All Around the Watchtowers’ (Banerjea). Our facilities are complemented by dedicated **archaeobotany and palaeoecology** laboratories for the extraction and microscopic analysis of fossils from archaeological features (pits, ditches, hearths) and landscapes (bogs, lakes, caves), providing key information on past economy and diet, land-use histories, climate and environmental change. These capabilities support diverse research projects within LCLE RC. The advanced imaging facilities in CAF have also been integral to Bell’s analysis of molluscs on the ‘Cemeteries and Sedentism’ project (Leverhulme Trust), foraminifera research in the Severn Estuary, and our ECR-led ‘Integrated Microscopy in Archaeobotany’ initiative.

A recent initiative is the development of a **Materials Analysis** facility (lead: Bray) housing new MP-AES and ICP-OES machines (£113k) and two new PXRFS (£80k). These facilities will support 'big data' humanities projects focussed on the life history of material culture (Bray FLF). Access to our world-class analytic facilities strengthens collaborations with the BM and the heritage sector allowing us to untap the potential of local and international archives.

[Quaternary Scientific \(QUEST\)](#), established in 2008, is a self-financing enterprise comprising 5 full-time staff, and a large network of specialists. Quest offers expert scientific services to developer-funded archaeological research projects on behalf of professional units, consultancies, charities and government organisations. It also underpins internal projects: Dunyvaig, Silchester, Lyminge, Vale of Pewsey, Roman River Finds, and the Somerset Levels and Kennet Valley. In addition to generating research income, QUEST produces research outputs and curatorial-related guidelines (e.g., ['Curating the Palaeolithic'](#), ['Deposit Modelling & Archaeology'](#)). Finally, curatorial staff at the [Museum of English Rural Life](#) provide professional input to a wide range of our research projects and impact activities.

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

a. Academic Collaborations

Already well-developed in 2014, our global profile and contribution to international research agendas has grown significantly over the assessment period, exemplified by **three British Academy International Partnerships**. Research on Neolithisation in south-west Asia remains a strong focus of international engagement: R. Matthews' British Academy International Partnership grant 'Climate, environment and past societies of Iran', works in collaboration with Tehran University, while his Erasmus+ award (€65k) for staff and PGR mobilities enabled productive exchanges between Reading and Universities in Iran and Iraq. Mithen's AHRC 'People and Birds in Southern Levant' project collaborates with the American University of Madaba, Jordan, with Kiel as European partners. **Latin America** now acts as an important arena for international collaboration within the Unit, combining partnerships embedded in Mayle's LSB/HERCA projects (Utah State University, Bern, Bonn, the University of Sao Paolo, and the Federal University of Rondonia) and Branch's **Peruvian initiative** (University of San Marcos; Pontificia Universidad Católica del Perú, Universidad Nacional de San Cristóbal de Huamanga). Delivered through a consortium of eleven universities spread across four European countries (Estonia, Latvia, Lithuania, and Poland), and **praised as 'exemplary' by the ERC evaluation committee**, Pluskowski's ERC EBC project provides a model for international interdisciplinary collaboration; this collaborative momentum is now being carried forward through his AHRC-funded 'LRC' project involving partnerships with the University of Granada and Sorbonne University. Support from a dedicated SAGES Internationalisation Fund has enabled us to harness internal expertise to respond to international research priorities, including a European network on the theme of **Medieval Religious Transformations** by Thomas, Pluskowski and Gilchrist, involving partnerships with Stockholm, Lund, Bologna, Granada, Tübingen, and Tartu, and [resulting in a collaborative publication](#).

Strong and sustained partnerships with other UK Universities underpin our funded research projects: Exeter: A Place in Time (Exeter); AHRC Grave Goods (Manchester); Neolithic Crannogs (Southampton); Glastonbury Follow-On (York). Our staff have also forged multi-institutional collaborations within the UK as a vehicle for advancing international research agendas, exemplified by Thomas's AHRC Networking grant on early medieval rulers' residences, conceived and delivered with colleagues in Aberdeen, Durham, Oxford, and UCL.

b. Contribution to the Research Base

Reading has **four Fellows of the British Academy** (Bell, Fulford, Gilchrist and Mithen), the largest concentration of in-post FBAs in any discipline in any university, reflecting our status as a centre of research excellence. Over the 2021 REF period, Gilchrist was elected **Honorary Fellow of Jesus College, Cambridge** (2018), Pluskowski was awarded an **honorary doctorate from the University of Tartu**, Estonia, three of our staff were voted **Current Archaeology's Archaeologist of the Year** (Fulford, 2015; Gilchrist, 2016; Eckardt, 2018) and Garrow and Lewis received prizes for best journal article in *Proceedings of the Prehistoric Society* (2014) and

Medieval Archaeology (2016). Our staff play key service roles within the academic sector, both in the UK and internationally: Gilchrist has served on 3 successive REF sub-panels and chairs the British Academy Projects Committee; Fulford served as Treasurer and Vice-President of the British Academy (2010-15), and President of the Roman Research Trust (2008-17); Pluskowski sits on MERC, Historical Archaeology in a European Framework. R. Matthews (2011-), Garrow (2012-); Hosfield (2014-17) and Thomas (2015-18) have served terms on the AHRC Peer Review College; our staff sit or have previously served terms on a total of 10 grant awarding committees (e.g. Leverhulme Research Leadership Competition; Leverhulme Prize; Wellcome Early Career Medical Humanities Panel; GCRF multi-academy network awards) and regularly undertake peer review, including for a total of 12 European research councils and funding schemes (e.g. Horizon 2020 and ERC Advanced Scheme, UNESCO and the European Science Foundation, Austria, Iceland, Poland, Sweden, Norway etc).

Reading staff have played leadership roles in a range of learned societies and subject associations; highlights include: Creighton, Director of the Society of Antiquaries of London and Chair of its Research Committee, (2014-16); Fulford, Vice-President of the Society for the Promotion of Roman Studies, (2014-18); Bell, President of Sussex Archaeological Society (2018); Bell and Thomas, Oxford Archaeology Research Committee.

Three Reading staff act as Editor/Deputy Editor for prestigious journals (*Britannia*, Eckardt; *Anatolian Studies*, R. Matthews; *Medieval Archaeology*, Pluskowski); a further three serve or have served terms as Associate Editors on four leading international journals (Müldner, *Environmental Archaeology*; Mayle, *The Holocene*; Lewis, *American Journal of Physical Anthropology* and the *International Journal of Palaeopathology*), while Thomas co-edits the *Society for Medieval Archaeology Monograph Series*. Many more staff serve on the editorial boards of journals and publication series.

Reading has hosted 6 international conferences and workshops over the census period, including the prestigious International Roman Archaeology Conference (2014, c. 400 delegates), a conference showcasing the latest research on Late Iron Age Oppida (2017, 125 delegates), and organised a further 11 in collaboration with other institutions, including two with the British Museum (2015, Landscapes in Mind: Settlement, Sociality and Cognition in Human Evolution; 2019, Objects and Death: On the trail of grave goods).

Our staff have delivered 40 prestigious lectures over the assessment period, half of them keynotes at high-profile international conferences; highlights include: **Gilchrist**: 2017 Rhind Lectures; 2018 McDonald Lecture, University of Cambridge; 2016 Sune Lindqvist Lecture, University of Uppsala; 2016 Stanford Distinguished Lecture in Heritage, Stanford; 2016 Boyle Lecture in Medieval Studies, Toronto; **Fulford**: 2016 Joan Pye Lecture, Roman Society; **Pluskowski**: 2014 Inaugural lecture for the Stanford Europe Center, Stanford University; **Lewis**: 2019 Lansdowne Lecture, University of Victoria, Canada.

c. Engaged Research: impact through working with stakeholders and end-users

Our research benefits wider society and end-users through two broad overlapping networks of engagement: i) museums and education; and ii) shaping heritage policy and enhancing the commercial practice of archaeology. **Much of this impact is built on long-term relationships with stakeholders, in some cases sustained over a decade or more** (Figure 2).

i) Museums and education. Exemplified by the Glastonbury impact case study, we nurture **deep, meaningful partnerships** with museums, investing in programmes of co-design and co-delivery that transform institutional culture and revitalise educational and visitor experiences. This includes **working alongside marginalised groups in politically challenging environments**. Mithen has transformed [Faynan Museum, Jordan](#), into a vibrant community hub offering education and training to local communities and boosting tourism away from the major site of Petra through a Heritage Walking Trail (AHRC Follow-On award, 2016; Newton-Khalidi fund, 2018). Supported by a prestigious **Newton Prize**, a new initiative (AHRC FoF, 2020) seeks to **empower Bedouin women**, who are usually excluded from the economic benefits of tourism, to develop a sustainable handicraft business, producing high quality and locally distinctive products for sale to tourists, inspired by the art from WF16. The redesign of the prehistoric gallery at [Sulaimaniyah Museum](#) (the only functioning museum in Iraqi Kurdistan), based on the research of R. and W. Matthews on the region's Neolithic, received funding from the US State Department in recognition of its

contribution to UN Sustainable Development Goals. Mayle's HERCA project promotes public awareness of **indigenous Bolivian communities'** roles in protecting the Amazon rainforest,



Figure 2. The breadth of our impact activities and partnerships

collaborating with three ethno-archaeological museums at rural, provincial, and national levels to transform static and poorly understood displays.

Museum engagement within the UK is exemplified by Garrow's AHRC 'Grave Goods' project which spearheaded the redisplay of key sections of the European prehistory galleries in the British Museum, as well as introducing an **innovative, multi-gallery 'Grave Goods trail'** co-designed with multiple curators. The results of the long-term Silchester Insula IX excavations led by Fulford have been channelled into multiple museum collaborations, including the recent '[Last supper in Pompeii](#)' exhibition at the Ashmolean, which used the site as a major case study to explore the absorption and adaptation of Roman ways of living in Britain (Visitor numbers in excess of 70,000).

Reading has been at the forefront of promoting cultural inclusion and diversity through its education work. Research by Eckardt, Lewis & Müldner features in the educational website 'RomansRevealed' (2013) and the History Key Stage 3 textbook 'Understanding History: Britain in the wider world' (2019) and a new (2016) GCSE History module. This module won the 'Research Champion' category in the 2017 Community Integration Awards and the Guardian University Award 2019 for Research Impact. '[The Ivory Bangle Lady](#)' is discussed in David Olusoga's (2020, 16-18) 'Black and British – a short essential history' and Eckardt contributed a video to a social enterprise aiming to transform the [curriculum](#) (2021). Eckardt also worked with the Roman Society Education Committee to improve research-led teaching on migration in museums, resulting in the development of new materials at the Museums of London, Cirencester and Reading. An innovative collaboration between Garrow and the **poet Michael Rosen** featured in a 'Prehistoric Burial' information pack for schools, including commissioned poems and videos on Rosen's [YouTube channel](#). Launched online in October 2019, these educational resources have already had 23,000 views, engaging children and teachers with the unfamiliar and challenging theme of death and grave goods. A book for children on Mesolithic life in the Severn Estuary by Bell and Foster was distributed to all primary schools in southern Wales.

ii) Contributions to heritage management coalesce around shaping heritage policy, enhancing commercial practice, and unlocking sources of 'Big' data. These three domains are brought together in Fulford's [RSRB](#) project, delivered in collaboration with the University of York, Cotswold Archaeology and multiple county-based HERs (Heritage Environment Records). The project adopted a reflective and user-driven approach, discussing preliminary results with heritage professionals and commercial practitioners at a series of regional seminars. The final results were made available through a database and web-based GIS interface hosted by the [Archaeology Data Service](#), as well as the publication of three major monographs. The RSRB project led to **changes in commercial practice**, e.g. the industry standard being changed through the publication online of high-quality PDFs with capacity for internal searching, as well as significant enhancements to HER facilities through digitisation (cf. Fulford & Holbrook 2018). The outputs of the project are now used **strategically to inform fieldwork and post-excavation strategies for major infrastructure projects**, e.g. HS2 for HS2 Ltd and Headland Archaeology's submission to Highways England for the A14 project.

Garrow's 'Grave Goods' project has collaborated with regional heritage managers across the UK to **enhance the quality of HER data** on later prehistoric burial sites. The FoF '[Boundary Object](#)' project (2020) will take this collaboration to the next level by creating a new 'finds hub' resource, ensuring increased digital connectivity and enhanced information flow between different areas of the heritage sector, especially HERs (sites) and museums (artefacts). **Collaboration with Historic England on period-based research priorities** has been a feature of the assessment period, taken forward in Hosfield's project on '[Curating the Palaeolithic](#)' and research by Bell on [Mesolithic landscapes in the Somerset Levels and the Middle Kennett Valley](#). We also actively shape UK Heritage Policy through prominent appointments with the National Trust (Gilchrist, Research Strategy Panel, 2018-21), and the Monuments Commission/Historic England (Fulford: Commissioner and Chair Advisory Committee, 2014-19).

Reading has also been at the forefront of applying **new technologies to heritage management**. Garrow's Neolithic Crannogs project (2020-2023), working in partnership with the Ordnance Survey and Historic Environment Scotland will produce a free smartphone App that enables users to visualise prehistoric sites across the Outer Hebrides in 'augmented reality'. An innovative collaboration with the [SmartWater Foundation](#) by R. Matthews uses nanotechnology to encode isotopic signatures on artefacts to combat the trafficking of antiquities in Iraq.

We are strongly committed to harnessing the real-world relevance of our research to make positive and enduring contributions, whether working with local communities to protect cultural heritage and promote sustainable development goals, or collaborating with heritage agencies, museums and schools to widen public access to archaeology in the promotion of inclusion and diversity. This ethos lies at the core of Reading Archaeology and will serve as a touchstone for shaping its future trajectory.