

**Institution:** University of Southampton

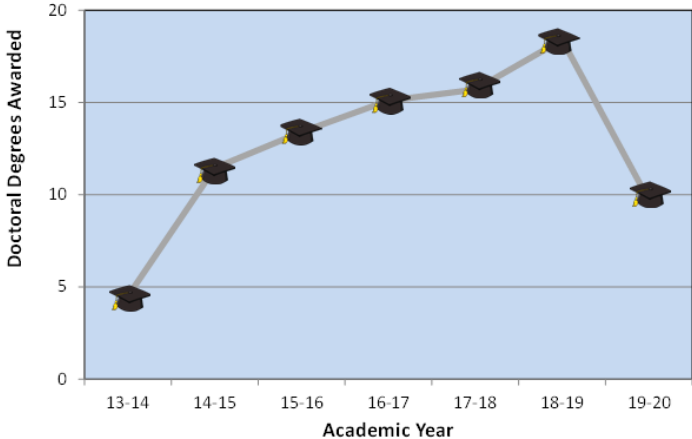
**Unit of Assessment:** 15 Archaeology

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

1.1 Overview

The Department of Archaeology has fulfilled the strategy outlined in the 2014 REF by delivering innovative world class research across a broad theoretical, methodological, and interpretative spectrum. It has incorporated and integrated scientific and cultural fields to produce sophisticated, interdisciplinary-based knowledge on the human past.

Our goal in REF2014 was to be an international leader in all our five research themes and our strategy was guided by eight principles. We have delivered on all of these and as a result seen a significant step-change in research activity (Table 1).

REF2014 PRINCIPLES	HIGHLIGHTS
<p>(1) <i>Establishing and leading major research projects on archaeological sites, materials and topics overseas and in Britain.</i></p>	<ul style="list-style-type: none"> <li>Major research excavations and surveys at Avebury, Old Sarum, Százhalombatta (Hungary), Portus (Italy)</li> <li>Eleven funded major research projects ranging from dating cave paintings to maritime exploration of the Black Sea (see §3.3)</li> </ul>
<p>(2) <i>Developing partnerships with national and international centres of research excellence.</i></p>	<ul style="list-style-type: none"> <li>Collaborations span 45 countries and include academic centres, museums, state cultural and heritage agencies (§4.1)</li> </ul>
<p>(3) <i>Supporting all academic staff to regularly submit grant applications to funding agencies</i></p>	<ul style="list-style-type: none"> <li>Staff made a total of 155 grant applications with a total value of £20.7M</li> <li>Successful applications total £14.4M with £9.1M attributed to the UoA</li> <li>Five-year annual average research expenditure increased by 25% (§3.3)</li> </ul>
<p>(4) <i>Sustaining our research by winning ECRs and PhD studentships through project funding.</i></p>	 <p><b>Figure 1 - Doctoral degrees awarded 2014-2020</b></p>

	<ul style="list-style-type: none"> <li>• Average annual PhD completions up 80% (§2.5 and Fig.1)</li> <li>• 22.4 PDRAs during REF cycle (§2.3)</li> </ul>
(5) <i>Fostering the next generation of research leaders through training and mentoring</i>	<ul style="list-style-type: none"> <li>• 25 PDRAs and PhD students successfully progressed to Lectureships and prestigious research positions (§2.2, §2.5)</li> </ul>
(6) <i>Directing our publications to key international journals and academic publishers</i>	<ul style="list-style-type: none"> <li>• More than 350 outputs including key papers in international journals such as Nature, Science, Antiquity, Quaternary Science Reviews, Journal of Archaeological Method and Theory, Journal of Archaeological Science and PLoS one, and more than 25 monographs.</li> </ul>
(7) <i>Diversifying our funding streams by fostering industrial collaboration and knowledge transfer</i>	<ul style="list-style-type: none"> <li>• 73% of research funding from non-UKRI sources (40% in REF2014)</li> <li>• Creation of Coastal and Offshore Archaeological Research Services (COARS) (§3.3)</li> <li>• CAHO consulting is leading Palaeolithic archaeological work on the new Lower Thames Crossing, Britain's biggest road scheme since the M25.</li> <li>• Participation in <i>Maritec-x</i> which aims to create a scientific and business Centre of Excellence in Marine and Maritime issues, based in Cyprus.</li> </ul>
(8) <i>Engaging with source communities and disseminating research through the media.</i>	<ul style="list-style-type: none"> <li>• More than 40,000 have participated in two online courses (MOOCs)</li> <li>• Humanities in the European Research Area (HERA) Knowledge Exchange and Impact Fellow (Sofaer, 2017-2021)</li> <li>• Participation in numerous national events and festivals</li> <li>• High profile TV and radio appearances</li> </ul>

**Table 1 - Our REF2014 principles and indicative measures of success**

## 1.2 Structure

Our research continues to fall within the five broad research themes identified in our REF 2014 submission:

**Human Evolution, Chronology, Dispersals and Lifeways** (Bynoe, Davies, Farr, McNabb, Pike, Sturt, Weinstock, Zakrzewski) takes as its remit the development of science-based knowledge of human origins, evolution and global dispersal in its environmental context; bio-diversity and bio-archaeology of past populations, and morpho-metrical and DNA analysis of ancient fauna. Approaches include science-based dating, stable and radiogenic isotopes, land and seascape modelling and osteology. The theme has been strengthened by the appointment of Bynoe as a lecturer in Archaeology with research strengths in submerged Pleistocene

landscapes. This theme works under the legacy *Centre for the Archaeology of Human Origins* (CAHO) which has been retained as an outward facing focus of research.

**Classical Empires** (Collar, Gascoigne, Keay, Soficaru, Zakrzewski) explores the development of Classical and early Medieval societies in the Mediterranean world and its periphery, with emphasis upon identity, commerce, connectivity and urbanism. Our interdisciplinary approach encompasses historical research, fieldwork, physical anthropology and computer-based techniques. Research within this theme was broadened with the appointment of a specialist in the archaeology of the Roman Eastern Mediterranean (Collar), and a Marie Skłodowska-Curie Fellow investigating migrant women in late Roman Scythia (Soficaru).

**Maritime Archaeology** (Adams, Blue, Bynoe, El Safadi, Farr, Fowler, Keay, Sturt) aims to transform our understanding of maritime and underwater cultural heritage on a global scale through innovation, research and capacity building. We ask critical questions of changing maritime landscapes, ports and ship technology, as well as addressing issues of methodology, value and ethics in a rapidly developing world. Research within this theme has been strengthened with the permanent position (2016) of Farr as a University strategic appointment via the Southampton Marine & Maritime Institute (SMMI), and the appointment of Fowler and El Safadi as Senior Research Fellows. This theme works under the legacy *Centre for Maritime Archaeology* (CMA) which has been retained as an outward facing focus of research.

**Prehistoric Landscapes, Monuments and Materialities** (Davies, Jones, McNabb, Pike, Pollard, Sofaer, Sturt, Wheatley) engages with understanding prehistoric materials, innovation, transmission and creativity in material culture; monumentality, landscape and settlement, and understanding the dynamics of human and non-human relations in the constitution of prehistoric social worlds. Methodologies range from large-scale excavations and surveys to the isotopic analysis of artefacts and human/faunal remains.

**Representation, Visualisation and Politics of Archaeology** (Fowler, Jones, Marshall, McNabb, Moser, Sofaer, Wheatley) focuses on past representational practices and reception within the discipline and wider publics, and the social context of archaeology. The departure of Earl, Hamilakis and Isaksen has resulted in a shifting of emphasis away from multimedia technologies in cultural heritage and the politics of archaeology. Focus is now directed upon archaeological representation: in particular, visualisation and heritage, reception, and community archaeology.

### 1.3 Future Research Strategy

Over the next five years, we will continue to work within our five themes, further developing synergies with other Faculties across the University, as well as partners in the UK and internationally. Our goals are to 1) maintain and develop our reputation as a major international leader for archaeological research across the broad chronological, geographical and disciplinary base of our research themes, and 2) ensure that our research continues to have a major social and economic impact beyond academia. The strength and sustainability of our themes is key to meeting these goals. The recent appointments of Bynoe, Collar, Farr, Fowler, El Safadi and Soficaru ensure the solidity of our themes and the delivery of the highest quality research and outputs.

We have been awarded £2.75M in the past 2 years which will see projects funded until 2023 and our priorities from 2021 will be to complete and publish our major research and field projects, notably *Living with Monuments*, *MarEAMENA*, *Islands of Stone*, *Black Sea MAP* and major excavations at Avebury and Százhalombatta (§3.3). However, we recognize the need to plan for

a research landscape that is increasingly competitive, so we aim to deliver our research goals by leveraging our existing research strengths and assets. We will:

- Continue to diversify funding streams by leveraging our existing extensive international research and industrial networks (§4.1).
- Ensure our research is informed by the latest cutting-edge science by exploiting recent University investment in state-of-the-art facilities (§3.2), and use their capabilities to develop new avenues of research.
- Interface with the newly launched Southampton Institute for Arts and Humanities, SIAH (RA5a §2.6), to further develop interdisciplinary research and as a vehicle for impact delivery.
- Ensure sustainability in research excellence through enhanced mentoring of our junior staff by experienced senior research leaders.

Our strategy will continue to be benchmarked by our REF2014 'principles' (§1.1). Going forward these will be augmented by three further principles that recognise the changing landscape of research, which at Southampton will be met with changes to our working practices:

#### Principle 9 *Supporting interdisciplinary research*

Multi-disciplinary engagement has been key to the success of much of our research and has involved collaboration with colleagues in the fields of marine science, earth science, art practice, geography, genetics, engineering, computing, and biological and social anthropology. We will take a strategic role in developing interdisciplinarity through Sofaer's co-directorship of SIAH, Pike's membership of the University's Interdisciplinary Research Working Group and Sturt's co-directorship of the SMMI which has as its goal the harnessing of the multi-disciplinary skills of the University and our partners. We will further strengthen our interdisciplinary footprint through engagement with the University's Strategic Research Groups and Interdisciplinary Institutes (REF 5a, §2.6), notably SIAH, Sustainability Science, The Institute for Life Sciences, Computational Modelling and the SMMI, and various University Facilities that allow the interdisciplinary study of artefacts, people and landscapes of the past (§2.6 and REF5a §4.2).

#### Principle 10 *Progressing towards an open research environment*

We are committed to ensuring that the results of our research are openly accessible wherever possible, and we work within the University's Open Access Policy: <https://tinyurl.com/r5j6wkh>. (REF 5a §2.4). University-wide resources such as its online repository, *ePrints*, and its research management system *Pure* provide a venue for online deposition and open dissemination of outputs and datasets. Where possible, staff are encouraged to make use of Open Access deals with publishers (e.g. Sidestone Press for Pollard's *Stonehenge for the Ancestors* monograph, and the McDonald Institute for Keay's *Isola Sacra* volume), and where necessary we use the Archaeology research budget to facilitate OA publishing. Staff are encouraged to use external open access repositories such as the Archaeology Data Service (ADS) and OASIS to make project archives available to the archaeological community (e.g. that of the AHRC-funded *Neolithic Stepping Stones* project). All content within our Future Learn *Shipwrecks and Submerged Worlds* MOOC, which drew heavily on primary research within the UoA, was openly available. We contribute to open research governance and development through Sly's membership of the management committee for the ADS.

**Principle 11 *Ensuring research integrity***

We are strongly committed to fulfilling the principles of the *Concordat for Research Integrity* (REF5a §2.8). To oversee this, we have a dedicated Research Ethics Officer. All research (from undergraduate dissertations to professorial grant applications) requires approval through the University's *ERGO II* ethics system. In the development of this, Archaeology personnel (Champion, Gascoigne) led the production of detailed guidelines on ethics in cultural heritage research (e.g., invasive work on artefacts and human remains, fieldwork, and the study of objects of uncertain provenance). Individual membership of such disciplinary bodies as the Chartered Institute for Archaeologists, Society of Antiquaries, British Association for Biological Anthropology and Osteoarchaeology further ensures that standards are maintained.

**1.4 Impact Strategy**

Engagement with a diverse range of non-academic partners has been core to our research mission, leading to the generation of substantive impact in policy, industry, pedagogy, and the development of public awareness of heritage and its value. Impact delivery is facilitated by the establishment of an Impact Champion within the Department who coordinates impact activity and ensures that impact strategies are built into personal research plans and research projects, and, where appropriate, impact is leveraged through internal University funding (e.g. from its Public Engagement with Research unit, *PERu*, REF5a §2.9).

We have identified capacity building and policy development to be important avenues of impact, prompted by recognised global failings in the protection and management of maritime cultural heritage (see Black Sea ICS). Impact has been generated in this way, through training and assessment of vulnerable underwater heritage through the Montenegro Maritime Archaeological Research Project (MMARP) and The Maritime Archaeological Survey of Oman (MASO), commissioned by the Ministry of Heritage and Culture in Oman. Similar training programmes will be built into research projects in other areas where maritime cultural heritage is vulnerable.

We also recognize that our research plays a role in developing tourist economies by raising public awareness of cultural heritage. Our projects will not only engage with the public but also with the institutions who can respond to the increasing public interest. For example, the Portus project has prompted the Italian Government to recognise the value of Portus as a key cultural heritage and tourism asset, making it an integral part of one of the largest archaeological parks in the world (see Portus ICS).

We take a lead in the development of structures for impact in Archaeology and the Humanities at a European level through the work of Sofaer as a Humanities in the European Research Area (HERA) Knowledge Exchange and Impact Fellow (2017-2021). Her recent appointment as co-director of the SIAH will see this institute become an important focus for impact delivery across the Faculty, capitalizing on her HERA experience.

**2. People****2.1 Our Staff**

The Department has 22 (19.28FTE) Category A staff. This represents a small reduction in FTE on REF2014 in which we returned 100% of eligible staff (22 total: 20.9FTE). Category A staff changes since December 2013 include the retirement of Gamble, three members taking up posts elsewhere (Hamilakis, Isaksen, Earl), the transfer of Revell to History at Southampton, and Mladenović returning to Switzerland. Blue has moved from 0.8 to 0.4FTE to focus on coordination of the Maritime Archaeology Stewardship Trust and the Directorship of the Honor

Frost Foundation. There have been 4.4FTE new appointments. Of the 22 staff, 18 (82%) are on permanent contracts which will ensure the long-term viability of the Department. The four on fixed contracts (3-5 years) are all independent researchers tied to funding streams on research grants with fixed end-points. The Department and Faculty have a track record of supporting Fellowship applications from independent researchers towards the end of their contracts (e.g. Future Leaders).

Essential to our research success has been the ongoing investment in non-REF-returnable staff. These include an Experimental Officer (Strutt), three Technicians (Barker, Copeland to March 2019, Phillips 0.4FTE to August 2018), a Teaching Fellow (Whitewright) and a Senior Teaching Fellow (Sly). The Teaching Fellows are key in supporting delivery of our curriculum, allowing the accommodation of staff research leave and ensuring staff maintain a 40% research workload. The experimental and technical staff support research in the laboratory and the field, and play a key role in enabling research when issues such as age, disability or pregnancy require additional support.

Increasing diversity is a key objective and we recognise this as essential for offering the diversity of perspective and creative pulse that underpins research excellence. The current self-identified ethnic make-up of REF-returned staff in Archaeology is 74% white, 4% BAME and 22% unknown. We recognize there is work to be done to achieve a representative diversity, and this cycle we have ensured that all staff have undertaken equality and diversity training, with staff involved in REF returns and staff appointments taking additional unconscious bias training. Our commitment to diversity is highlighted in job adverts, and we aim to ensure gender representation on recruitment and interview panels, REF review and selection committees, and to avoid same-sex shortlists. Our EDI officer sits on our executive body, the Archaeology Management Group, and ensures diversity is considered in all our decisions. We are proud to have now achieved a near equal balance between male and female Category A staff: 52% and 48% respectively, contrasting to 61% and 39% in 2014. However, we recognize it will be a number of years before this balance is propagated through to higher grades, and processes are in place to support female junior staff to achieve this (§2.2). In terms of age profile, of the 22 REF-eligible staff, two (9%) are 26-35, five (23%) 36-45, ten (45%) between 46-55, and five (23%) aged 56 and over, reflecting a dominance of early and mid-career researchers. The moderate imbalance of male to female staff in returned outputs (58% vs. 42%) is a result of several long-standing senior male staff approaching retirement with larger numbers of outputs versus ECR female staff with fewer. We are working towards parity by supporting junior staff to progress (§2.2).

## 2.2 Staff development, support and monitoring

We see the wellbeing of our staff as crucial in achieving research success. We support and promote the University's Dignity at Work and Study policy on campus and in the field, which, in addition to providing a code of conduct, provides routes, independent of the Department or Faculty, of complaint and reporting. The University holds a silver-level Athena Swan award, and the recently formed (2018) School of Humanities is currently working towards Athena Swan recognition. For female staff, the University offers access to Springboard, career guidance, peer mentoring programmes, and the staff network WiSET (Women in Science, Engineering and Technology). There are additional support networks for BAME, LGBT+ staff and parents and carers (REF5a §3.8). Support for families is provided through maternity and paternity leave (in this census period, to three staff) and local adjustment is made via our workload model to teaching and administrative loads for staff returning from such. Importantly, periods of maternity,

sickness or compassionate leave do not affect the frequency of research leave. Flexible working arrangements (REF5a §3.2) have been put in place for two staff. These have enabled remote working to accommodate childcare issues and to manage long-term illness. Recognising the gender bias in caring roles, we have recently introduced a flexible teaching scheme for those with parental or caring responsibilities. This allows a staff member to avoid teaching at particular times on particular days to accommodate these responsibilities. In addition, we avoid scheduling research seminars or key meetings in the early morning, late afternoon or evening.

Archaeology provides collegiality at a local level, one of the four principles underpinning the University's 'Simply Better' strategy (REF5a §1.2). We offer a supportive and friendly environment within which staff can build their research careers. All staff work with the Director of Research to develop personal research plans, including targeting research outputs to be developed for the REF, identifying and developing funding applications, and identifying pathways to impact. In addition, all new staff (including PDRAs) are assigned a senior colleague as a mentor who supports them through their probation process and serves more generally as a source of encouragement and guidance; a second mentor from outside the Department can be provided. Following probation, colleagues move to a system of annual appraisals. Both probation and appraisal meetings are constructive occasions, providing opportunities for feedback and support, setting research objectives and priorities, and identifying training needs and opportunities for career development and promotion. The appraisal process is also important in identifying training and development opportunities in more senior staff who attend workshops and courses covering areas including Leadership and Management, Research and Impact, and Learning and Teaching. Since 2014, ten members of staff have been promoted: three to Associate Professor (Farr, Gascoigne, Weinstock) and seven to Professor (Davies, Jones, Pike, Pollard, Sofaer, Sturt and Wheatley) which is testament to the effectiveness of our staff development.

We are fully committed to the Career Development of Researchers through fulfilment of the *Concordat*. The University implements this by means of the Centre for Higher Education Practice (CHEP), providing targeted support to ECRs, and offering training and networking events across the University (REF5a §3.5). Local measures provide dedicated support for ECRs, their integration into the research life of the Department, and their research development. ECR representation on our executive body ensures that ECR issues are at the forefront of decisions made. In recognition of their need for more rapid career development and training, they receive a lighter teaching and administrative workload: in Year 1 of their permanent post, 50% of a standard load, rising to 70% and 90% in Years 2 and 3 respectively. This reduction does not affect their entitlement to research leave (§2.4). Archaeology takes a key role in supporting ECRs within the Faculty, with Gascoigne as the Faculty ECR Champion. All ECRs are members of a Faculty-wide ECR network, which affords formal and informal opportunities to meet colleagues in other subject areas, identify prospects for collaboration and knowledge exchange, promote ECR research outputs and activities, and to seek and provide advice and support. ECRs receive dedicated annual funds from the Faculty toward conference attendance and other research activities. This does not preclude applying for funds from the Departmental research budget. Opportunities for dissemination of on-going research and new project concepts is afforded by participation in the now established annual Staff Research Symposium, which offers a friendly environment in which ECRs, including PDRAs, can discuss their research with peers and receive constructive group feedback.

An indicator of our success in career development are the recent PDRAs who have successfully progressed to Lectureships or research positions: Prior (University of Exeter), Salomon (CNRS, University of Strasbourg), Diaz-Guardamino Uribe (University of Durham), Standish (University of Southampton), Julien (Natural History Museum, Paris), Soto Cañamares (University of Lisbon), Shaw (Wessex Archaeology) and Ruiz-Redondo (University of Zaragoza).

### 2.3 Staff Recruitment

Our primary policy for staff appointments has been to enhance existing research strengths and build capacity to deliver our strategy. The focus over the review period has been on attracting junior colleagues with exceptional research potential to ensure the long-term sustainability of our themes. There have been three new appointments as Lecturer: Bynoe, Collar and Farr, the latter being a strategic University appointment to strengthen Maritime Archaeology research; also, 1.4 Senior Research Fellows, and a Marie Skłodowska-Curie Fellow were appointed as well as 22.4 PDRA/Research Fellows employed through project funding. The appointment of Bynoe strengthens our research into submerged landscapes, and feeds into our capacity building maritime heritage impact work. Farr further strengthens our expertise in submerged landscapes, early seafaring and ancient island colonization. With research interests in the Roman Eastern Mediterranean, Collar strengthens our Classical Empires theme and will ensure research leadership beyond the anticipated retirement of Keay within the next REF cycle. The Senior Research Fellows (El Safadi and Fowler) have been appointed to lead aspects of research on two major grant-funded projects, *MarEAMENA* and *ACROSS*.

### 2.4 Research leave

The provision of research leave plays a key role in staff development. In the current REF period, the Faculty operated an expected 1 after 6 semesters pattern of research leave for staff, and an expectation that individuals taking on senior management roles (e.g. Head of Department) will be afforded a full year's research leave following completion of their term of office. This is more generous than the standard University policy (REF5a §3.2). Leave has offered opportunities for staff to complete major outputs (e.g. Gascoigne's *Tinnis* volume, Jones's *Making a Mark* monograph, Keay's *Isola Sacra* volume) and develop major funding proposals (e.g. to the AHRC, British Academy, Leverhulme, HERA, UKRI Covid Response Fund). It is managed via applications to the Associate Dean Research, who grants the leave and reviews follow-up reports post-leave.

### 2.5 Research Students

Degree Type	Academic Year							
	*Completions for 19/20 academic year are likely to have been affected by the Covid pandemic.							
	13/14	14/15	15/16	16/17	17/18	18/19	19/20*	Total
PhD	4.50	11.45	13.40	15.10	15.70	18.40	9.70	88.25
Research-based professional doctorates	0	0	0	0	0	0	0	0

We have made 88.25 PhD awards within the review period, with a F:M gender split of 56:44%. The average completions per year (12.6) represents an increase of over 80% on REF2014. In recognition of the increasing importance of interdisciplinary research, the inter-institutional



requirement of DTPs, and to ensure resilience in our supervision, we have now moved to a collaborative doctoral supervision structure involving a supervisory team of two or three staff. We feel this has significantly contributed to the maintenance of our high PhD submission rate within 4 years (average 4.02 years), despite having increased our PGR numbers. PhD funding is available through our membership of the AHRC SWW DTP, through which we have secured 18 fully-funded doctoral scholarships (6 at Southampton, 12 co-supervised elsewhere). University sources have funded a further 17 studentships through Presidential Scholarships (12, including joint studentships with Engineering and with Ocean and Earth Sciences), the SMMI (4) and the Parkes Institute (1). External funding has been obtained from the Honor Frost Foundation (3 studentships), ERC projects (3) and the British School at Rome (1).

To foster the ownership of and engagement with research, we pair an ECR with one or two PGR students to run our research seminar series which invites 8 external speakers each term. These events are well attended by our PGR community, allow them to set the agenda, and provide a valuable networking opportunity while hearing about cutting-edge research. Postgraduate students organize an Annual Symposium (PGRAS) in which they present their research to staff and peers. As well as representing one of the first year PGR 'milestones', presenting at PGRAS fosters peer review, cross-fertilization of research, and generates a sense of community among the whole cohort and staff. Other postgraduate initiatives include the Maritime Archaeology Graduate Symposium (with Oxford, 2019) and the Model Boats workshop (with the British Museum, June 2016).

Training and career development needs are identified each semester by self-assessment and in consultation with the PGR's supervisors. Training can include completion of relevant Masters modules, targeted PGR training offered by the Faculty Postgraduate Research Training Programme, University programmes such as postgraduate teaching qualifications and bespoke one-on-one training offered by staff (e.g. analytical methods). Teaching experience is gained through the Faculty's 'PGRs who teach' scheme which provides a transparent and fair mechanism through which paid Teaching Assistantships are allocated.

The success of our PGRs career development strategy can be evidenced by how 11 of our postgraduates have been appointed to lectureships: Sibbesson and Williams (Canterbury), G. Beal, N. Beal (Glasgow), Rowe (Northern Kentucky University), Stark (UCL), Brughmans (Aarhus), Riris (Bournemouth), Chuang (National Cheng Kung University, Taiwan), and Bynoe and Pedrotti (Southampton). A further six have gone onto postdoctoral research: Elmer and El Safadi (Southampton), Mataix (Helsinki University), Cooper (Cambridge), Linscott (Oxford) and Romanowska (Barcelona). Other destinations for our PGRs include archaeology, heritage and academic-related posts in the ESRC, the Canadian Government's Indigenous and Northern Affairs, MMT, Wessex Marine, Kent County Council (Archaeology), Coastal and Intertidal Zone Archaeological Network and the New Forest National Park.

### **3. Income, infrastructure and facilities**

#### **3.1 Research funding strategies**

Staff are actively encouraged to seek external funding for research and are supported throughout the process. The School of Humanities provides a structure for internal review and the delivery of constructive feedback on grant proposals. At a Department level, support is offered by the Head of Research, Head of Department (HoD) and the Impact Champion, including mentoring of ECRs through the grant application process. Our workload model ring-fences 40% of staff time for research but is also adjusted to allow additional time for the

development of large grant applications. Grant proposals are also encouraged as outcomes of research leave. The HoD holds a research budget and allocates funds in line with strategic goals; funds ring-fenced for ECR staff are available through the Faculty's Strategic Research Fund, and there are University-wide competitions available such as the SMMI research stimulus fund. These support the development of research and impact through conference and workshop attendance, collaborative meetings and through pilots for larger projects. The Faculty has a policy of returning 5% of research grant overheads to successful applicants, which is often used to maintain research momentum between grants or develop pilots for future grants. The effectiveness of these strategies is evidenced by the high (59%) success rate in our funding applications.

Research activities in the Department are supported by a Senior Administrative Officer, who helps with the organisation and promotion of events, travel and accommodation for research visits, and staff recruitment, as well as a dedicated member of Finance, who assists in managing budgets for projects and other research activities. A Research Engagement Librarian advises staff and PGRs on open access, impact measurement, and data management. (REF5a §2.4).

### 3.2 Facilities

Archaeology is housed in the purpose-built Crawford Building. This houses seven laboratories accessible to all students and staff for the study of isotopes, lithics, osteology, ceramics, digital imaging, microscopy, sediment processing, organic artefacts and teaching. The osteology, ceramics and lithics laboratories contain major reference collections and sample preparation equipment. A Faculty-owned computing laboratory houses state-of-the-art data capture, analysis and visualisation hardware and software. All laboratories have wheelchair access either on the level, or via a lift. The Department has a wide range of equipment to support survey and excavation, including state-of-the-art geophysical and topographical survey instruments, diving and underwater recording equipment. We are exceptionally well endowed with analytical facilities through our access to shared University Facilities (REF5a §4.2). These include: the recently expanded geochemistry and laser ablation mass spectrometry laboratories used for U-Th dating, Sr isotope analysis, and provenance studies (Pike 2015, 2017 2018, Zakrzewski 2015); e-Infrastructure South and Iridis4 super-computing which has been essential in our research on applications of machine-learning for site detection above and below water (Sturt 2019); survey and sampling technologies in the National Oceanography Centre (NOCS) and Geography used for marine and lacustrine sampling; the  $\mu$ -VIS CT centre used routinely for the study of artefacts and producing biometric and morphometric models; and Ship Science and Engineering used for access to cutting-edge autonomous aerial and underwater robotics. Archaeology is a partner in the SECTOR Multidisciplinary Carbon Research Facility (hosted at NOCS), which enables the analysis of C, N, O and S, and was funded by £1.2M MULSER infrastructure bid to the University (REF5a §4.2), and the TOF-ICPMS facility funded by a NERC capital bid of £300k. Together these facilities have been instrumental for delivering our high-quality research and impact, attracting PhD students, post-doctoral researchers and new lecturers to Southampton.

### 3.3 Research Income

Over the census period, staff made a total of 155 funding applications with a value of £20.7M and were successful in 92 (59%). Successful applications total £14.4M with £9.1M attributed to Archaeology. Research expenditure over the census period has totalled £6.6 million (average £0.89 million p.a. over the last 5 years), a 25% increase on REF2014. Of this £1.75 million has

come from UK Research Councils, £2.19 million from EU governmental sources, and £0.85 million from UK charities. We have also been successful in attracting £0.81 million in income from industry and commerce sources. Significant awards and outputs resulting from funded projects include:

**Human Evolution, Chronology, Dispersals and Lifeways.** Major awards to Pike for *Dating the Origins and Development of Palaeolithic Cave Painting in Europe by U-series Disequilibrium* (NERC, £393k); to Gamble and McNabb for *Crossing the Threshold: the evolution of place and landscape* (AHRC £570k); to Gamble and Pike for *Seasonality, Mobility and Storage in Palaeolithic Hunting Societies* (Leverhulme £160k). Research highlights resulting from these and other grants include the demonstration of Neanderthal authorship of Iberian cave art through the application of U-series dating (Pike); work on key Pleistocene hominin sites and the origins of place-making in NW Europe, including La Cotte, Jersey (Gamble, McNabb); and mapping submerged deposits relating to the earliest hominin settlement of Britain at Happisburgh, Norfolk (Bynoe). Zakrzewski's work on palaeopathology has been key to tracking the early spread of leprosy in Europe. Analysis of mutilated Medieval bodies from Wharram Percy, Yorkshire (Pike), indicating methods of controlling the dead, was listed by Historic England as one of the top 10 English archaeological discoveries of the decade <https://tinyurl.com/tnk7tx2>. Significant outputs include *Thinking Big* (Gamble 2014: the acclaimed synthesis of the British Academy Centenary Project), *Crossing the Human Threshold* (McNabb, Gamble 2018), and papers in *Science* (Pike 2018), *Nature* (Pike 2017, 2020), *PloS One* (Pike 2017, 2018; Zakrzewski 2015, 2017), *Antiquity* (Bynoe, Sturt 2016; Weinstock 2017), *Cell* (Weinstock 2019), *Journal of Archaeological Science* (Weinstock 2017) and *Quaternary Science Reviews* (Davies 2015).

**Classical Empires.** Major award to Keay for the *Roman Mediterranean Ports* project (ERC Advanced Grant, €2.5M). Highlights include the bioarchaeological modelling of Egyptian skeletal remains (4000-1900 BC) to better understand social structures of state-level populations (Zakrzewski), and a ground-breaking study of the foodweb of the inhabitants of mid 5<sup>th</sup> c AD imperial harbour complex at Portus (Keay). Significant publications since 2013 include *Science in the study of ancient Egypt* (Zakrzewski 2016), *Roman Port Societies* (Keay 2020), the survey of the Isola Sacra near Portus (Keay 2020), *The island city of Tinnis* (Gascoigne 2020), and papers in *Antiquity* (Keay 2019) and *PlosOne* (Keay 2016). Impact highlights include the inclusion of Portus in one of the largest archaeological parks in the world, with recent investment of €32M for research, management, valorisation and outreach over the next five years (see Portus ICS).

**Maritime Archaeology.** Major awards to Farr for ACROSS, an interdisciplinary study of early human colonization of Australasia (ERC Consolidator, £1.1M); to Blue for her Maritime Endangered Archaeology project *MarEAMENA: the endangered coastal zone* (Arcadia, £1.2M of £2M total), to Adams and Farr for *The Black Sea MAP* project (EEF, £2.1M of £8M total). A major research highlight was the discovery of c.70 deep-water wrecks of the Classical to late Medieval period in the anaerobic environment of the Black Sea (Adams), as well as transforming our knowledge of the palaeo-hydrology, geomorphology and early settlement of this key region. Significant publications include *Neolithic Stepping Stones* (Sturt 2017); *Aboriginal Maritime Landscapes of South Australia* (Fowler 2019), articles in *Antiquity* (Sturt 2019), *Proceedings of the Prehistoric Society* (Sturt 2017) and *Journal of Archaeological Science* (Adams 2019, Safadi 2019). Impact highlights include the Black Sea STEM Scholarship programme where 26 students from challenging school environments were selected to join the project to engage with STEM subjects through maritime archaeological research (see Black Sea ICS). Recently

secured EU-funded grants extend impact in education through the Erasmus Plus educational maritime archaeological exchange grant, and education and capacity through an EduMUST Education and Capacity Building in Museum Studies grant (Sturt, Blue).

**Prehistoric Landscapes, Monuments and Materialities.** Major awards to Pollard for *Living with Monuments* (AHRC £880k); to Sturt for *Islands of Stone: Neolithic Crannogs in the Outer Hebrides* (AHRC, £952k) to Pike (as co-I) for *Protohistoric to Medieval pastoralism in the Western Alps* (AHRC £178k of £650k). Research highlights include Pollard's (2015) work on the identification of the quarry source of the Stonehenge Bluestones; the demonstration of the extent of Neolithic Crannog use in the Outer Hebrides (Sturt 2019) and Davies' large-scale reappraisal of Palaeolithic ceramic figurines (2015). Pike's application of laser ablation MS isotopic analysis has been instrumental in sourcing prehistoric gold (2015) and understanding landscape use by Neolithic pastoralists (2017). Sofaer's (2015, 2018) innovative and interdisciplinary research into 'making' has reshaped understanding of prehistoric creativity. Major outputs include *Clay in the Age of Bronze* (Sofaer 2015), *Creativity in the Bronze Age* (Sofaer 2018), *Considering Creativity* (Sofaer 2018), *Continental Connections* (Sturt 2015), papers in *Nature* (Pollard 2015), *Antiquity* (Pollard 2015, 2016, 2017, 2019; Sturt 2015, 2016, 2019; Wheatley 2017), *Proceedings of the Prehistoric Society* (Pike 2015, Pollard 2020), *PLoS ONE* (Pike 2017).

**Representation, Visualisation and Politics of Archaeology.** Major award to Jones for *Making a Mark: Imagery and Process in Neolithic Britain and Ireland* (Leverhulme, £98k). Research highlights include the first large-scale application of RTI imaging techniques to archaeological assemblages allowing the reassessment of Neolithic portable art (Jones 2019, *Making a Mark*), the publication of Moser's (2019) major work on the late 19th-century artistic reception of Ancient Egypt, *Painting Antiquity*, and McNabb's research on the impact of human origins research on the Victorian imagination (2015). Other significant outputs include *The Archaeology of Art* (Jones 2018), *The Lives of Prehistoric Monuments* (Wheatley 2015), and papers in *Cambridge Archaeological Journal* (Marshall 2014, Jones 2017) and *Antiquity* (Jones 2015). Impact highlights include the *Making a Mark* project which introduced professional artists and students from Central St. Martin's and Camberwell College of Arts to archaeological recording techniques (RTI, photogrammetry). The results of this collaboration were showcased in two exhibitions about connectivity and shared history in the United Kingdom.

A major new initiative to diversify our income streams has been the creation of Coastal and Offshore Archaeological Research Services (COARS) as a joint enterprise initiative between Archaeology and SOES. Since 2014 this has generated c. £440k of income from commercial and NGO sources, and has generated 10 publications. There has been a reduction of research-led enterprise activity in our Centre for Applied Archaeological Analyses (CAAA) and Archaeological Prospection Services at Southampton (APSS) due to staff retirements and changes (Morris, Hay). CAHO consulting, continues to be a leading provider of Palaeolithic archaeological services in the UK, and Wenban-Smith was recently appointed lead specialist on the Palaeolithic for the new Lower Thames Crossing, Britain's biggest road scheme since the M25.

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

##### 4.1 Collaborations and networks

Effective collaboration with colleagues and institutions elsewhere in the UK and overseas is pivotal to the development of our research projects, as a means of drawing in the best skills sets

and resources available for cutting-edge fieldwork and analysis, and the successful delivery of the projects and their impact. Our strategy has been to build long-standing collaborations that can be developed and enlarged through time. For example, our continued work at Portus (2014-2019) represents the continuation of a close and long-standing research collaboration with the British Academy-funded British School at Rome and one of the largest government-funded archaeological parks in Italy (Parco Archeologico di Ostia Antica). These relationships were central to the ERC-funded *Rome's Mediterranean Ports* project. In a similar way, we have built upon long-standing research links to develop continued collaborations with our fieldwork in Avebury and at Százhalombatta in Hungary. We continue to develop new collaborations, recently (2019) signing a Memorandum of Understanding with the State Archaeology Service of Saxony-Anhalt and Martin Luther University, Halle, for collaborative work on Neolithic monument complexes in the UK and Germany.

The success of our approach is evidenced by the extent of collaboration on our recent major funded projects (Table 2). Our collaborative networks are further revealed through analysis of co-authors on our outputs. According to SciVal, 46% of our publications since 2014 included an international collaborator. These spanned every inhabited continent, representing a network of 370 collaborating institutions (Figure 2).

PROJECT	FUNDER (value)	COLLABORATORS
<i>Dating the Origins and Development of Palaeolithic Cave Painting in Europe by U-series Disequilibrium</i>	NERC (£393k)	Universities of Durham, Barcelona, and the Basque Country (Spain), Centro Nacional de Investigación sobre la Evolución Humana, Burgos, Spain
<i>Crossing the Threshold: the evolution of place and landscape</i>	AHRC (£570k)	Institute of Archaeology, UCL, The British Museum, State of Jersey, Société Jersiaise, Jersey Heritage
<i>Seasonality, Mobility and Storage in Palaeolithic Hunting Societies</i>	Leverhulme (£160k)	Universities of Cambridge and Masaryk (Czechia) Archaeology Institute in Brno, Czechia, Russian Academy of Sciences, St Petersburg
<i>Roman Mediterranean Ports</i>	ERC Advanced Grant (€2.5M).	British School at Rome, Universities of Cambridge, Rome (La Sapienza and Tre: Italy), d'Aix-Marseille, Lyon (France), Seville and Cadiz (Spain), Ghent (Belgium), and Alabama (Birmingham: US), Ministry of Cultural Heritage and Activities, Italy, Parco Archeologico di Ostia Antica, Ecole Franciase de Rome, Institut Català d'Arqueologia Classica, Tarragong Spain
<i>ACROSS project, an interdisciplinary study of early human colonization of Australasia</i>	ERC Consolidator (£1.1M)	Universities of Oxford, Huddersfield, Minho (Portugal), La Trobe and Western Australia (Australia) Francis Crick Institute

<i>MarEAMENA: the endangered coastal zone</i>	Arcadia, (£2M)	Universities of Oxford and Ulster
<i>The Black Sea MAP project</i>	EEF (£8M)	Universities of Connecticut (US) and Södertörn (Sweden), Centre for Underwater Archaeology, Sozopol, Bulgaria, Bulgarian Academy of Sciences
<i>Living with Monuments</i>	AHRC (£880k)	Universities of Leicester, Bournemouth, Cambridge, and Ghent (Belgium), The National Trust, Allen Environmental Archaeology
<i>Islands of Stone: Neolithic Crannogs in the Outer Hebrides</i>	AHRC (£952k)	University of Reading, Historic Environment Scotland, Access Archaeology, Highland and Island Airports, Comhairle Nan Eilean Siar, Callanis - Urras Nan Tursachan, Ordnance Survey
<i>Protohistoric to Medieval pastoralism in the Western Alps</i>	AHRC (£650k)	Universities of York, Savoie Mont Blanc, and Aix-en-Provence (France), CNRS, France

**Table 2 - Major recent funded projects and their collaborators**



**Figure 2 - Collaborators by country on Southampton Archaeology publications since 2014** Source: Scopus SciVal. Note: Scopus only picks up c.50% of our publications so this map is likely representative of the reach, but not the intensity of our collaborations.

Recognising the value that lies in engagement with the wider heritage sector, including commercial and industrial domains, we have actively sought opportunities for collaboration with a range of organisations outside HE. During the census period this has included consultancy

work with AMEC, Dong Energy, EDF, Historic England, Rochford District Council, and the Beaulieu Estate. Research collaboration has been developed with non-HE partners, including HERA, Historic England, ProProgressione, the National Trust, the Woodbridge Riverside Trust, and USISK (Croatia). Staff expertise has been drawn upon in advisory roles for Highways England A303 Scientific Committee, and the HS2 Expert Advisory Panel. We are members of the Heritage Alliance, the principal UK heritage advocacy group.

#### 4.2 Contribution to sustainability of discipline

The Department has maintained its international leadership in the subject through membership of key committees, undertaking major editorial roles on journals and organising international conferences in our areas of specialisation.

- Editorial and publication advisory roles: Staff sit on the Editorial and Advisory Boards of over 20 national and international journals, among them: *Antiquity*, *Bioarchaeology International*, *International Journal of Heritage Management*, *Journal of Social Archaeology*, *Journal of Maritime Archaeology*, *International Journal of Nautical Archaeology*, and *Norwegian Archaeological Review*. Moser is a Trustee of the *Antiquity* Trust. Blue is editor of the *Journal of Maritime Archaeology*. Pollard is UK editor of the *Journal of Social Archaeology* and co-editor of the Manchester University Press *Social Archaeology and Material Worlds* series. Collar is a series editor for *Monumenta Graeca et Romana* (Brill), and *Ancient Environments* (Bloomsbury). Gascoigne is on the editorial board of *Studies in the Archaeology of the Islamic World* (Brepols).
- Conference and workshop organisation: Since early 2014, staff have had a key role in the organization of major conferences and workshops, hosted by Southampton and elsewhere, including:
  - Royal Archaeological Institute conference on maritime archaeology (2015)
  - *MORPH2015* (morphometric analysis in Archaeology)
  - *Assessing Digital Solutions in Cave and Rock Art Research* Workshop, Altamira (2015)
  - *Theoretical Archaeology Group* (TAG) meeting (2016)
  - Honor Frost Foundation international conference with the University of Cyprus (2017)
  - International meetings of the Paleopathology Association in Atlanta (2016) and New Orleans (2017)
  - The Prehistoric Society's Europa Conference: *The Bronze Age as Pre-Modern Globalisation* (2017)
  - HERA Early Career Researcher Event at the Slovakian Academy of Science (2018)
  - HERA JRP *Uses of the Past & Public Spaces*, Gdansk, Poland (2019)
  - CBA (Wessex) conference on recent work in the Palaeolithic (2018).
  - The Black Sea MAP event at the Wellcome Collection (2019)
  - Two conferences and three annual workshops at the British School at Rome as part of the *Rome's Mediterranean Ports* project (2014-2019).
  - PDRAs have also led the organization of conferences, including *Unravelling the Palaeolithic* (2016) and *Buildings and the Body* (2014).
- Knowledge transfer: Our knowledge transfer activities include participation (Sturt, Blue) in the H2020 project *Maritec-x* which aims to create a Centre of Excellence based in Cyprus to act as an enabler of scientific and business excellence in Marine and Maritime issues in the Eastern Mediterranean. In 2014 we ran the *Embedding Research in Knowledge Exchange*, World Universities Network Knowledge Exchange Workshop.

#### 4.3 Engaging with source communities and disseminating research through the media.

We maintain our strong track record in public engagement and dissemination. Highlights include annual participation in national initiatives including Science and Engineering Festival (REF5a §2.9), Anthropology Day, Archaeology Day, Festival of British Archaeology, coordination of the month-long 'Being Human: Religion and Me' festival (2015) as part of the BA and AHRC's National Festival of the Humanities, and participation in 2014 and 2016, and the 'Prehistoric Roadshow' at local primary schools. Staff have delivered numerous public-facing *Science Cafe* talks and local society lectures. Staff have made academic and advisory contributions to museum exhibits at the Stonehenge Visitors Centre, the Alexander Keiller Museum, Avebury, the C+C Gallery, London, Central St. Martins and at Altamira Cave, Spain.

Our commitment to engagement is witnessed by Archaeology's high success-rate in gaining support from the University's Public Engagement with Research Unit (PERu, REF5a §2.9), resulting in funding to develop the *Archaeology for the Creative Industries* portal to exploit our increasing collaborations with creative industries; the *Between the Barrows project* which provided a vehicle for local school and community group engagement; *Life at the Cutting Edge* which used citizen science to investigate user wear on stone tools; *Stories from Bones* which used 3D printed bones for public engagement; and *A Joint Effort* which worked with local runners to investigate kneecap morphology. Community involvement also lies at the heart of the *Old Sarum Landscapes Project*, with proactive involvement of local groups, schools and the Salisbury and South Wiltshire Museum.

Via FutureLearn, we ran our own very successful MOOCs, which showcased our research in an educational framework. More than 40,000 have participated in two online courses - *Portus* and *Shipwrecks and Submerged Worlds* - with over half of participants completing the course. The *Portus* MOOC was the first archaeology-based MOOC in the UK and learners came from 120 countries.

We participate in *Learn with US*, a multidisciplinary research-led programme preparing students (years 12-13) for University; *TEAtime lectures* (a series that connects pupils' national curriculum subjects to current university research) and *Ask the Expert* taster sessions.

Staff have made numerous appearances on radio and TV discussing projects and research discoveries, e.g. 'Antony Gormley: How Art Began' (2019); BBC South (2016); Channel 4, 'Digging for Britain' (2017, 2018); 'The Human Universe' (2015); Radio 4 'In Our Time' (2020), Discovery Channel (2015, 2018); BS (2019), Smithsonian Channel (2019, 2020) and Sky Arts (2020).

#### 4.4 Indicators of influence

- Awards:
  - Khaled al-Asaad award (The Black Sea Project, 2019)
  - Gold Star, first grade, from the Prime Minister of Bulgaria (Adams, 2017)
  - Duke of Cambridge Scuba Prize (Bynoe, 2019).
  - Philip Leverhulme Prize (Sturt 2016).
  - Royal Society Wolfson Research Merit Award (Pike, 2014).
  - Baguely Prize of the Prehistoric Society (Pike, 2014).



- Membership of organisations that shape the discipline's structure and trajectory:
  - Keay is a Fellow of the British Academy (FBA), a Corresponding Member of the Institut d'Estudis Catalans and the Real Academia de Bones Lletres (Barcelona), and Chair of Archaeology at the Faculty of Arts, History and Letters of the British School at Rome.
  - Gamble is an FBA, the President of the Prehistoric Society (from 2018), a former President of the Royal Anthropological Institute (2011-14), and a Trustee of the British Museum (2010-18).
  - Moser was a member of Council of the Society of Antiquaries of London (2013-2016).
  - Zakrzewski was Vice-President of the Paleopathology Association (2015-17).
  - Blue is Vice-President of the Nautical Archaeology Society (since 2011) and a Fellow of the Royal Geographical Society (since 2008).
  - Pollard was Secretary (2009-14) and a Vice-President (2014-15) of the Prehistoric Society, and is a member of the Research Committee for Oxford Archaeology, the Advisory Board of Cotswold Archaeology, the Project Panel for the Stonehenge & Avebury Archaeological Research Framework (2012-16), and Highways England A303 Scientific Committee
  - Pike served on the Project Executive for Historic England's *Pleistocene Dating Guidelines*;
  - Gascoigne is a Trustee of the Amarna Trust and serves on the Islamic Archaeology board of the ICAANE organising committee.
  - Sturt is a council member of the Severn Estuary and Levels Research Committee.
  - Farr is an Associate Investigator of CABAH, the Australian government's centre of excellence for Australian Biodiversity and Heritage
  - The Department coordinates the UNESCO UNITWIN Network for Underwater Archaeology (2018-present)
  - Among research-active staff, 10 are Fellows of the Society of Antiquaries, London.
- Membership of peer review bodies for research councils in the UK and overseas include: AHRC Peer Review College (2 staff), membership of the AHRC Strategic Peer Review College (Keay), International Scientific Advisory Board, Croatia (Sofaer), and the NERC Radiocarbon facility steering committee (Davies, Pike).
- External grant reviewers include those for the British Academy, CNRS, Leverhulme Trust, AHRC, NERC, the Wellcome Trust, the Cypriot Research Council, Marie Skłodowska-Curie Actions, the Norwegian Research Council, Polish National Science Centre, European Social Fund, the Dutch Research Council (NWO), Wenner Gren Foundation, University of Science and Technology (Missouri), the Royal Society (NZ), Austrian Research Council, Hungarian Research Council, Croatian Research Council, and National Geographic.