



ARCHAEOLOGY
DATA SERVICE

internet
archaeology



Annual Report

1st August 2019 -
31st July 2020

A pair of wooden bottles with elaborate decorative metal rim mounts placed
to the north of the coffin from the Prittlewell Princely Burial archive

© Museum of London Archaeology.



DIRECTOR'S FOREWORD

As was the case for all organisations across the globe, for ADS and *Internet Archaeology* the past year has been dominated by having to respond to the Covid-19 pandemic and to adapt to lockdown and home-working. We made the transition remarkably quickly and smoothly and within days all staff were conducting their normal duties from home, and the Monday 10:00am staff meeting has become a regular Zoom fixture. As I write, in mid August, a few staff have been able to return to our much-loved King's Manor offices, but for the majority home-working is likely to remain the norm well into 2020-21.

Our European projects were amongst the first to have to make rapid adjustments. The 2-day meeting of SEADDA working group 4 on Data Re-use, followed by a joint SEADDA/SSHOC/E-RIHS 1-day workshop on the re-use of heritage science data, were both to have been hosted by ADS in King's Manor from 31 March - 2 April. Instead they quickly made the transition to becoming successful online conferences, closely followed by the ARIADNEplus Steering Committee and General Assembly on 14-15 April, no longer able to take place in Oxford as part of CAA2020.

However, for ADS 2019-20 was also the year we were awarded the [CoreTrustSeal](#) (CTS), the "gold standard" for the accreditation of digital repositories. The

award makes us the 90th repository worldwide to receive the CTS, and the 5th in the UK. This is a massive achievement for a small digital repository, and represents the culmination of many hours, weeks and months of hard work by all ADS staff. The CTS gives depositors confidence that their data is being properly cared for and, looking to the future, as funders and professional organisations increasingly mandate deposit in an archive that holds CTS it will be tremendously important for the sustainability of ADS.

One of the signs of the increasing acceptance of the need to preserve primary digital data is our adoption by commercial archaeological contractors undertaking major transport infrastructure projects in the UK. In 2019-20 we completed our scoping study for the preservation of the digital heritage data derived from fieldwork prior to the construction of High Speed 2 (HS2), and now look forward to an ongoing relationship, with the first HS2 data being



OPEN TO EXPLORATION

archived in 2020-21. We are also working on archiving and publishing the outcomes of several major Highways Agency projects, including the A1 and A14 improvement schemes. Meanwhile *Internet Archaeology* was chosen by the authors of a paper on amazing new discoveries near Stonehenge as the place they wanted to release their findings to the world.

Finally, we are delighted that ADS has been included in proposals by AHRC for future infrastructure investment. The 2019 UKRI report on The UK’s Research and Innovation Infrastructure concludes that “The Archaeology Data Service (ADS) is a world-leading digital heritage data archive that has been leading the development of digital preservation since 1996” and we were featured as a case study in the UKRI report Opportunities to

grow our Capability on future funding priorities for the UK’s research infrastructure. As we look forward to 2020-21 we can have confidence that whatever external challenges are presented, we are well placed to meet them.

OUR VISION

Over the next five years ADS and Internet Archaeology aim to further enhance their position within the UK historic environment community, capitalise on their standing within the international archaeological and digital heritage communities, and leverage their reputations in different spheres to become the first port of call for Open Access data and publication in Archaeology. ADS will also further enhance its standing within the international digital preservation community by assuring its work is aligned to appropriate international digital preservation accreditation and data management standards, by proactively engaging with the preservation community, and advocating its work on guidelines and standards to a wider community to ensure the ADS remains at the forefront of data management and digital preservation.

ARCHIVE NOW. ACCESS FOREVER

STRATEGIC GOALS

- 1 To be the lead UK **preservation service** for historic environment data following relevant standards for trusted digital repositories.
- 2 To host the most important UK-level **collection** of high quality digital data sets created in the course of historic environment research in the UK.
- 3 To provide **open** and **easy** online access to primary data and digital **resources** created in the course of historic environment research.
- 4 To develop and encourage the adoption of new models of **electronic publication**, providing a holistic service, covering publication and archiving.
- 5 To be the primary UK-level historic environment data **aggregator** and to provide appropriate finding aids and **resource discovery** mechanisms.
- 6 To be the primary point of **advice** in the UK on the creation, dissemination, documentation, and preservation of historic environment data.
- 7 To develop and implement agreed **standards** to ensure appropriate documentation and preservation of historic environment data and resources.
- 8 To encourage and support the **re-use** of primary data and digital resources created in the course of historic environment research.
- 9 To take a lead international role in **research and development** into preservation, access and interoperability of historic environment data,.
- 10 To maintain effective **service management** and administration in pursuit of all the above aims, and to maintain financial sustainability.

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PRESERVATION SERVICES

1

To be the lead UK **preservation service** for historic environment data following relevant standards for trusted digital repositories.

Preservation Report

Throughout 2019-20 repository staff have worked to improve both the robustness and dependability of internal workflows. Continuing updates and migration of the ADS virtual machines, on which systems and data depend, have contributed to this work, while the continued enhancement of workflows associated with Amazon Web Services (AWS), used for the remote backup of datasets, have improved the efficient flow of data from ingest through to release. Such infrastructural developments have been instrumental in the successes associated with CoreTrustSeal and World Data System accreditation. Managing and updating the associated policy documents, which formalise these workflows, also played a key role in the external assessment process, whilst simultaneously allowing a reflective look at the processes and procedures. As ever, the annual curatorial week allowed ADS Digital Archivists time and resources to plan and review existing requirements and internal procedures.

Certification

The evaluation of our digital preservation infrastructures, workflows, procedures and practices continues to be central to the ADS position as a 'trusted repository'. Internal self-assessment of our preservation activities has been a consistent feature in the ADS calendar, almost since our inception. Whether via the [Digital Repository Audit Method Based on Risk Assessment](#) (DRAMBORA), [Trustworthy Repositories Audit and Certification](#) (TRAC), or latterly, the [Digital Preservation Coalition Rapid Assessment Model](#) (DPC RAM) we are continuously evaluating our work. While we promote 'good practice' amongst colleagues within the archaeological and heritage communities, we also 'practice what we preach' in terms of our engagement with the wider data management and preservation sectors. As if to illustrate its significance, 'alignment to appropriate international digital preservation accreditation and data management standards' features strongly in the ADS strategic vision. Consequently, we have always taken a keen interest in accreditation as a means to reassure depositors that we are



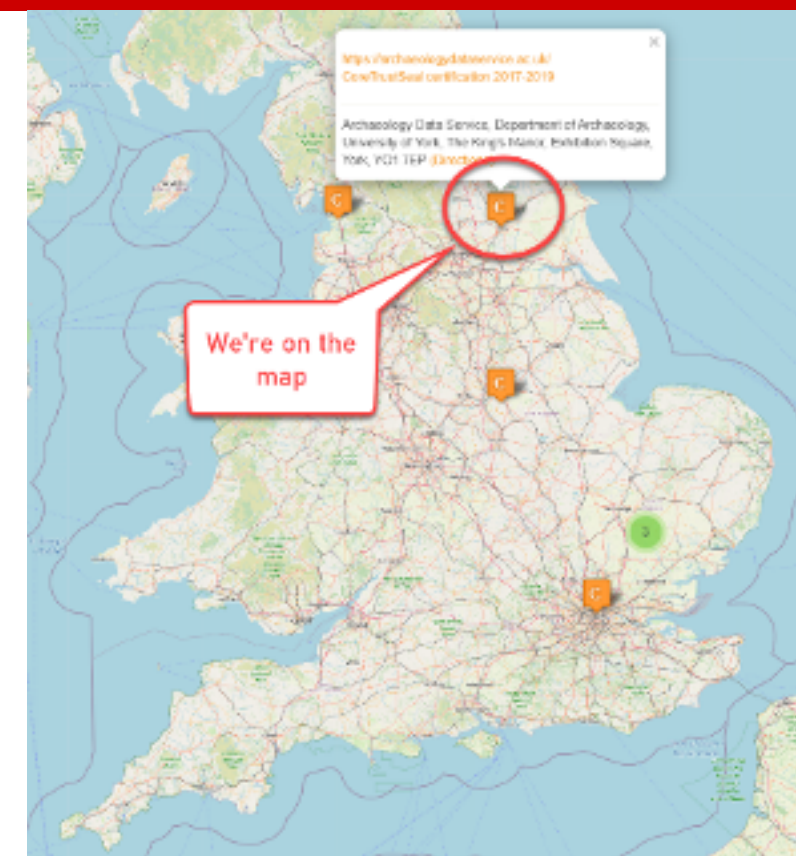
preserving their data to the best of our abilities, but also to measure our continued development. Many will remember our early success in 2012 with the award of the [Data Seal of Approval](#). It is with great pleasure and a little pride, therefore, that we can now report not only one, but THREE further milestones in ADS development with the award of the [CoreTrustSeal](#), acceptance as a regular member of the [ISC - World Data System](#) (WDS), and also our WDS certification of [Trusted Scientific Data Services](#).

CoreTrustSeal

In June 2020 we received notification that our application for CoreTrustSeal (CSA) certification had been successful. CoreTrustSeal is a non-profit consortium, under the umbrella of the [Research Data Alliance](#) (RDA), which provides a core standard for digital repositories, based on the DSA-WDS [Core Trustworthy Data Repositories Requirements](#), used to assess archives. At the time of writing the ADS is one of 90 repositories to hold the standard worldwide, one of only five archives in the UK and the only archaeological and heritage specific institution to hold the accreditation. Indeed, we are delighted to be in the esteemed company of the [UK Data Archive](#), [The National Geoscience Data Centre](#), [DANS](#), [Digital Repository of Ireland](#), amongst several other leading institutions.

ISC - World Data System

Further success followed in July with an application to join the WDS and certification as a [Trusted Scientific Data Services](#), both of which were similarly

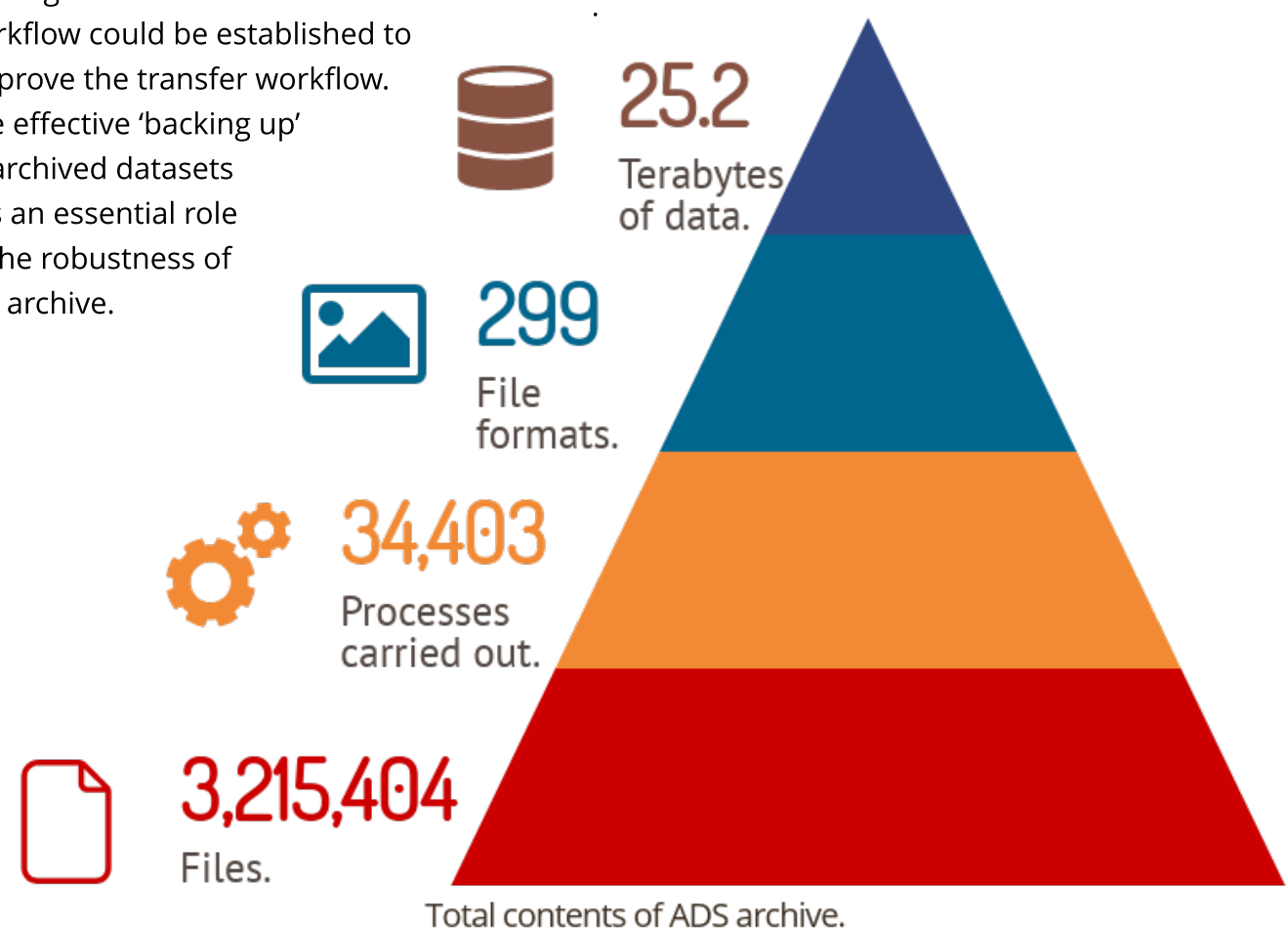


successful. The WDS is an interdisciplinary body of the [International Science Council](#) (ISC) that supports the long-term stewardship and access of datasets. As a regular member of the WDS the ADS is one of 84 repositories around the world to be certified, and part of a network that extends to some 126 member organisations. Again, the roster includes many large international and national data centres, including the [Swedish National Data Service](#), [World Data Centre for Geomagnetism](#), [Environmental Information Data Centre](#) and many others.

These successes mark 2020 as a landmark year in ADS history and signify our intention to be a trusted and respected digital repository both within the UK, and across the world. For more information see our blog posts [We passed! Great result from CoreTrustSeal accreditation](#) and [More 'exam' success! Certification and membership of the ISC- World Data System \(WDS\)](#).

Remote Storage Solutions

Following on from research carried out in 2018, 2019-20 has seen the full integration of Amazon Web Services (AWS) into current work patterns. Indeed, repository staff have already made significant improvements and developments to this workflow to enable the more consistent and stable transfer of data from local drives to off-site storage. The implementation of AWS DataSync data transfer service has certainly added resilience to this workflow, whilst at the same time improving the efficiency of the transfer process. As with all new processes there is always room to fine-tune and we are continuing to investigate how a more automated workflow could be established to improve the transfer workflow. The effective 'backing up' of archived datasets has an essential role in the robustness of the archive.



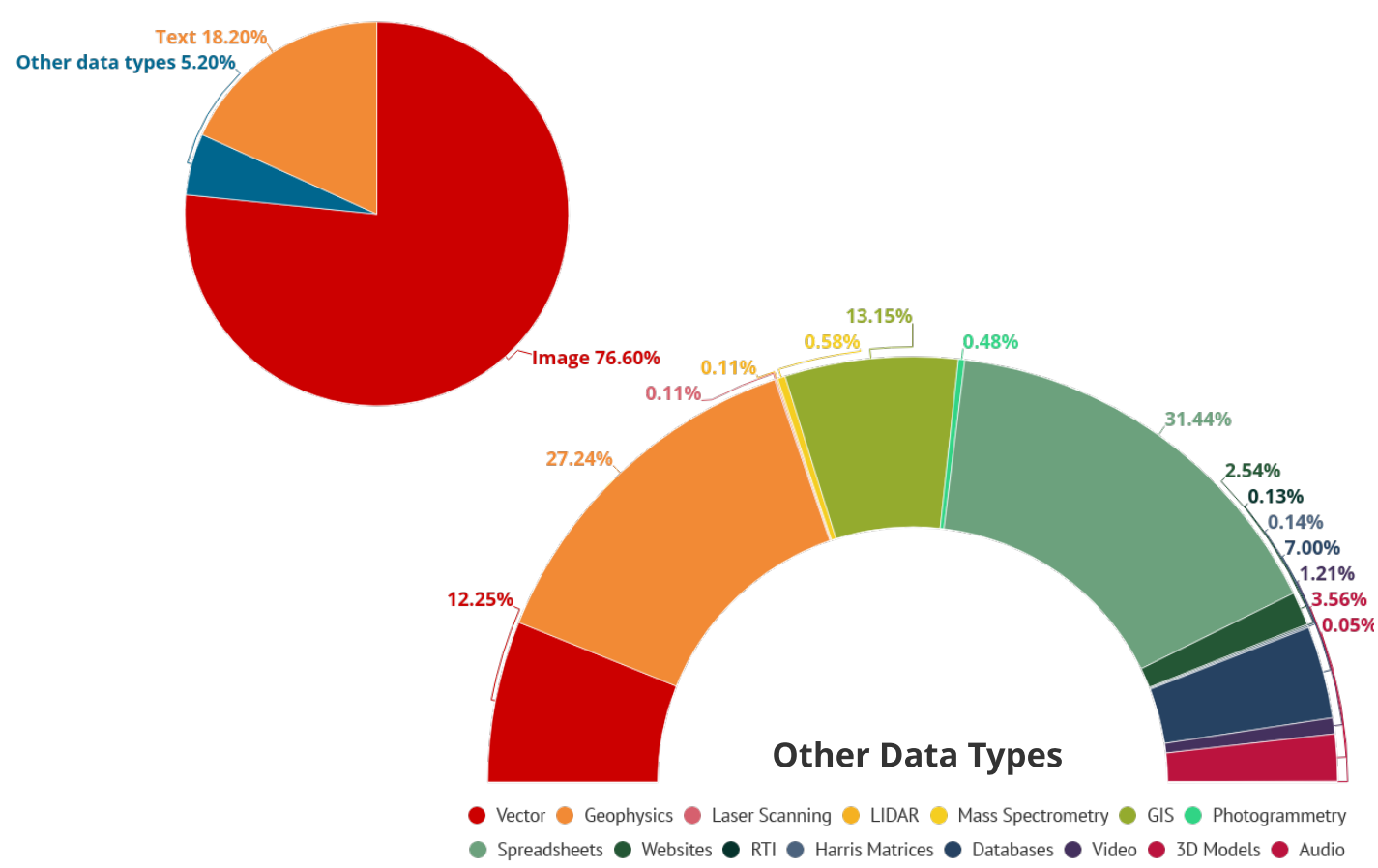
Absolutely love @ADS_Update. Their #openaccess library has been the answer to many of my urgent research needs over the years #ReadABookDay.

Twitter user.

CATS Week and Continuing Development

The annual CATS (curatorial and technical staff) week proved to be very productive. A focus on the dissemination of data highlighted how the use and implementation of new technologies, particularly Leaflet and IIIF, would improve user engagement with data and datasets, but also improve internal workflows. As a result Leaflet has already been implemented into archives, while a thorough examination of IIIF continues. The week also provided time to examine processes and workflows for the evaluation and assessment of formats for preservation and dissemination, alongside those that the repository accepts. The formalisation of this assessment process should facilitate a more rapid assessment of current and future holdings, allowing for more effective planning of file and format normalisation and migration. Time was also made available for the development of new 'tools' to improve the archiving workflow, the development of preservation action registries, alongside the usual reviews of data procedures.

The ADS Archive by Data Type



COLLECTIONS DEVELOPMENT

Runic inscription from Maeshowe. © Nicole Smith.

2

To host the most important UK-level **collection** of high quality digital data sets created in the course of historic environment research in the UK.

This year has been a busy year with the total number of collections currently being preserved by the ADS totaling 3234 at the end of July 2020. Despite a downturn in deposits seen towards the end of the reporting year due to the effects of the Covid-19 lockdown, 256 collections were released across the reporting period, only a decrease of 2 on last year's reporting period of 258 collections. The steady number of releases can be correlated to the significant increase in the number of ADS-easy and OASIS Image archives that were submitted in the early part of the year. We saw double the number of ADS-easy and OASIS image deposits in comparison to the previous year despite the reduction of commercial archives deposited in the latter half of the year.

As reported last year we ramped up our efforts to engage with planning archaeologists and museum services, and this increase in depositions is the direct result of the requirement to deposit

digital archives with a Trusted Digital Repository being added to museums and planning guidance in recent years. This year we continued to build these relationships increasing the Councils and Museum groups mandating deposition with a Trusted Digital Repository to 21.

This year we have also continued to develop our relationships with large infrastructure projects and are looking forward to beginning to receive the collections from the A1 Leeming to Barton Improvement Scheme and A14 Cambridge to Huntingdon Improvement Scheme in the coming year. We have also successfully completed our Scoping Study for High Speed 2 and are currently working towards a framework agreement for the archiving of the Phase One Historic Environment digital data.

ADS Collections

Collections by type:



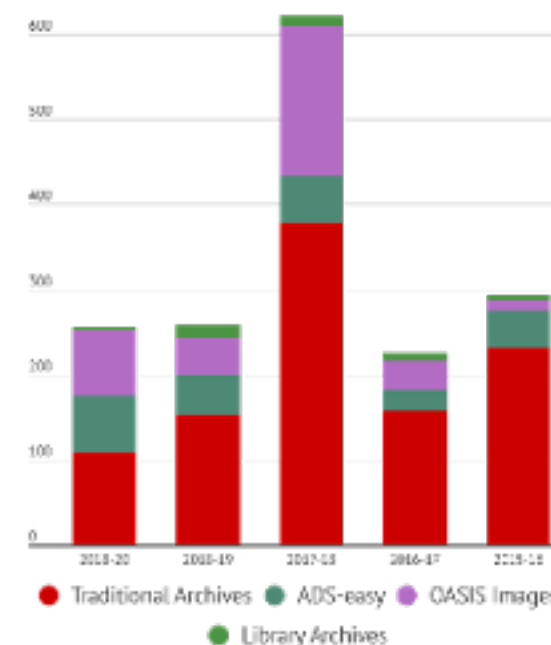
Collections by contents:



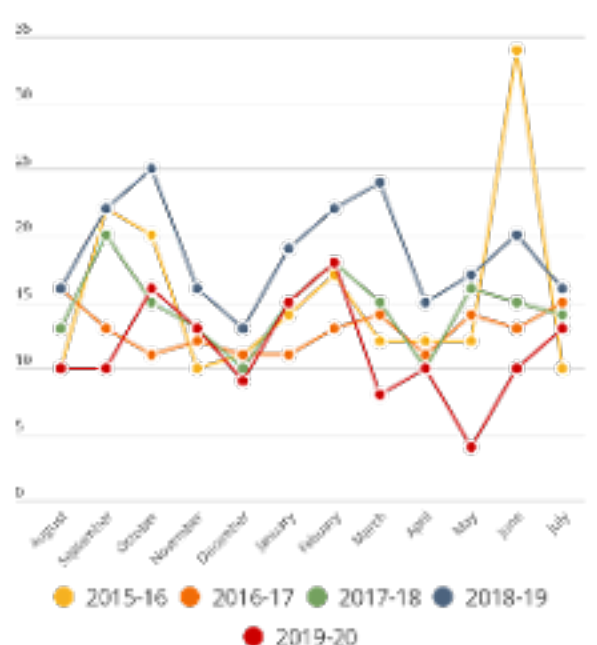
256 New Collections Released 2019-20

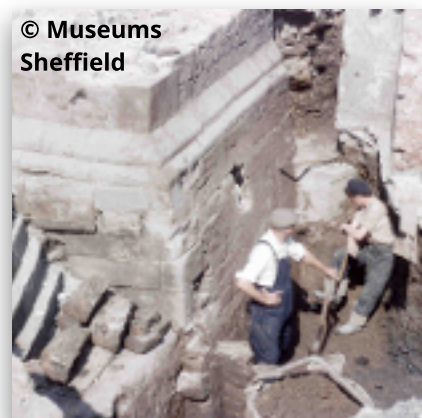
136 New Deposit Enquiries 2019-20

Collections released by year:



Deposit enquiries by month:



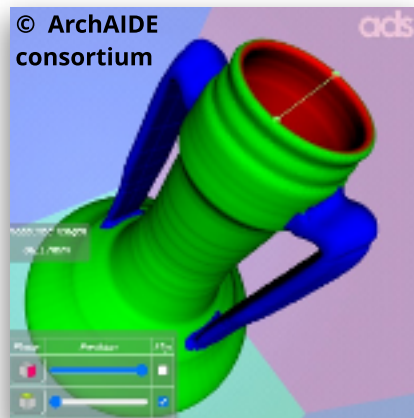


© Museums Sheffield

Sheffield Castle 1927-2018

<https://doi.org/10.5284/1074899>

This archive contains the documents, maps, plans photographs curated by Museums Sheffield from archaeological recording undertaken between 1920s to 1960s at Sheffield Castle.



© ArchAIDE consortium

ARCHAIDE Portal for Publications and Outputs

<https://doi.org/10.5284/1050896>

Key components of the ArchAIDE project were archived by the ADS towards the end of 2019, including multilingual pottery vocabularies, project videos and interactive 3D models.



© Barbican Research Associates

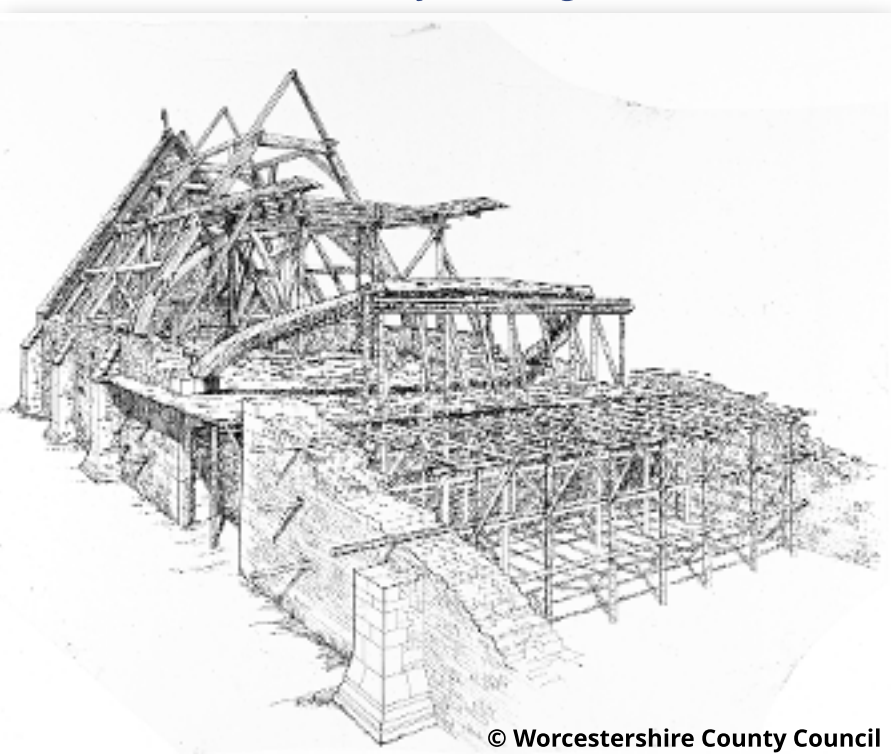
The Staffordshire Hoard: an Anglo-Saxon Treasure

<https://doi.org/10.5284/1041576>

This archive contains a catalogue of finds with photographs, x-ray images and conservation reports from the Staffordshire Anglo-Saxon Hoard

COLLECTION HIGHLIGHTS

A list of all our collections can be found on our [Collections History Web Page](#).



© Worcestershire County Council

The Charles Archive

<https://doi.org/10.5284/1076946>

This is the digitised data from a project to digitally preserve and make publicly accessible the practice archive of F W B and Mary Charles Chartered Architects.



© Norfolk & Norwich Archaeological Society

The Norfolk Archaeology Journal

<https://doi.org/10.5284/1078322>

Volumes 1-44 of this journal are now available via the ADS Library, containing papers on the history, antiquities and archaeology of Norfolk and East Anglian region.

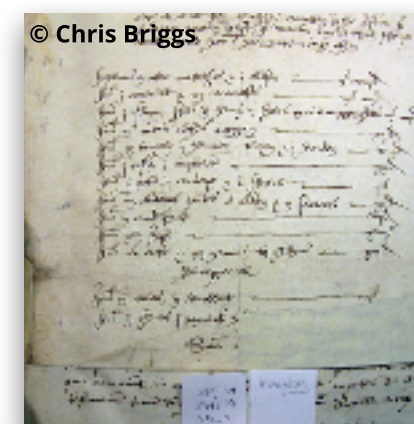
Forthcoming Archives



© MOLA Headland

A14 Cambridge to Huntingdon

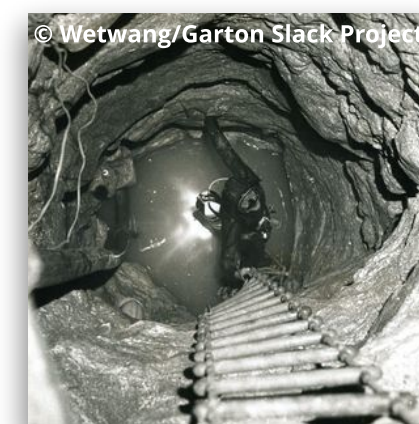
When released this archive will contain the post excavation assessment reports. Over the next few years it will be updated with the raw data for all of the sites along the route of this infrastructure project, culminating in an interactive map and search query interface.



© Chris Briggs

Living Standards and Material Culture in English Rural Households

This archive contains two interactive searchable databases containing archaeological and historical evidence for material culture in English medieval rural households.



© Wetwang/Garton Slack Project

The Wetwang/Garton Slack Project

This archive contains over 10,000 files of data from the excavations at Wetwang and Garton Slack directed by T.C.M. Brewster (1965-1975) and J.S. Dent (1975-1981/84) respectively.



© Andrew Reinhard

No Man's Sky Archaeological Project

<https://doi.org/10.5284/1056111>

This year the ADS released its first-ever dataset of an archaeological survey conducted in a purely digital space – the No Man's Sky multiplayer video game. The project produced archives for 30 sites, recording hundreds of digital images and videos of each location.

THE HOMEFRONT ARCHIVE

The ADS is such a great resource, and I have enjoyed rediscovering the treasures within.

Helpdesk Email 2020.

Those with long memories will recall that back in 2002 we published the Defence of Britain, working with colleagues at the Council for British Archaeology (CBA). This resource has continued to make regular appearances in our list of popular archives over the years, with the original research from the project attracting a small, but dedicated volunteer community who continue that research. Data reuse in action. Building on the experiences from that project the CBA, working with Historic England and many other partners across the UK, coordinated the Home Front Legacy 1914-18. This community engagement project, sought to raise awareness and enhance the future protection of sites associated with the First World War across the UK. Back in July, we were pleased to publish some of the outcomes from that project, including a searchable database documenting the First World War sites scattered across our communities and landscapes.

Often our principle focus in considering the First World War is on the battlefields and landscapes of Europe, but the period also had a profound effect on the lives of civilians and communities within the UK. While the period witnessed the construction of many new buildings and sites to defend and support military activities, it also saw the requisition and conversion of many existing structures. This resource provides a window on these 'hidden', and often forgotten, histories of the places we all inhabit. Here in York, for example, there is the story of the Zeppelin alarm developed by local electrician, Alec House, and sold in town by Barnitts Department Store. In Glasgow, the Victorian Alexander's Cotton Spinning Mill temporarily became a reception centre for Belgian Refugees. The period also saw the establishment of a Red Cross hospital in the rather grand



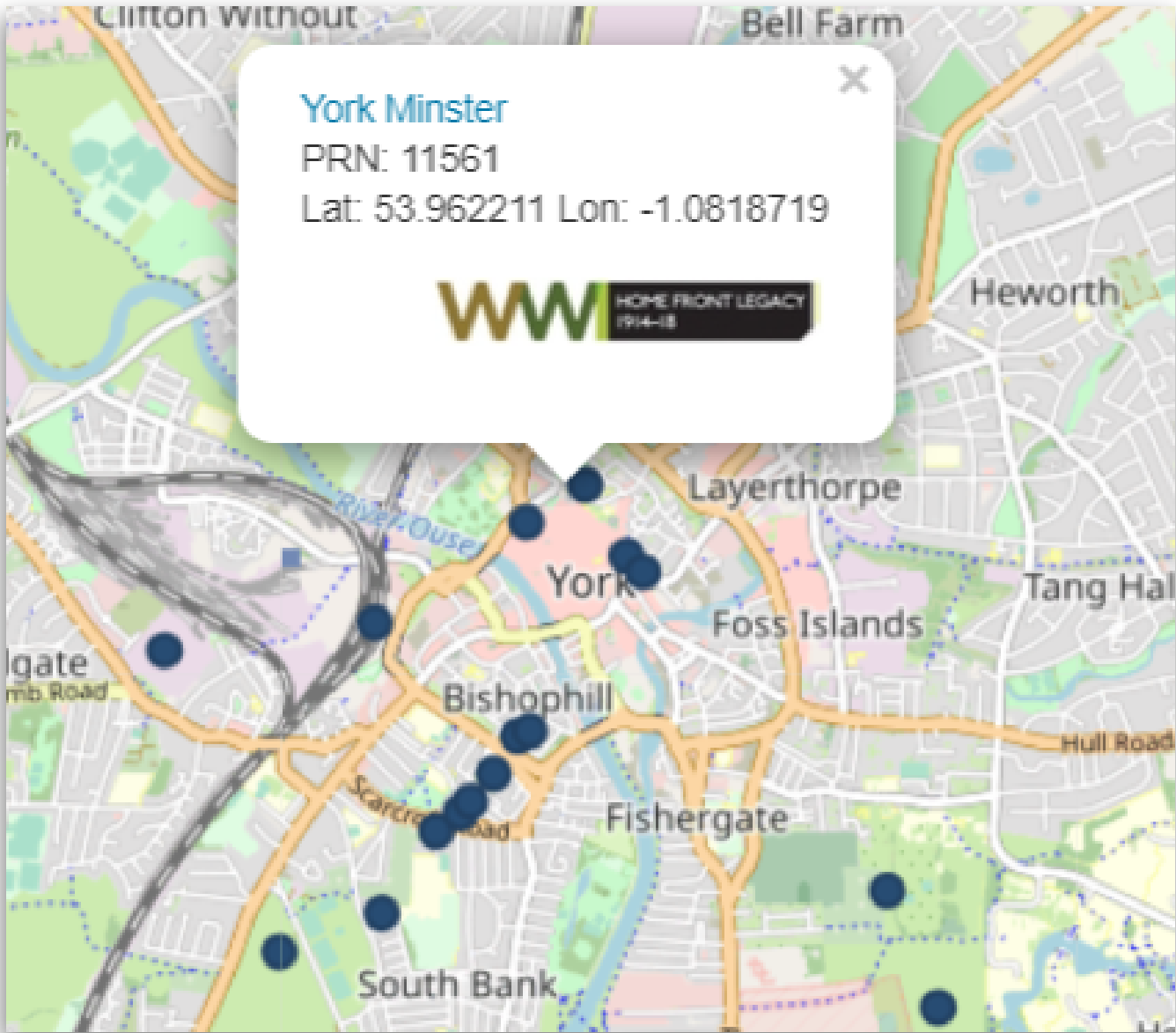
Top: Hingham Library Hut, Hingham, Norwich. © Council for British Archaeology.

Right: Screen shot of the archive map interface showing the records from York.

Bottom: Men and dog in wheelbarrow from Archcliffe Fort (Snargate Street, Dover, Kent). © Council for British Archaeology.

surroundings of the Balmoral Hotel, Llandudno. The locations listed in this resource also serve as beacons to stories and narratives that highlight the impact of the war here at home. Here is hoping the [Home Front Legacy archive](#) becomes as popular, and well used, as its well established [Defence of Britain](#) predecessor does.

Go on, have a look.



ADS-EASY DEVELOPMENT

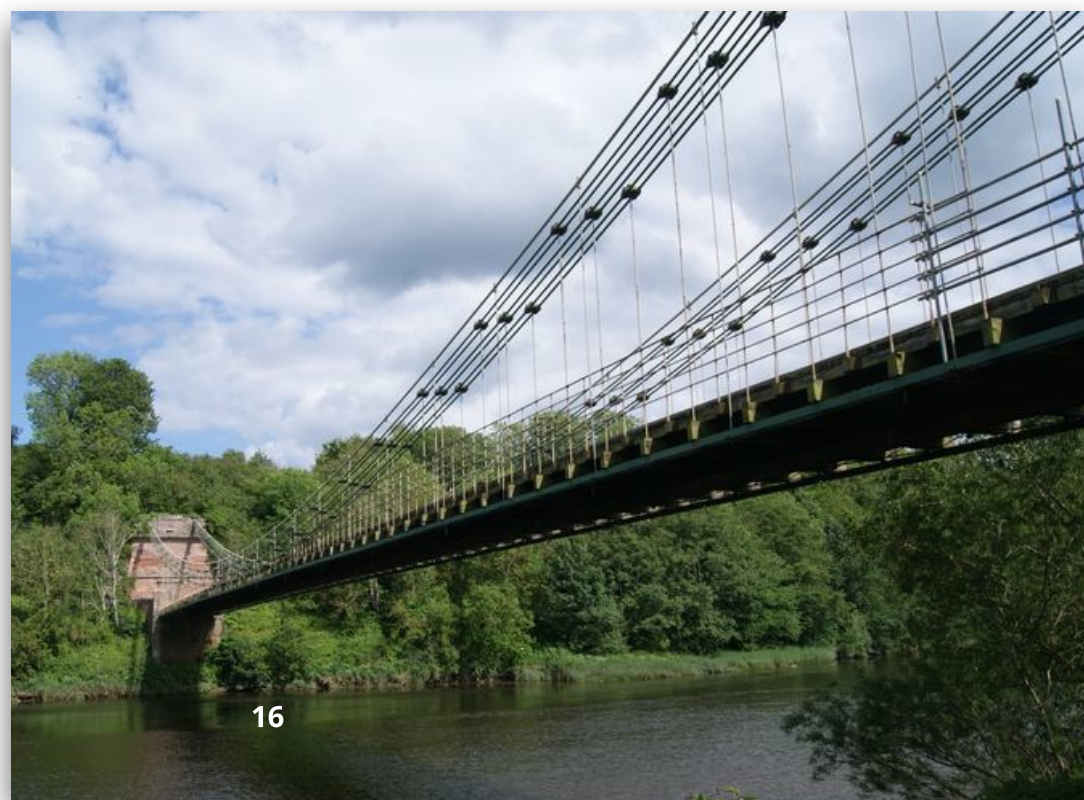
Throughout 2019-20 ADS-easy and OASIS Images have continued to play an important role in the submission of data to ADS. Changes enacted during 2018-19 to update the system have proved particularly successful and improved the stability of both services. With an ever-increasing number of local authorities and museums mandating the preservation of historic environment sector digital data with a 'trusted digital repository', an increase in new depositors taking advantage of the digital submission streams has been observed. This, alongside improvements to the workflow, have certainly impacted use and improved user experience.

Plans to undertake a wide-ranging training programme were curtailed by the Covid-19 pandemic, but staff are presently planning a far-reaching training programme of resources and workshops in the near future. Attendance at a number of conferences and workshops through the year, both physically and virtually, has helped bring new technologies and workflows to our attention.

Our ambition is that some of these will be incorporated into ADS-easy and OASIS-images in the near future to facilitate deposition.



Images from the Union Chain Bridge, The River Tweed Photographic Record submitted via OASIS Images. © John Nolan



RESOURCE DELIVERY

To provide **open** and **easy** online access to primary data and digital **resources** created in the course of historic environment research.

3

The three primary mechanisms for ADS Resource Delivery continue to be well used. This year has seen a concerted effort to enhance our technical delivery, and begin to build a strategy towards enhancing these applications.

[ArchSearch](#) continues to provide the means of searching our main catalogue, now with almost 1.4 million thin metadata records for the archaeology of the British Isles, many brokered on behalf of other organisations. Redevelopment work has focussed on simplifying the Resource facet, and ensuring that URIs are retained when data is reloaded. The latter is essential where other services - such as ARIADNE - will be referring back to ArchSearch.

Our [Archives](#) search now provides access to over 1,850 data rich archives. Another piece of work has redeveloped the Search page to ensure the Keyword search, and facets, are accurate and meaningful. Within the Archives pages themselves, an internal project to provide a new

Downloads page with the capacity for bulk downloads, among other features, is nearing completion.

The [ADS Library](#) search gives access to over 300,000 bibliographic references, including well over 100,000 journal articles and unpublished fieldwork reports immediately available for download from the ADS and Internet Archaeology, and links to over 11,500 other online publications.

Over the winter of 2019-20 the ADS Library was also reviewed and redeveloped, with a primary focus on enhancing the user experience, but also with an eye to increasing certain technical capabilities. This has included general improvements to the search pages (similar to that undertaken for ArchSearch and Archives), inclusion of ORCIDs and WikiData QCodes, higher visibility of Digital Object Identifiers (DOIs) and guidance on citation, creation of DOIs for journal articles, and increased display of usage licences in the metadata records.

"You can't really call yourself an archaeologist if you haven't read something from the @ADS_Update or @IntarchEditor library"

Twitter user

Website User Statistics 2019-20

All ADS and IA resources



685,256

Unique Visitors



2,979,165

Unique Page Views



360,722

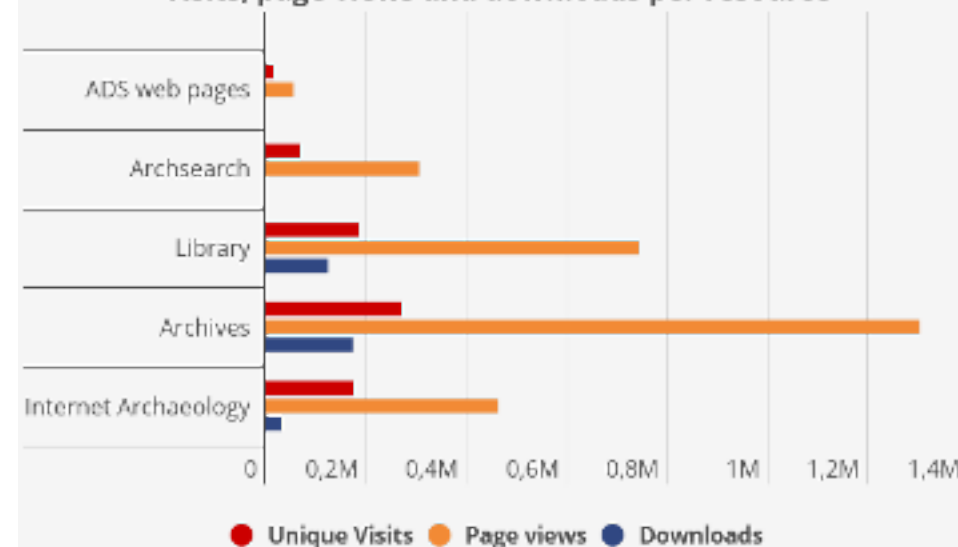
Downloads

Percentage of visitors per resource

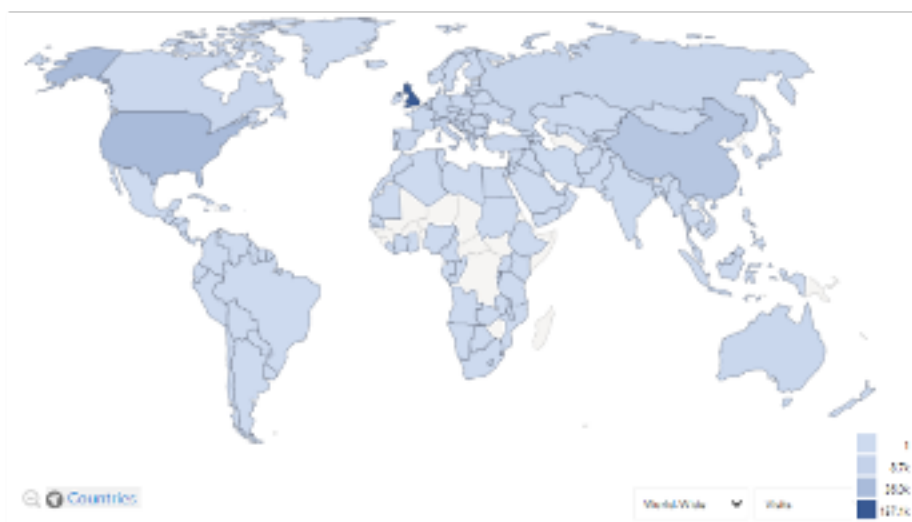


● ADS web pages ● Archsearch
● Library ● Archives
● Internet Archaeology

Visits, page views and downloads per resource



Visitor Access Locations



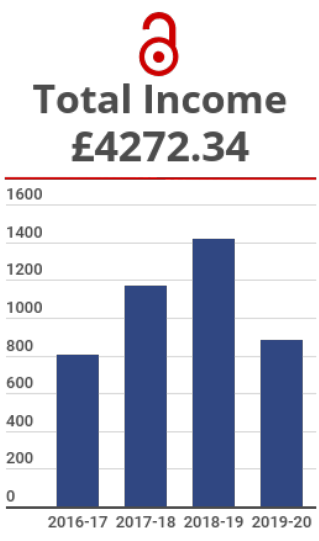
"[Internet Archaeology's] reactive, open-minded, and flexible approach with articles is so important. It enables the publication of studies that otherwise fall between the cracks of other journals, but are nonetheless important."

2020 User

OPEN ACCESS ARCHAEOLOGY FUND

The Open Access Archaeology Fund was established by *Internet Archaeology* and ADS in 2016 with the specific aim of supporting the publishing and archiving costs of researchers who have no means of institutional support. Over the course of the current year, the fund has accrued **£882** in revenue from one-off donations as well as a handful of very generous recurring donors. Unfortunately the total is down by over £500 from last year despite continued appeals online. This may reflect a more widespread caution and reticence to donate during this period of economic uncertainty due to Covid-19.

The demand for assistance has unfortunately outstripped our ability to help, with several worthy applications 'on hold' until sufficient funds have built up again. The fund requires constant replenishing so donations of any size are still very much welcome. One of our specially commissioned trowel-shaped USB sticks are still given out to all donations over £25.



Publications supported by the Fund this year:

DSLR Digitisation of Colour Slides: The Digitising Jemdet Nasr 1988–1989 by Mónica Palmero Fernández (*Internet Archaeology*, forthcoming)

This article will discuss a cost-effective method for digitising photographic film for archival purposes using a DSLR camera.

Digital archives supported by the Fund this year:

Prehistoric Lithic Collections from Yorkshire: Appleyard, Feather, Hardisty, Heys, Waterhouse and Woodward by Keith Boughey.

<https://doi.org/10.5284/1063205>

This archive consists of six private archaeological collections of items spanning the Mesolithic to the Iron Age, found mainly within the historic county of Yorkshire. Few details of these collections have ever been published or brought to the archaeological record until now.

A big thank you goes to all our donors!

ELECTRONIC PUBLICATION

4

To develop and encourage the adoption of new models of **electronic publication**, providing a holistic service, covering publication and archiving.

Internet Archaeology Update

Over the course of the last 12 months, *Internet Archaeology* has published 22 articles (with the mixed issue for 2020 remaining open until the end of December). The journal is proud to continue to be the publication venue of choice for the European Archaeological Council Heritage Management Symposium proceedings. These special themed issues are authored by a wide range of leading archaeology and heritage managers from across Europe

and is helping to establish closer and more structured cooperation and exchange of information.

June 2020 saw the publication of Vince Gaffney and colleagues A Massive, Late Neolithic Pit Structure associated with Durrington Walls Henge which attracted widespread international news coverage and created a peak of over 25,000 visits to the journal in a single day. The journal also published the companion article to the Horizon 2020-funded ArchAIDE project (see ADS Collection Highlights) outlining the methods used by the team to create a tool to recognise and classify pottery using automatic image recognition technology.

Closer to home, the journal has had a redesign with an eye to the changing, more mobile nature of digital access and accessibility. A user survey has also been undertaken and the results, currently undergoing analysis, will further add to

"[Internet Archaeology] manages to integrate a wide range of data and media within an article, and importantly, you feel that the editor actually understands your needs..and takes care with how all of the content of the article should be presented."

2020 User Survey

and inform the journal offer in due course. Alongside the development of the online submission system reported on last year, these changes have started to have a positive effect on the number of proposals received whilst the stricter proposal requirements have improved their quality. In addition, over the last couple of years, one of the Editor's aims

has been to encourage and make publication in the journal viable for significant outputs from the commercial sector. *Internet Archaeology* is well placed to sit at the intersection of the academic and commercial archaeology 'worlds' and relationships with some of the larger contracting units are now established and starting to bear fruit.

internet
archaeology
by numbers

175 countries
reached

485,585
page views per year
(2020 figures)



55
volumes
produced

average
daily readers
295



582
articles
published



Full-time
staff members 1



181,670
visits



Bird's eye view of the Stonehenge Hidden Landscapes Project team marking the bounds of Durrington anomaly 8A. From Gaffney, V. et al. 2020 A Massive, Late Neolithic Pit Structure associated with Durrington Walls Henge, *Internet Archaeology* 55. <https://doi.org/10.11141/ia.55.4>



Image © G Karkens.

Traces in a Lost Landscape: Aboriginal archaeological sites, Dyarubbin/Nepean River and contiguous areas, NSW, Australia (Data Paper).
Karskens, G. et al. 2019
<https://doi.org/10.11141/ia.52.8>

“To someone without an institutional log in, like me, it's utterly brilliant to be able to access journals like [Internet Archaeology]. Plus the papers are always fantastic”. Twitter user.

ARTICLE HIGHLIGHTS

“[Internet Archaeology is an] accessible and engaging publication of immense benefit to the public and professionals”
Twitter user.



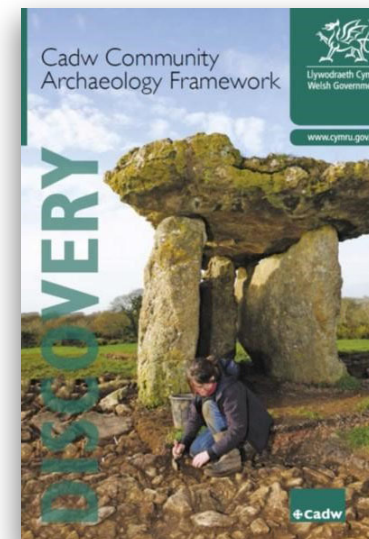
An Approach to the Ethics of Archaeogaming
Graham, S. 2020
<https://doi.org/10.11141/ia.55.2>



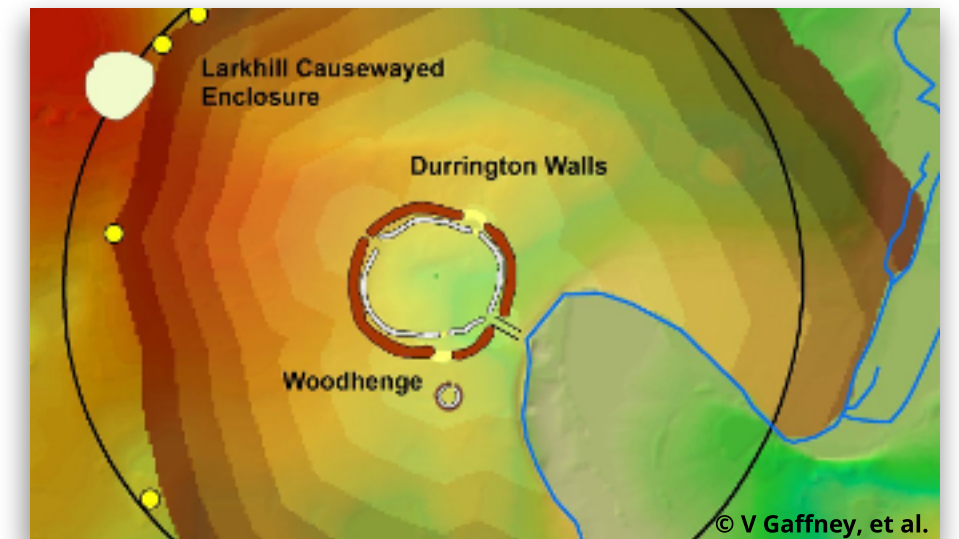
A Typology of Practice: The Archaeological Ceramics from Mahurjhari
Lefrancq, C., Hawkes, J., C.M.
Jaseera and Mohanty, R.K. 2019
<https://doi.org/10.11141/ia.52.9>



Developing the ArchAIDE Application: A digital workflow for identifying, organising and sharing archaeological pottery using automated image recognition
Anichini, F. et al. 2020
<https://doi.org/10.11141/ia.52.7>



Public Archaeology: sharing best practice. Case studies from Wales
Griffiths, S. et al. 2020
<https://doi.org/10.11141/ia.55.1>



A Massive, Late Neolithic Pit Structure associated with Durrington Walls Henge
Gaffney, V. et al. 2020
<https://doi.org/10.11141/ia.55.4>

FORTHCOMING ARTICLES

Digital public archaeology at Must Farm

Digital public archaeology is increasingly exploring social networks as platforms for online outreach initiatives. Despite a growing body of literature concerning archaeological engagement on social media there are few examinations of such applications in practice. This research critically assesses the current discussions surrounding archaeological social media use before exploring commercial digital outreach at Must Farm, Cambridgeshire.

The post-excavation analysis and archiving of outputs from complex, multi-period landscape investigations: the example of Heslington East, York

The project and post-excavation analysis and archiving of data generated by fieldwork undertaken at Heslington East near York in the UK has stretched over two decades, and involved two

commercial companies and a student training and local community element. The article reflects on the complex challenges that arise when attempting to combine diverse stratigraphic, spatial and assemblage data from different sources to reach meaningful interpretations of an extensive, multi-period landscape.

Functional Replica Roman and Late Antique Musical Instruments

This article describes methodologies for 3D scanning and 3D printing, together with appropriate craft techniques, in the creation of replica musical instruments from the collection of UCL's Petrie Museum of Egyptian Archaeology in London. The replicas make an important contribution to our understanding of the contexts of use of the original instruments. Sound recordings virtually modelled are also produced.

ADVISORY SERVICES

5

To be the primary UK-level historic environment data **aggregator** and to provide appropriate finding aids and **resource discovery** mechanisms.

In hand with our ongoing work to improve Resource Delivery, 2019-20 has also seen significant advances in Resource Discovery. As previously discussed all three internal mechanisms for metadata discovery have been improved and redeployed. This has included improvements to the quality of metadata provided to [DataCite](#) and [MEDIN](#).

As part of ARIADNEplus, we have mapped all relevant datasets held in Archsearch to the AO-Cat, the ontology which underpins the ARIADNE data infrastructure, and subsequently provided XML exports to populate the [ARIADNEplus discovery portal](#).

An internal review of workflows, including Resource Discovery, has been undertaken over this year. This has focussed towards building a Strategy towards streamlining and improving throughput and delivery of metadata. The first steps of these are a collection of [documents on our website](#) which outline our current work and what we want to achieve. This includes a [user guide for ADS Metadata](#), including a description of all the current aggregators and services that consume ADS metadata.

4

OAI PMH Targets

Archives, Articles, Journals, Oasis Reports.

8

Web Mapping Services in Heritage Gateway

Excavation Index, Exeter, Greater London, Historic Milestones, Lake District, Merseyside, Parks and Gardens, Yorkshire Dales.

11

External Aggregators

Ex-Libris, EBSCO, ARIADNE, EUROPEANA, UKRDDS, MEDIN, DES, Heritage Gateway, The Keeper's Registry, MOLA, BBC.

16m

Linked Data Triples

Roman Amphora (5648 triples), Archives (1559467 triples), Chartex (76168 triples).

"the digital repositories (ADS, DANS, SND) directly influenced our institution by being good examples of concrete implementations of data sharing."
Feedback from Inrap on the ARIADNE Project.

6

To be the primary point of **advice** in the UK on the creation, dissemination, documentation, and preservation of historic environment data.

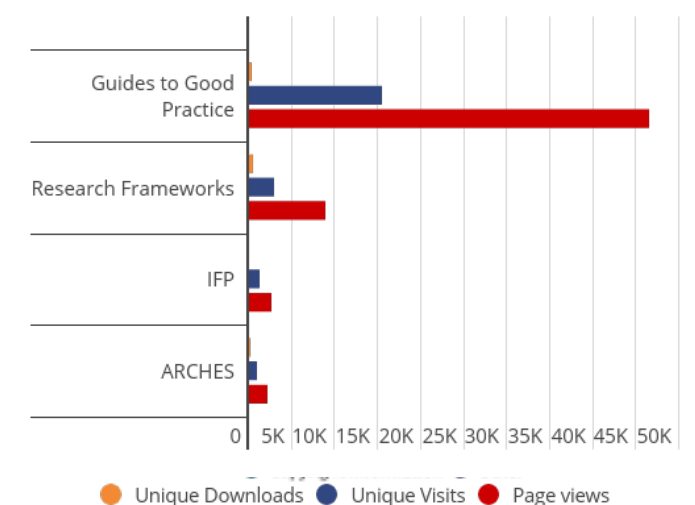
This year has seen a number of projects and initiatives aimed at providing Guidance and Advice for those working within the sector.

Internationally, the [COST Action SEADDA](#) has delivered a number of international workshops aimed at building a wider community of digital preservation practitioners in archaeology.

Within the UK ADS staff have been actively promoting best practice in digital archiving and data management at workshop and conference sessions, and continued to provide expert data management advice to academic, independent, and professional researchers, during the preparation of their funding applications.

Before Covid-19 lockdown, a new strategy of 'getting out of the office' to talk to larger groups of depositors and explain and de-mystify archival processes was launched. The first initiative was a regional workshop for practitioners and curators in Southwest England held in Exeter. A similar event held in Nottingham, at the invitation of the

Advisory Websites User Statistics



Council for British Archaeology (CBA) East Midlands group, was provided for community groups and independent researchers from the region. Both events were well attended and received, and it is hoped to build on this work in the future. In a Post-Covid-19 world one such mechanism could be an increased use of technology to provide online workshops and tutorials; a live online talk/workshop called 'Find the Romans near you' held as part of the CBA's 2020 online Festival of Archaeology was attended by nearly 100 people.

CPD Courses

This year the ADS has been pleased to receive funding from the University of York Pump Priming Fund to aid the development of a suite of Continuing Professional Development courses.

Two courses have been developed aimed at the heritage market:

- Data Management for Heritage Professionals (1 day course)
- Data Management and Digital Preservation for Heritage Professionals (2 day course)

Both of these courses are ClfA accredited and include representatives from the DPC and [The Work Digital/Think Archive](#) project (see page 29).

In addition to these one course has been developed aimed at the wider digital preservation community:

- Digital Preservation for Beginners (1 and 2 day courses)

This course is aimed at individuals beginning their digital preservation journey and shares with them nearly 25 years of ADS experience in digital preservation and is supported by the DPC.

All three courses have been designed as both in person and digital events with the intention that the first round of courses, starting in November 2020 will be held online, with the second round held in 2021 hopefully returning to the more traditional classroom based learning. We hope this is just the beginning of our CPD provision and plan to expand our training opportunities in the coming years. To find out more about the courses and how to book visit our new [CPD web page](#).



Aerial view of the excavation 2013-14 from the [Silchester Insula IX archive](#). ©University of Reading.

Membership

The ADS is represented on the following committees and groups:

- AHRC Infrastructure Advisory Group
- Archaeological Archives Forum
- ARIADNEplus Board of Directors
- Bedern Group
- ClfA Archaeological Archives Group
- ClfA Information Management Group
- Community Standards for 3D Data Preservation Forum
- Digital Antiquity Board of Directors
- HEIRNET
- Heritage 2020 Discovery, Identification and Understanding Working Group
- Historic Environment Information Resources Network
- Forum on Information Standards in Heritage
- OASIS Advisory Board
- MEDIN Data Archive Centres Committee
- MEDIN Heritage Data Archive Centre Group

ADS OUTREACH MAP

A map of all the locations ADS has attended events at since 1996. A full list can be found on our [outreach page](#).



DEVELOPING STANDARDS

To develop and implement agreed **standards** to ensure appropriate documentation and preservation of historic environment data and resources.

7

As always, engagement with our designated communities in order to develop and enhance the necessary standards to ensure sufficient documentation and preservation of digital datasets, continues to be of central importance to the ADS. These activities feature prominently in our ongoing strategic goals, not as isolated components, but as tasks that allow ADS to engage with and contribute to activities within the wider data management and preservation sectors.

Further to work started in 2019, the ADS has continued to engage with the IIIF Consortium to look at how best to implement IIIF into our workflow and services. Images are by far one of the largest types of data deposited with the ADS and increasing access to - and reuse of - image data in an enhanced, standardised way is seen as a key priority. An online IIIF Week was held at the start of June showcasing recent developments. Within the ADS scoping has been undertaken to see how best to begin implementing the framework.

3D standards remain an important and relatively fast area of development within Archaeology and the wider Heritage sector and work within the ADS has

continued to ensure we remain up to date with developments in both data formats and metadata. Such work includes the continuing collaborative development of standards and projects with colleagues in Historic England and Historic Environment Scotland. More generally ADS staff have also attended meetings and events such as the DPC event focussed on 3D models. Despite a short delay, the CS3DP final publication is due to go to the presses towards the end of 2020.

Another area that has seen a significant growth in interest is that of Heritage Science data. Over the last twelve months the ADS has been involved in a number of projects (E-RIHS, ARIADNEplus, SEADDA) looking at current standards for archaeological data with a growing focus on standards for scientific data. The E-RIHS project produced a 'state of play' document looking at the types and formats of scientific data being generated by project partners while the SEADDA Short Term Scientific Missions allowed visiting researchers to share expertise and contribute directly to the development of standards and metadata specifications.

"spent the morning going through the websites of the major cultural heritage web platforms and wow. the proliferation of projects, services, standards, protocols, tools, etc etc is really mind-boggling. Among other things, I found this highly useful: <http://guides.archaeologydataservice.ac.uk/g2gp/UsingGuides>". Twitter User.

In addition to external work, an internal review of standards is now a key component of our annual curatorial week. This looks to assess our current situation and identify areas where work needs to be undertaken, more generally looking to update and simplify what we ingest, hold, and disseminate while also allowing easy reuse of data. Work identified in our 2019 week has most recently led to an update to our [Guidelines for Depositors](#).

Work Digital/Think Archive

Over the past year the ADS has been delighted to support the much needed Historic England funded project "[Creating a sectoral standard and guidance for managing digital data](#)". This project has culminated in the updating of ClfA Standards and guidance to better represent digital data, and the development of the Dig Digital online resource, put together by DigVentures in partnership with ClfA. The aim of the Dig Digital online resources is to provide guidance for those working with digital archives in archaeology every day, helping archaeologists manage digital data throughout projects and providing guidance on how to create a complete, ordered and stable archive.

The ADS is pleased to endorse this excellent project and we have updated our guidelines and web pages to link to appropriate Dig Digital online resources providing mutual support. We look forward to receiving many more Data Management Plans in the future as a result of this new guidance and will be helping the project team track the success of the resources through our deposition statistics over the coming years.



Preview of 3D model from [The Becket Connection - Visualising Medieval Canterbury archive](#).

© Centre for the Study of Christianity and Culture

SUPPORTING RE-USE

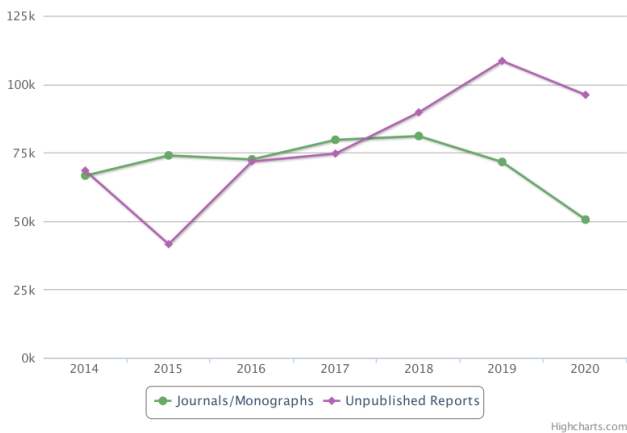
8

To encourage and support the **re-use** of primary data and digital resources created in the course of historic environment research.

The ADS has (for nearly 25 years!) been providing free access to resources deposited with us. We put them online in open/accessible formats, people use them, and people cite them. We know people use them because we have data on page views and downloads. These access statistics always make a good basic demonstration of impact; we can pass them onto project funders and stakeholders to demonstrate quantitative success. However the follow-up questions normally ask “who” is using this data, and for what purposes.

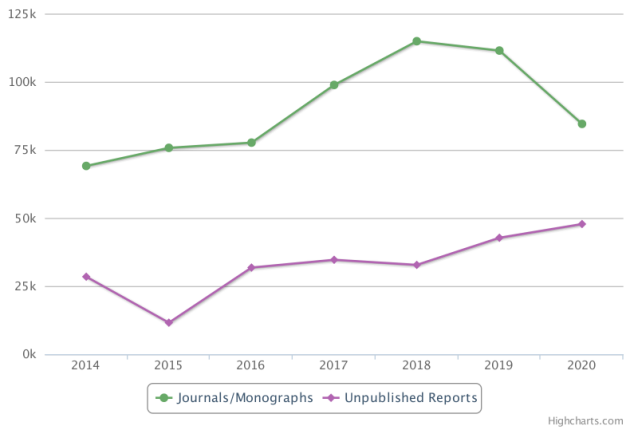
We are still trying to better gain a qualitative understanding of re-use. As such we are taking part in Working Group 4: Use and Re-Use of Archaeological Data of the SEADDA project (see page). We are also still actively promoting our guest blog series set up last year to acknowledge the wide range of research carried out that re-uses data preserved and disseminated by the ADS, and have set up a new [web page](#) on data re-use including a link to a page which lists

re-use case studies although it is still unfortunately a surprisingly short list. During 2019-20 we have therefore also been thinking more about what we could and should be doing to facilitate and demonstrate re-use and how it can help us, our users, and depositors. The key to this are the DOIs we create for all our deposited collections, unpublished reports and journal articles. These DOIs are registered with DataCite, and in doing so we also pass on key metadata for the digital object. This metadata is then searchable in the DataCite interface, alongside records from other repositories that are part of the DataCite community such as Zenodo or Dryad. When users use ADS resources they should be citing the DOI and not the URL, because the DOI is persistent. No matter what happens to the ADS applications in the future (for example an application update may lead us to change the URL), the DOI will always take the user to where the content is. Importantly, for investigating re-use the DOI also allows



Visits per year to the ADS Library.

us to identify, via a range of tools, where our DOIs are being used. One such tool is the DataCite Event API, a prototype developed in collaboration with Crossref to track citations of DataCite DOIs quoted as sources in academic papers. There is also the incredibly powerful CrossRef Event Data that captures and records events that occur all over the web. This includes not only published articles but also Twitter and Wikipedia (including WikiData). Capturing this sort of re-use, and mentions of resources in Twitter conversations is a useful indicator not only of re-use, but a glimpse into the sort of conversations people may be having about our digital objects. In the coming year our next step is to build a method to pull data from these



Downloads per year from the ADS Library.

APIs and incorporate it back into our metadata as a dynamic process so we can demonstrate that a collection has been ‘Cited By’ XXX. This could even be extended to email a depositor when their data has been cited so that they know their data is being actively used. However, while it’s good to know where our resources are being cited, there’s a whole bigger world of possible study. Which journals are ADS resources cited in, what sort of ADS resources are cited (e.g. is anyone citing the raw data?), what topics do these represent, who is citing whom. There is material here for a new area of research into citation habits and biases, or at the very least a PhD. We have so much more to learn about our data re-use.

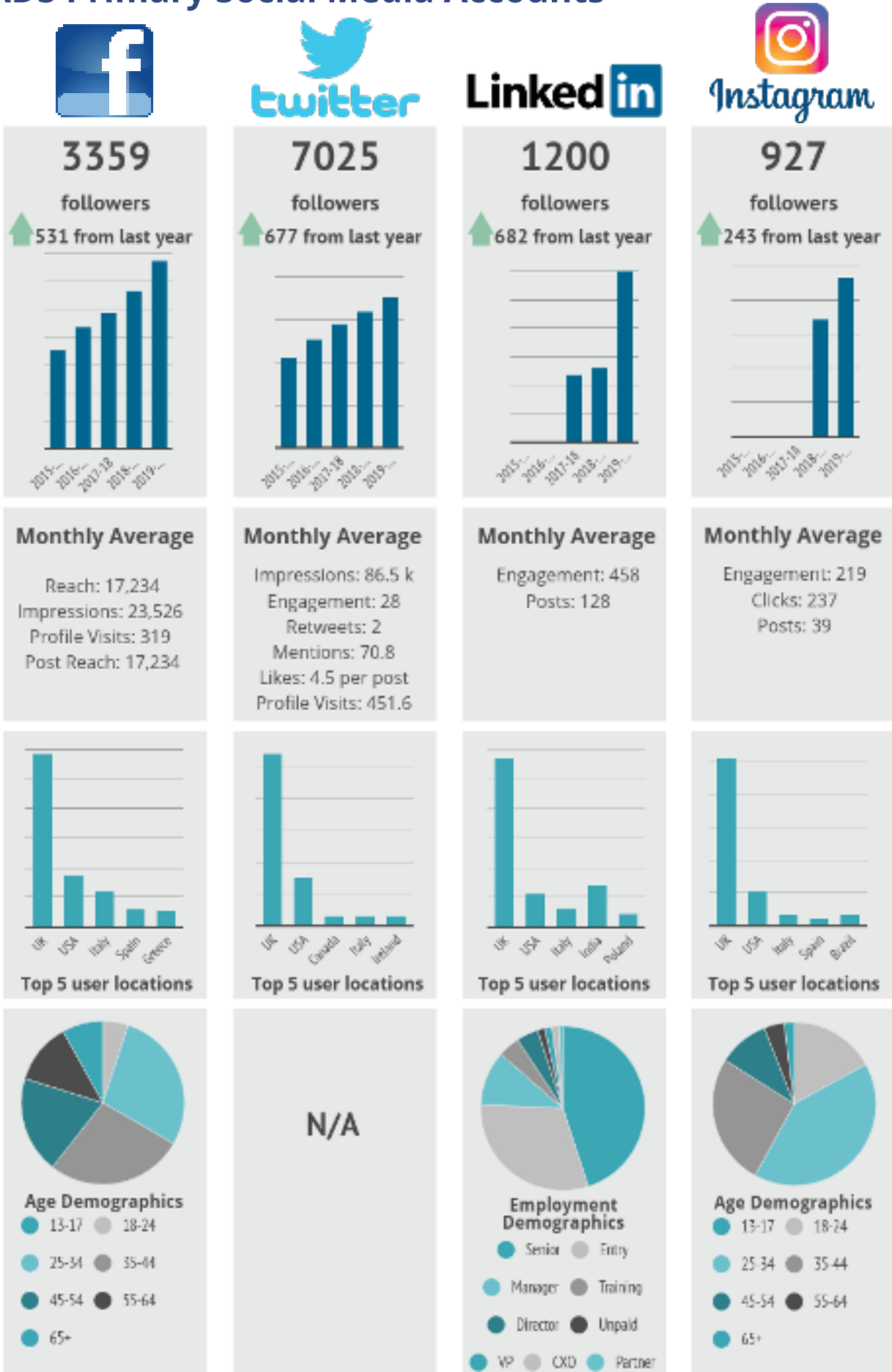
Social Media

The ADS has been actively involved in promoting our resources via social media for a good many years now. In early 2020, it was decided to take a closer look into what impact this was having on our archives. Does what we do on social media make a difference to who sees our archives? **In short, it does!**

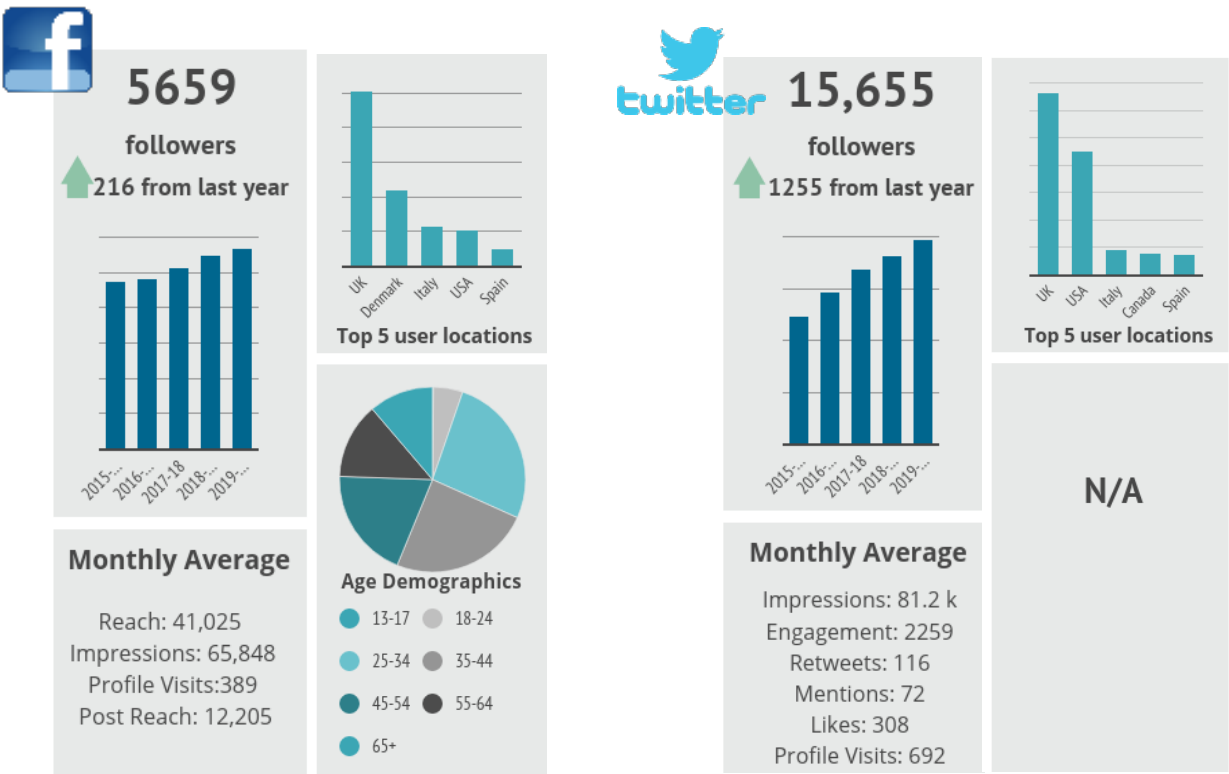
Our investigation looked at the page views of archives that were publicised on Facebook or Twitter to measure engagement per month over 2018 and 2019. These two years had differing levels of activity on social media as in 2019, two additional staff members were hired to help with the task. To measure the impact of social media publication, three statistical models were tested. The maths

of how this was investigated can be seen in detail in our blog [Social Media Impact](#). What we found was that during the 2018 baseline year social media accounted for 15 new views to an archive when it was published. Once we became more active in 2019, this was raised to 45 additional views. Thus proving that by increasing our social media presence, we were able to increase traffic to our archives. We hope that by increasing our social media presence even more, we can continue to bring attention to the archives that we store. As such we have further ramped up our social media activity taking part in several social media events including the Festival of Archaeology and Archive Alphabet, and we hope to take part in more over the coming year.

ADS Primary Social Media Accounts

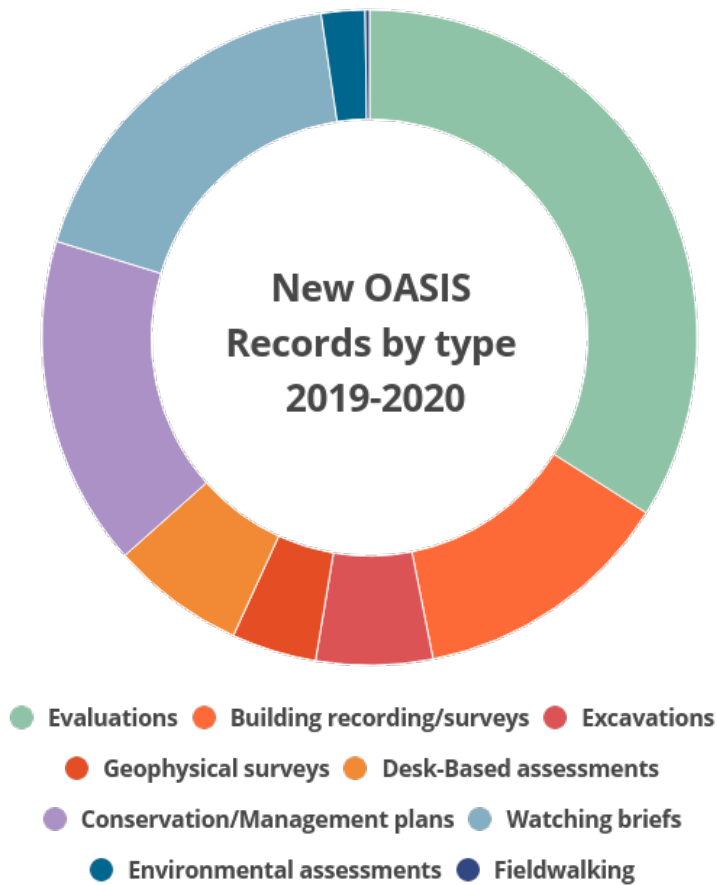


Internet Archaeology Social Media Accounts



OASIS

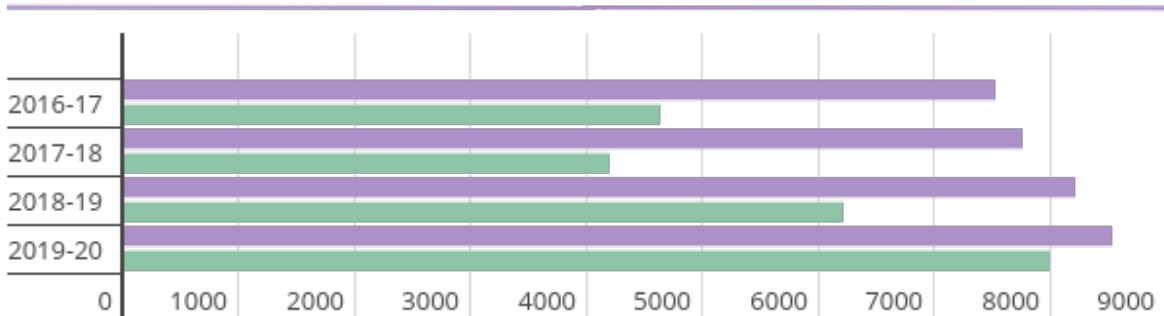
The OASIS system continues to be incredibly well used in England and Scotland, with more records created and reports released in 2019-20 than in any previous year. There are now well over 50,000 reports from OASIS available in the ADS Library. Over the last year, 121 new users have opened an OASIS account. It is noticeable that compared to previous years, there is a significant increase in the amount of buildings recording/surveying being undertaken, and a spike in conservation and management plans. This represents a success in advocacy of the OASIS system to wider parts of the heritage sector, as championed through partnerships with Historic England and Historic Environment Scotland.



OASIS Records and Reports

 **8528**
OASIS Records Created 2019-20.

 **7986**
OASIS Reports Released 2019-20.



HERALD

The HERALD project (the redevelopment of OASIS) has continued on schedule. A Beta version of the new form was released in March 2020, with select users from across all relevant parts of the sector (including community groups, built heritage, and archives) invited to form Working Groups to test and provide feedback on the system.

A particular focus has been the importance of identifying archival requirements and appropriate repositories for physical, documentary and digital material as early on in the workflow as possible. ADS are currently working with the sector, including the Society of Museum Archaeology, to this effect. The full new OASIS form is planned to be released in Autumn 2020, with

users transitioning to the new system thereafter. In England, the rollout will coincide with a series of training sessions and materials being developed and implemented by partners MSDS Marine Ltd. Next year will be an exciting one for OASIS, and will include developing partnerships with Northern Ireland, Wales (RCAHMS and ALGAO Cymru) and the Isle of Man.

HERALD is funded by Historic England as part of the [Heritage Information Access Simplified \(HIAS\)](#). Additional resources have been provided by Historic Environment Scotland to support reporting to Archaeology Scotland's annual summary of fieldwork: [Discovery and Excavation in Scotland](#)

Geophysical Survey at [Site name]

Location Help

The location page allows a number of different options to record the spatial aspects of your project.

Location

Site name: My Survey Site, York

Site code: Site123

SE 60986 50761 (UL) N30° 12 1g

Files:

- Download GeoJSON for site
- testdata1-003451_210826.dlp

Add a site

Cancel edit Save page Previous page Next page

RESEARCH AND DEVELOPMENT

9

To take a lead international role in **research and development** into preservation, access and interoperability of historic environment data,.

ADS continues to participate in significant research efforts, both within the UK and internationally. ADS has succeeded in creating a better alignment with the core research needs of the archive over the last year, with research efforts now creating a virtuous circle between research, best practice development and decision-making around ADS core services and implementations. Our work to increase opportunities and act as a conduit for knowledge transfer between domestic and international stakeholders has been strengthened.

The [ArchAIDE](#) project was brought to a successful close last year, resulting in a [comprehensive Internet Archaeology publication](#) released in early 2020, highlighting the efforts of a range of ADS staff. Our ongoing participation and leading roles in [SEADDA](#), [ARIADNEplus](#), [E-RIHS](#) and [SSHOC](#) continue to strengthen our place at the heart of European research e-infrastructure initiatives, collaborating on data standards, new ontologies, interoperability, and policies for preservation and access. Our international engagement has ensured ADS is well-placed to take advantage of post-Brexit investment in infrastructure at UK level, as we await the outcome of negotiations which will define our ability to participate internationally.

Closer to home, our work on DEBS has been completed, and hopefully will lead to important research resources for cemetery research, hosted by ADS.



3D model of Africana 2B
Tripolitanian DR450 for the
ArchAIDE archive.
<https://doi.org/10.5284/1050896>.
© ArchAIDE consortium.

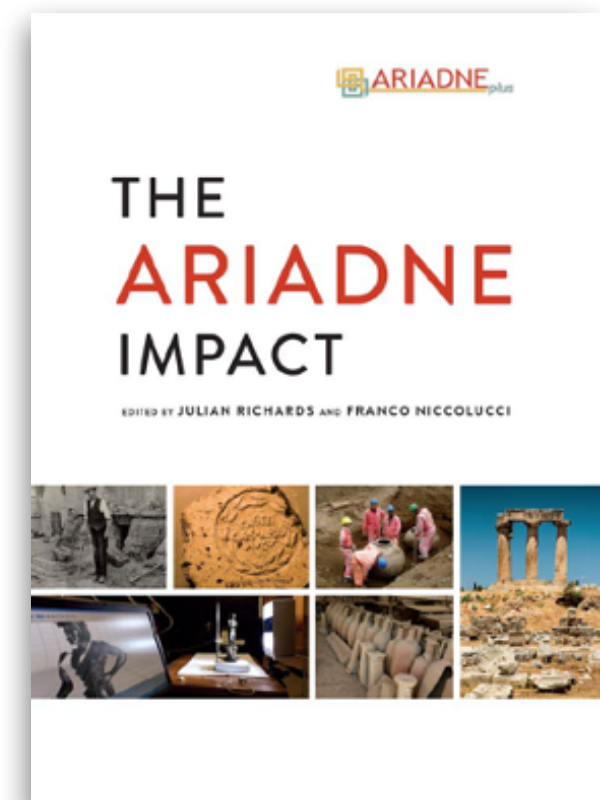


We have completed our first full year as Deputy Coordinators for the ARIADNEplus digital infrastructure for European archaeology. The role of ADS is focused on two core areas: leading activities for networking and integration, and acting as the archaeological lead partner for research into data aggregation. We will also support data stewardship, and provide internships for those wishing to learn more about the work of ADS, via the Transnational Access scheme. Whereas ARIADNE comprised 23 partners across 16 European countries, ARIADNEplus has expanded to 41 partners across 24 European countries, along with 3 international partners in Japan, the United States and Argentina. The disciplinary scope of ARIADNE has also been extended, with an emphasis on archaeological science, palaeo-anthropology, and buildings archaeology. ARIADNEplus has therefore provided a major focus for ADS activity in 2019-20.

We are leading activities targeted at new partners to bring them rapidly to the same level of awareness as those who participated in the previous project. This includes preparing documentation and workshops to present and explain the way ARIADNE integrates data, and held one of these in Pisa in September 2019. Such activities also include the

introduction of all partners to the extended and innovative ARIADNEplus approach, such as the deeper integration of data. The ARIADNEplus community is also being informed, involved and trained in the global data strategies concerning data, such as the application of the FAIR principles to the domain and the implementation of the ARIADNEplus Cloud as a thematic cloud within the global [European Open Science Cloud](#) (EOSC).

In September 2019 we published an Open Access volume entitled "The ARIADNE Impact", edited by Julian Richards and Franco Niccolucci. This



presented the papers given at a session entitled “Digital Infrastructures for Archaeology: Past, Present and Future directions” which had been held at CAA 2019 in Krakow, Poland, as well as additional papers commissioned from partners unable to attend. The publication, by Archaeolingua Press, was launched at the European Archaeological Association annual conference in Bern, Switzerland. In November 2019, we co-organised a roundtable on FAIR data at the annual conference Cultural Heritage and New Technologies (CHNT), held in Vienna, Austria.

ADS is also leading the development of international collaborations within ARIADNE. We have worked, in particular, with existing international partners: Arizona State University (the home of tDAR, the US-based repository), CONICET, which is developing a consortium of Argentinian repositories for archaeology, and the Nara Research Institute, which aggregates tens of thousands of fieldwork reports in Japan. In January 2020 we represented ARIADNEplus at a workshop on the aggregation and re-use of large data sets organised by CfAS (the Coalition for Archaeological Synthesis) of which

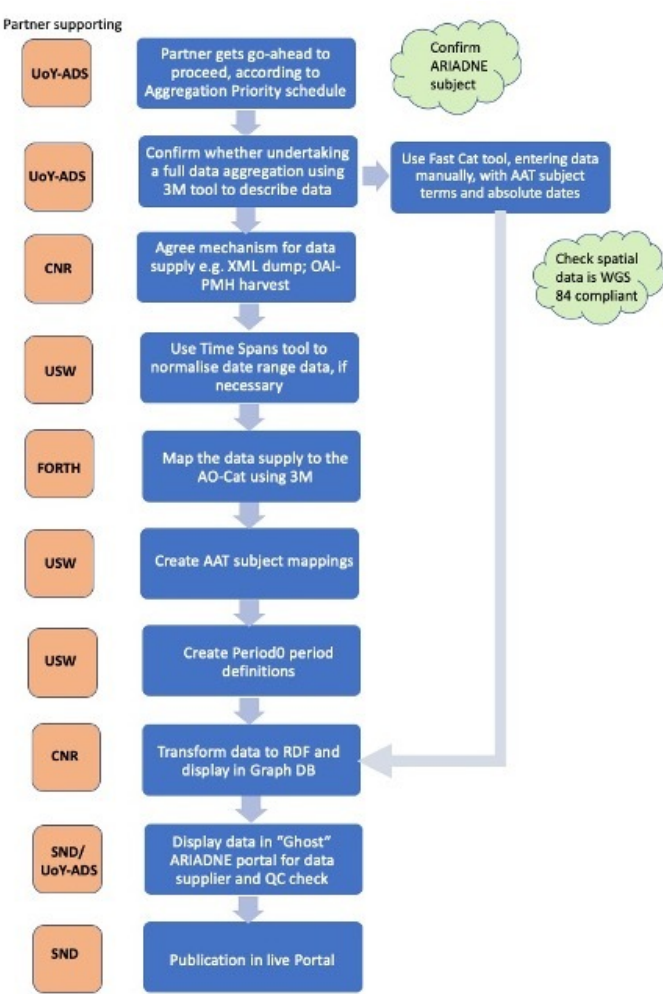
Project team at FAIR Archaeology workshop, Arizona State University library February 2020.
© University of York.



ADS is a member - at the conference of the Society of Historical Archaeology in Boston, United States.

In February 2020, Julian Richards represented ADS and ARIADNEplus at a workshop organised by partner Arizona State University in Tempe, Arizona, on the difficult issues surrounding the preservation and access of complex archaeological datasets. The group, which also included representatives of CyberSouthwest, DataONE, and OpenContext, agreed to establish FAIRarchaeology.org and to seek National Science Foundation funding for a number of joint workshops with ARIADNEplus and the SEADDA COST action aimed at developing implementation guidelines for the FAIR principles in archaeology, with recommendations for key bodies, such as EAA and SAA.

ARIADNEplus also seeks to update and extend the research data infrastructure delivered within the preceding ARIADNE project (2013-17). ADS is leading a task force of core partners who are managing the work of aggregation of partner data sets, so that they are integrated within the ARIADNEplus RDF triplestore, and made available via an enhanced ARIADNE portal, being developed by the Swedish National Data Service. We have worked with CNR (Italy), PIN (Italy), FORTH (Greece) and the University of South Wales (UK) to develop an aggregation pipeline and provided a manual for partners on the aggregation process. We have so far aggregated over 1.5m records



ARIADNEplus - data aggregation pipeline.

covering archaeological sites and monuments and archaeological ‘events’ (i.e. excavation and other fieldwork activities) from a small number of partners, but using ADS ArchSearch collections as the primary test data for the new ARIADNE ontology, the AO-Cat, and the data aggregation tools. A Beta version of the new ARIADNE portal is to be launched in September 2020.



We have now completed the first year of COST Action [SEADDA](#), a four-year networking project funded by the COST Association. SEADDA was created to help build an international community of archaeologists and digital specialists, working together to secure the future of archaeological data across Europe and beyond. SEADDA now has over 120 members representing 32 COST countries and four International Partner Countries. This year the first Action Management Committee was held at the annual European Archaeological Association in Bern and several Short Term Scientific Missions were begun this year, including two at ADS, with Paolo Lussu joining us from Italy and Vera Moitinho from Portugal.

Although uncertainty around Brexit caused difficulties around the financial

arrangements for SEADDA, requiring the grant-holder to be changed from ADS to our trusted partners Inrap in France, it was possible to continue on, with a meeting of Working Group 1 in Gothenburg in November and Working Group 2 in Vienna in December. The Working Group 1 meeting led to agreement to create a special issue of *Internet Archaeology*, featuring national surveys of the state of digital archiving in member countries, which will be published in 2020-21.

However, things became more difficult in the new year due as a result of Covid-19. Working Group 3 was scheduled to meet over three days in the Hague in March, and Working Group 4 over three days in early April. Both had to be cancelled and hastily moved online. While both were successful, and in some instances had a wider reach than would have been possible for an in-person meeting, it was still very disappointing to lose more momentum in the first year of a networking project we feel is very important internationally to the sector. But we will continue to work hard next year to make up ground as best we can.

SEADDA online Working Group meeting on data re-use



ADS has now successfully completed participation in the three-year preparatory phase of the new European Research Infrastructure for Heritage Science (E-RIHS). [E-RIHS](#) set out to support research on heritage science interpretation, preservation, documentation and management through the creation of a European infrastructure.

The ADS was one of several partners within the UK node, and completed a report in early 2020 on data curation policy, which was singled out and commended in the E-RIHS final evaluation: "The data policies specified in Data Curation Policy document are very well elaborated, especially with regards to the FAIR principles. The overview of data types produced by various methods employed in heritage sciences is very comprehensive and useful".

The ADS has also been an active partner within the [UK national hub](#), in which Julian Richards continued to Chair the Infrastructure and Access working party, and represented E-RIHS on a working party convened by AHRC to develop a proposal for a national infrastructure for heritage science.



ADS continues to work with [SSHOC](#) - the Social Sciences and Humanities Open Cloud - another EU-funded Research Infrastructure project. SSHOC brings together the existing research e-infrastructures: [CESSDA](#), [CLARIN](#), and [DARIAH](#), as well as [E-RIHS](#), to work together to help research data from the social sciences and humanities converge towards a coherent set of services provided by the European Open Science Cloud (EOSC).

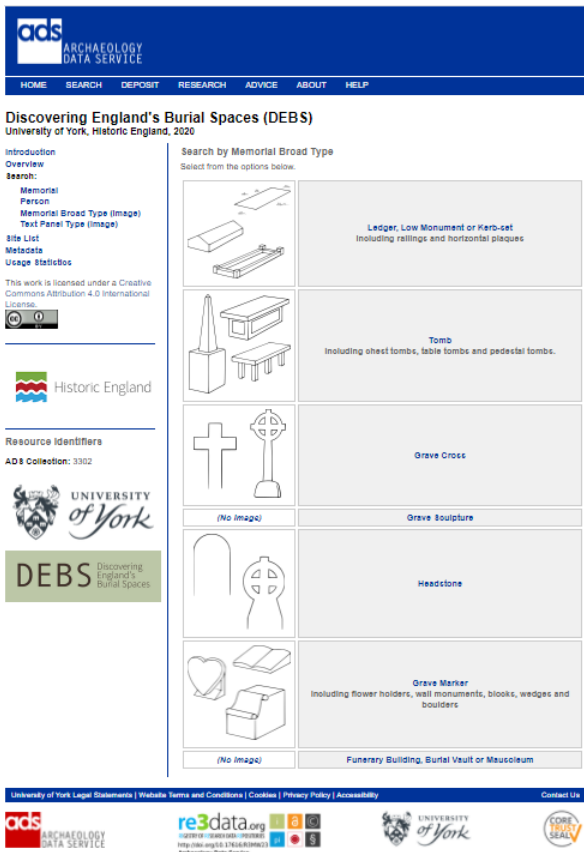
Within SSHOC ADS is investigating issues around the provision of Open Data from Heritage Science and Archaeology. ADS ran a joint SEADDA/SSHOC/E-RIHS workshop in April 2020 specifically on re-use of scientific data, which was very useful and well-received. The workshop was meant to be held in York, but was moved online at the last minute due to COVID-19.



DISCOVERING ENGLAND'S BURIAL SPACES

This year, the DEBS project has continued to work hard on producing tools and resources for community groups that want to conduct archaeological surveys of graveyard monuments. The project is now largely complete, with an [updated website](#) full of [guidance documents](#) and [digital tools](#), the production of a prototype mobile application for surveying (tested by our community participants), and the creation of a [new national database for burial space research](#), managed by the ADS.

A highlight of this year was the DEBS involvement in the Council for British Archaeology's [Festival of Archaeology](#). The DEBS team hosted two live streamed public lectures; one an introduction to the archaeology of burial grounds, and the other on what we can learn from systematic burial ground research that transcends individual sites. We had 216 attendees over the course of the two lectures, and more people are [catching up online](#) through the DEBS website. Judging by the questions and comments, the talks were very well received, and over 80% of attendees to the first lecture said that they had been inspired to look more closely at their graveyard heritage.



Screenshot of the DEBS database interface.



In addition, for the duration of the festival Dr Toby Pillatt provided one-to-one support for individuals and community groups that wished to convert existing datasets to the new standardised recording system, thereby making them compatible with the new [online database](#). To support this, the ADS ran a competition to enable community groups to archive their newly converted data for free. Consequently, we are now looking forward to adding archives from surveys in Liverpool and Manchester

to the collection. Although the bulk of the work is now done, we are still keen to raise awareness of the project. We recently published a [data paper in Internet Archaeology](#), an academic article is in peer review, and in the next few months, we will be writing a contribution to a new edited volume on graveyard research. While times are uncertain, it's clear that there is still a lot of interest in graveyards and the stories they can tell.

Slingsby Local History Group, October 2019. © Toby Pillatt.



SERVICE MANAGEMENT

10

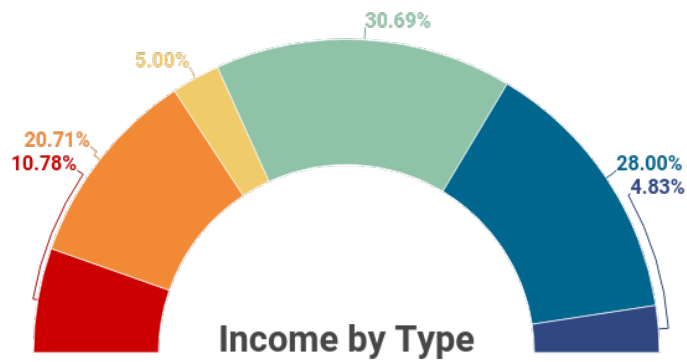
To maintain effective **service management** and administration in pursuit of all the above aims, and to maintain financial sustainability.

FINANCE REVIEW

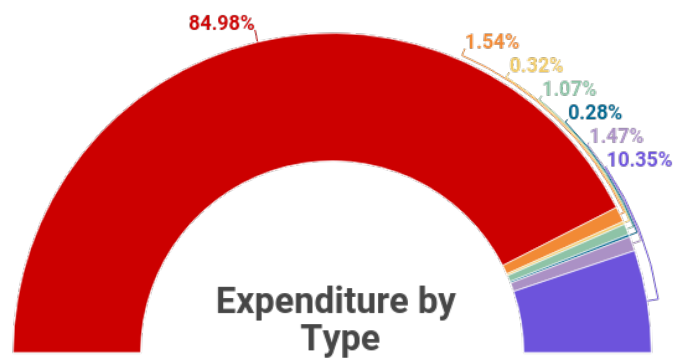
During the financial year 1 August 2019 - 31 July 2020 the ADS and Internet Archaeology had total income of £654,804 and total expenditure of £621,165. This is a significant improvement on the previous year, reflecting the start of some commercial contracts, and the first full year of ARIADNEplus. We therefore ended the year with an operating surplus, and did not need to draw upon our reserves, which remain stable at £170,711. The outlook for 2020-21 also looks positive, although we need to generate a larger surplus in order to invest in maintenance and enhancements to our infrastructure.



Reconstruction of Iron Age grave in Lovosice (Czech Republic) in *Internet Archaeology* article [VirtualArch: Making Archaeological Heritage Visible](#). © Jan et al.



Research Councils Historic England Historic Environment Scotland Commercial Archaeology European Funding Internet Archaeology



Staffing Travel Printing, Postage, & Publicity Events & Training Office Supplies Professional Fees Estates and Indirect

SYSTEMS MANAGEMENT

Efficient systems management of the 31 Virtual Machines, and numerous applications that we maintain is integral to the smooth running and continuity of the ADS and *Internet Archaeology*.

During the last year, ten Ubuntu 16.04 virtual machines were migrated to Ubuntu 18.04. Support for Ubuntu 16.04 will finish in April 2021.

Several of our web applications and programs have been updated during the last year, for example the Library, ArchSearch and Archives search page. Improvements have also been made to our internal collection management system and Heritage Gateway web services, for example, the latest data has been uploaded for Historic Milestones and the Excavation Index.

All of our Glassfish web servers have been updated to Payara 5.2, as have most of our Tomee servers, which has improved the overall consistency and maintainability of our web servers. Our Networked File System has also been upgraded by the IT Services department at York University.

There were no security incidents during the past year.

28
Virtual Machines managed by ADS.
★★★★★

10
VM migrations from Ubuntu 16.04 to Ubuntu 18.04 carried out in 2019-20.
★★★★★

2
Live databases.
★★★★★

2
Development databases.
★★★★★

0
Major events in 2019-20.

STAFFING

There were no staffing changes during 2019-20 but we anticipate having to increase staffing in 2020-21, finances permitting, to deal with the increased volume of activity.



The bounds of Durrington anomaly 8A from *Internet Archaeology* article [A Massive, Late Neolithic Pit Structure associated with Durrington Walls Henge](#). © Gaffney et al.

