Plan Overview

A Data Management Plan created using DMPonline

Title: Reconstructions of Sea Mills Roman Ruins, Bristol, UK.

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Template: University of Bristol Postgraduate Template

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Project abstract:

The creation of three-dimensional digital reconstructions of the sites of Sea Mills Roman Ruins and Kings Weston Roman Villa, in Bristol, England.

This forms part of the PhD Research produced by Alexander T. R. Birkett [https://orcid.org/0000-0002-1150-5464] entitled "Virtual Ruins, Real Insights: Establishing A Framework for three-dimensional Modelling in Archaeology".

The Sea Mills Roman Ruins case study focuses on digitally reconstructing the archaeological remains situated in Sea Mills, Bristol at ST55100 75800, excavated in 1934 by Alfred J. Selley. The only surviving evidence of this Roman settlement today is the excavated remains of a roadside structure in Sea Mills.

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Reconstructions of Sea Mills Roman Ruins, Bristol, UK.

Project Summary

Provide a brief description of the project and the research being carried out. State if research is part of a larger project, department(s) and funders involved and where data fits in.

The creation of three-dimensional digital reconstructions of the sites of Sea Mills Roman Ruins, in Bristol, England.

This forms part of the PhD Research produced by Alexander T. R. Birkett [https://orcid.org/0000-0002-1150-5464] entitled "Virtual Ruins, Real Insights: Establishing A Framework for three-dimensional Modelling in Archaeology".

This thesis aims to critically re-evaluate the state of Three-dimensional modelling within the field of archaeology by shifting the focus from physical fidelity to the rigour of interpretation. This is achieved with a focus on its pivotal role in documenting and reconstructing built structures, particularly domestic buildings, during and after excavation.

This is achieved through the application of three-dimensional recording techniques such as photogrammetry finite element analysis, lighting analysis, and methods for visually categorising levels of certainty. These are situated within a broader framework of methods to ensure ease of integration into the established processes of archaeological excavation.

The reconstruction of the Sea Mills Roman Ruins is one of three case studies focusing on digitally reconstructing the archaeological remains situated in Sea Mills, Bristol at ST55100 75800, excavated in 1934 by Alfred J. Selley. The only surviving evidence of this Roman settlement today is the excavated remains of a roadside structure in Sea Mills.

Data Types

What types of data will be involved?

The data collected and produced will be the following:

- Geospatial survey data:
  - Total Station and/or GNSS GPS data.
  - UAV data.
  - Created geospatial data from plans.
- Vector Drawings:
  - Plans and sections of buildings and trenches where applicable.
  - Harris Matrix for excavations where applicable.
  - Extended Harris Matrix for reconstructions.
- Raster Images:
  - Photographs from UAV surveys.
  - Photographs from terrestrial surveys.
  - Photographs of artefacts.
- Documents:
  - Reports from lighting analysis.
  - Reports form photogrammetry surveys.
  - Reports from structural analysis.
  - Reports from terrestrial and aerial surveys.
  - Reports of reconstruction paradata
- Tabular data:
  - Database of site data.
  - Results from structural analysis.
  - Results from lighting analysis.
  - Calibration data for Photogrammetry.
  - Metadata for files.
  - File tree data for project folder.
- Three-Dimensional Reconstructions and Records
  - Three-dimensional model files.
  - Texture files for three-dimensional models.

What file formats will be used?

Data will be stored, recorded, and organised according to the best practices outlined by the Archaeology Data Service (ADS) for the storage and archiving of digital data, including raster and vector data, geophysical data, geospatial data, three-dimensional data, and alpha-numeric documentary data.

Data Type	Archival File Types
Alpha-numerical data	Plain Text (.txt) Delineated Text (.csv)
Documentary data that may consist of just text, or text and pictures.	Plain Text (.txt) Portable Document Format (.pdf/A)
Raster imagery data	Tag Image File Format (.tiff) Portable Network Graphics(.png) Adobe Digital Negative(.dng)
Vector imagery data	Scalable Vector Graphics (.svg) Portable Document Format (.pdf/A) Drawing Exchange Format (.dxf) Graph Modelling Language (.xgml)
Geodatabase	Shapefiles (.shp) [this is accompanied by up to eleven reference files that are equally archival] Delineated Text (.csv) GeoTIFF (.tiff)
Three-Dimensional models (Records or Reconstructions)	Wavefront (.obj) Stereolithography (.stl)
Code	R Code (.R)
Compressed Files	.zip
Metadata & Paradata	Delineated Text (.csv) Plain Text (.txt) Portable Document Format (.pdf/A)

What will be the size of the files?

Data Type	Estimated File Size (Uncompressed)
Alpha-numerical data	< 01 GB
Documentary data that may consist of just text, or text and pictures.	< 01 GB
Raster imagery data	< 40 GB
Vector imagery data	< 05 GB
Geodatabase	< 05 GB
Three-Dimensional models (Records or Reconstructions)	< 40 GB
Metadata & Paradata	< 01 GB
Total (Uncompressed)	< 90 GB
Total (Compressed)	~ 54 GB

Data Storage and Preservation

How will the data be stored and kept safe?

Data prior to processing will be stored on University of Bristol SharePoint servers with two off-site backup of all data.
Once archived all data will be stored in The University of Bristol Research Data Storage Facility (RDSF), which provides secure, long-term storage for research data. This major investment provides nightly backup of all data, with further resilience provided by three geographically distinct storage locations. A tape library is used for backup purposes and also for long-term, offline data storage. Only authorised users can access data stored within the RDSF. The RDSF is managed by Bristol's Advanced Computing Research Centre (ACRC) which has a dedicated steering group and a rigorous data storage policy (https://www.acrc.bris.ac.uk/acrc/RDSF_policy.pdf). The RDSF upholds and reinforces Bristol's wider Information Security Policy(www.bris.ac.uk/infosec/policies/docs/isp-01.pdf).

Data Organisation

How will data be organised?

Primary Folder - Level One	Level Two	Level Three	Level Four	Level Five	Level Six	Contents description
3D						Three-Dimesnional Models
	PROJECT FOLDER					The top-level folder containing all the files relating to a three-dimensional reconstruction model.
		EXPORTED MODELS				Three-dimensional model assets produced for the reconstruction.

			LANDSCAPE			The reconstructed landscape surrounding the model which had previously not been able to be reconstructed.
				PHASE01		The Phase reconstructed.
			COMPONENTS			The folder containing all non-reconstruction related meshes.
				PHASE01_STRUCTURE		Structural meshes named with their BIM name and Extended Matrix name
					STRUCTURE_STRUCTURAL AREA REINFORCEMENT_AREAREIN	
					STRUCTURE_STRUCTURAL BEAM SYSTEMS_STRUCTURALFRAMINGSYSTEM	
					STRUCTURE_STRUCTURAL COLUMNS_STRUCTURALCOLUMNS	
					STRUCTURE_STRUCTURAL CONNECTIONS_STRUCTCONNECTIONS	
					STRUCTURE_STRUCTURAL FABRIC REINFORCEMENT_FABRICREINFORCEMENT	
					STRUCTURE_STRUCTURAL FOUNDATIONS_STRUCTURALFOUNDATION	
					STRUCTURE_STRUCTURAL FRAMING_STRUCTURALFRAMING	
					STRUCTURE_STRUCTURAL PATH REINFORCEMENT_PATHREIN	
					STRUCTURE_STRUCTURAL REBAR_REBAR	
					STRUCTURE_STRUCTURAL STIFFENERS_STRUCTURALSTIFFENER	
					STRUCTURE_STRUCTURAL TRUSSES_STRUCTURALTRUSS	
				PHASE01_ARCHITECTURE		Architectural meshes with their BIM name and Extended Matrix name
					ARCHITECTURE_CASEWORK_CASEWORK	
					ARCHITECTURE_CEILINGS_CEILINGS	
					ARCHITECTURE_COLUMNS_COLUMNS	
					ARCHITECTURE_DOORS_DOORS	
					ARCHITECTURE_FASCIAS_FASCIA	
					ARCHITECTURE_FLOORS_FLOORS	
					ARCHITECTURE_FURNITURE_FURNITURE	
					ARCHITECTURE_GUTTERS_GUTTER	
					ARCHITECTURE_LANDING_STAIRSLANDINGS	
					ARCHITECTURE_RAILINGS_RAILING	
					ARCHITECTURE_RAILINGS_STAIRSRAILING	
					ARCHITECTURE_RAILINGS_RAILINGS	
					ARCHITECTURE_RAMPS_RAMPS	
					ARCHITECTURE_ROADS_ROADS	
					ARCHITECTURE_ROOF SOFFITS_ROOFSOFFIT	
					ARCHITECTURE_ROOFS_ROOFS	
					ARCHITECTURE_ROOMS_ROOMS	
					ARCHITECTURE_STAIRS_STAIRSRUNS	
					ARCHITECTURE_STAIRS_STAIRS	
					ARCHITECTURE_SUPPORT_STAIRSSUPPORTS	
					ARCHITECTURE_SUPPORTS_RAILINGSUPPORT	
					ARCHITECTURE_TERMINATIONS_RAILINGTERMINATION	
					ARCHITECTURE_WALL SWEEPS_CORNICES	
					ARCHITECTURE_WALLS_WALLS	
					ARCHITECTURE_WINDOWS_WINDOWS	
					OTHER_PIPE ACCESSORIES_PIPEACCESSORY	
					OTHER_PIPE FITTINGS_PIPEFITTING	
					OTHER_PIPE INSULATIONS_PIPEINSULATIONS	
					OTHER_PIPES_PIPES	
					OTHER_PIPES_PIPECURVES	
					OTHER_PIPING SYSTEMS_PIPINGSYSTEM	

		MATERIAL LIBRARIES				Image files used for materials and textures of meshes within 3Ds Max.
		RENDER OUTPUT				The output location for all rendered images.
		RENDER PRESETS				A folder to store preset settings for render engines within 3Ds Max.
		SCENE ASSETS				Additional assets used for refrence or help.
			IMAGES			Image files used specifically for rendering or to aid in the alignment of cameras for rendering.
				ANIMATIONS		Animations stored as single frames produced from the reconstruction model.
				IMAGES		Images of rendered scenes of the reconstruction model.
	STRUCTURAL ANALYSIS STUDY FOLDER					The top-level folder containing all the files relating to a three-dimensional model.
		ARCHIVES				Old assemblies and part files that are no longer used or referenced in any studies.
		AUTOBACK				Within Autodesk 3Ds Max, scene files are auto-saved to this location.
		EXPORT				Parts and assemblies that are to be exported back into the Technical Model reconstruction.
		IMPORT				Models to be imported into inventor after changes or adaptations to the structure has been made in response to structural analysis.
		PARTS				The parts used to create the assemblies.
		ASSEMBLIES				The assemblies and studies saves.
		REPORTS				Results stored as .csv files and images.

RECORDS						Three-dimensional representations of archaeological data comprising of vectors, points, and meshes.
	POINT-CLOUDS					Three-dimensional representations of archaeological data as point clouds.
	MODELS					Three-dimensional representations of archaeological data as meshed models.
	CONTROL POINTS					Control points used to georefrence and align three-dimensional representations of archaeological data.
	CALIBRATIONS					Calibarations used to align photgraphs for three-dimensional representations of archaeological data.
DATA						Geodata
DATABASE						
SURVEY						Structured records of archaeological data often stored as tabular data contained within discrete files or organised within databases, geodatabases.
	DATA					Data usually imported as tables from
	EXCAVATION					Point, line, and polygon data relating to or gathered from excavations. This will typically not include features such as masonry walls or building/room points as these are also produced out of the trench.
	GEOGRAPHY					Point, line, and polygon data relating to the local geography including place names, building outlines (unless surveyed), rivers and roads.

	GEOLOGY					Point, line, and polygon data relating to underlying geology, geological features. This does also include soil data.
	SURVEY_PROCESSED					Point, line, and polygon data representing masonry features, building surveys, drawing locations and any measured or measurable data that is created that does not fit in the above categories.
	SURVEY_RAW					Point, line, and polygon data representing the working datasets directly output from survey instruments. The processed data can be considered the 'master' copy used for analysis.
	GRIDS					Point and polygon data relating to the site grid.
	DOCUMENTS					Reports
	FIELDWORK RECORDS					Formalised longform textual content or primary textural records relating to archaeological data either of digital origin or digitised from physical records.
DRAWINGS						Technical Drawings
ARTEFACT ILLUSTRATIONS						
CAD						Raster or vector data files conveying visual information of archaeological data as technical or illustrative representations.
PHOTOGRAPHY						UAV
SITE PHOTOS						Raster data records or archaeological data.
PHOTOGRAMMETRY						Raster data records or archaeological data.
ARTEFACTS						Raster data records or archaeological data.

Data Documentation and Description

What documentation will you keep?

Data will be stored, recorded, and organised according to the best practices outlined by the Archaeology Data Service (ADS) for the storage and archiving of digital data, including raster and vector data, geophysical data, geospatial data, three-dimensional data, and alpha-numeric documentary data.

Project Level Metadata

Human Name	Metadata Name	General Description
Project Title	PROJECT_TITLE	The title (and any alternatives such as site codes) for the dataset.
Description	PROJECT_DESCRIPTION	A brief summary of the main aims and objectives of the research project from which the data collection arose together with a brief summary description of the content of the dataset.
Subject	PROJECT_SUBJECT	Keywords for the subject content of the dataset (qualified using controlled terms such as those supplied by the Forum on Information Standards in Heritage (FISH))

Coverage	PROJECT_COVERAGE	This is both spatial and temporal coverage. For spatial coverage it should include the current and contemporary name(s) of the country, region, county, town or village covered by the data collection and, where possible, a standardised reference should be used. If names or administrative units were different during the time period covered by the data they should be recorded separately. Site coordinates can also be entered as a National grid reference in a number of different ways e.g., as a point (useful to describe a small project area via a central coordinate); as a line (e.g., at least two coordinates to represent the linear limits of the site); as a polygon (for a more complex site area, three or more coordinates are used to describe the boundaries). If applicable, the full postal code for the site can be included. For temporal coverage it should include the dates/period covered by the dataset (using existing thesauri where possible such as the Forum on Information Standards in Heritage (FISH) Period List).
Projection System	PROJECT_PCS	Projected Coordinate System used.
Coordinate System	PROJECT_GCS	Geographic Coordinate System used.

Creators	PROJECT_ CREATORS	Details of the creator(s), compiler(s), funding agencies, or other bodies or people intellectually responsible for the data collection. Information should include forename, surname, affiliation, address, phone, fax, email, or URL.
Publisher	PROJECT_PUBLISHER	Details about any organisation which has published this data.
Contributors	PROJECT_CONTRIBUTORS	Other individuals or organisations who have contributed to the resource.
Identifiers	PROJECT_PROJECTID	Project or reference numbers or site codes used to identify the dataset.
Dates	PROJECT_DATES	Dates indicating when the dataset was created, when the archaeological project was carried out, processing dates, or computerisation dates as appropriate.
Copyright	PROJECT_COPYRIGHT	The name of the copyright holder for the dataset. If the collection was created during work by an employee, the copyright holder will normally be the employer. If the material is covered by a specific copyright (e.g., Crown copyright) please indicate this.

Relations	PROJECT_RELATIONS	If the data collection was derived in whole or in part from published or unpublished sources, whether printed or machine-readable, this element should include references to the original material, details of where the sources are held and how they are identified there (e.g., by accession number). If the collection is derived from other sources include an indication of whether the data represents a complete or partial transcription/copy and the methodology used for its digitisation. Also include full references to any publications about or based upon the data collection.
Language	PROJECT_LANGUAGE	Indication of which language(s) the dataset is in (e.g., English, French, Spanish).
Resource Type	PROJECT_TYPE	Whether the dataset is best described as primary data, processed data, an interpretation of data, or a final report.
Format	PROJECT_FORMAT	The formats the data within the project is saved in (e.g., WordPerfect 5.1, HTML, AutoCAD).

General File Level Metadata.

Human Name	Metadata Name	General Description
File Name	FILE_NAME	The name of the file e.g., report.doc
File Format	FILE_FORMAT	The file format e.g., PDF/A or Open Office Document
File Location	FILE_LOCATION	The file path i.e. directory and filename e.g., /adsdata/cottam_ba/jpg/fwking_plan.jpg
Software Name	FILE_SOFTWARE	The software used to create the file e.g., Microsoft Word 2007
Hardware used	FILE_HARDWARE	The hardware used to create the file, this is more significant when files are created directly by survey equipment such as laser scanners or GPS devices.
Operating System Used	FILE_OPSYS	The operating system under which the file was made e.g., Windows XP or Mac OS X 10.5.
Date of Creation	FILE_CREATED	When the file was made.
Date of Last Update	FILE_UPDATED	When the file was updated.
Linked Files	FILE_LINKED	This element should be used to highlight relationships between files.
Identifiers	FILE_IDENTIFIER	This element should be used to highlight whether a file is a source file or derived from another.
Creator	FILE_CREATORS	The file path i.e. directory and filename e.g., /adsdata/cottam_ba/jpg/fwking_plan.jpg.
Copyright	FILE_COPYRIGHT	Details of copyright or other rights and holder details.

Raster & Vector File Metadata.

Human Name	Metadata Name	General Description
Title	FILE_TITLE	The title of the image or a suitable caption.
Description	FILE_DESCRIPTION	Description of the image.
Coverage	FILE_COVERAGE	Site location and description. The address, or coordinates for the subject and a description of the subject. Coverage should also include any relevant period terms.
Projection System	FILE_PCS	Projected Coordinate System used.
Coordinate System	FILE_GCS	Geographic Coordinate System used.
Keywords	FILE_KEYWORDS	Keywords e.g., period, site or feature terms. Use suitable thesauri where they exist.
File Format and Version	FILE_VERSION	e.g., TIFF 6.0.
File Size	FILE_SIZE	Size of the file in bytes.
Resolution	FILE_RESOLUTION	The resolution of the image measured in pixels per inch (ppi).
Dimensions	FILE_DIMENSIONS	Dimensions of the image in pixels e.g., 400 x 700px.
Colour Space	FILE_COLOUR	The colour space used in the image e.g., RGB or grayscale.
Bit Depth	FILE_BITDEPTH	e.g., 24bit or 8bit.

Three-Dimensional Record File Level Metadata.

Human Name	Metadata Name	General Description
Subject	FILE_SUBJECT	Keywords for the subject content of the dataset (qualified using e.g., the English Heritage NMR Monument Type Thesaurus or the MDA Object Type Thesaurus.
Intended accuracy	FILE_Accuracy	The originally intended accuracy or scale that the survey was to achieve.
Coverage	FILE_COVERAGE	Site location and description. The address, or coordinates for the subject and a description of the subject. Coverage should also include any relevant period terms.
Projection System	FILE_PCS	Projected Coordinate System used.
Coordinate System	FILE_GCS	Geographic Coordinate System used.
Keywords	FILE_Keywords	Keywords e.g. period, site or feature terms. Use suitable thesauri where they exist.
Dates	FILE_DATES	Dates indicating when the dataset was created, when the archaeological project was carried out, processing dates, or computerisation dates as appropriate.
Identifiers	FILE_PROJECTID	Project or reference numbers or site codes used to identify the dataset.
Resolution	FILE_RESOLUTION	The resolution of the image measured in pixels per inch (ppi).
Dimensions	FILE_DIMENSIONS	Dimensions of the image in pixels e.g., 400 x 700px.
Colour Space	FILE_COLOUR	The colour space used in the image e.g., RGB or grayscale.
Bit Depth	FILE_BITDEPTH	e.g., 24bit or 8bit.

Three-Dimensional Record Control Point Metadata.

Human Name	Metadata Name	General Description
Coordinates	CONTL_X, CONTL_Y, CONTL_Z,	List the three-dimensional coordinates for each control point.
Covariance	CONTL_CX, CONTL_CY, CONTL_CZ	Provide full correlation if available (from survey adjustment or GPS baseline solution), otherwise provide estimated standard deviation or variance of each coordinate.
Location	CONTL_Location	Textual description of location.
Dates	FILE_DATES	Dates indicating when the dataset was created, when the archaeological project was carried out, processing dates, or computerisation dates as appropriate.
Identifiers	FILE_PROJECTID	Project or reference numbers or site codes used to identify the dataset.
Coverage	FILE_COVERAGE	Site location and description. The address, or coordinates for the subject and a description of the subject. Coverage should also include any relevant period terms.
Projection System	FILE_PCS	Projected Coordinate System used.
Coordinate System	FILE_GCS	Geographic Coordinate System used.

Geographical Information System File Metadata.

Human Name	Metadata Name	General Description
Scale	FILE_SCALE	Scale/resolution of data capture, e.g., 1:1250
Method	FILE_Method	Method of original data capture, e.g., Total Station Survey, etc.
Dates	FILE_DATES	Dates indicating when the dataset was created, when the archaeological project was carried out, processing dates, or computerisation dates as appropriate.
Identifiers	FILE_PROJECTID	Project or reference numbers or site codes used to identify the dataset.
Coverage	FILE_COVERAGE	Site location and description. The address, or coordinates for the subject and a description of the subject. Coverage should also include any relevant period terms.
Projection System	FILE_PCS	Projected Coordinate System used.
Coordinate System	FILE_GCS	Geographic Coordinate System used.
Identifiers	FILE_PROJECTID	Project or reference numbers or site codes used to identify the dataset.
Resolution	FILE_RESOLUTION	The resolution of the image measured in pixels per inch (ppi).
Dimensions	FILE_DIMENSIONS	Dimensions of the image in pixels e.g., 400 x 700px.
Colour Space	FILE_COLOUR	The colour space used in the image e.g., RGB or grayscale.
Bit Depth	FILE_BITDEPTH	e.g., 24bit or 8bit.

Three-Dimensional Model File Metadata.

Human Name	Metadata Name	General Description
Number of Vertices	FILE_VERT	The number of vertices (points) in the model
Number of Polygons	FILE_POLY	The number of triangles or polygons in the model

Geometry Type	FILE_GEOMTYPE	The type of geometry used within the model (wire frame, parametric, etc. if applicable).
Scale	FILE_UNITSCALE	What scale is represented by 1 unit.
Coverage	FILE_COVERAGE	Site location and description. The address, or coordinates for the subject and a description of the subject. Coverage should also include any relevant period terms.
Projection System	FILE_PCS	Projected Coordinate System used.
Coordinate System	FILE_GCS	Geographic Coordinate System used.
Basic, Technical, or Extended	FILE_TYPE	Is the model the master model produced just after raw data processing, or is it a derived model produced from the master (e.g. after hole filling, simplification, smoothing, etc.)?
Level of Detail	FILE_LOD	How detailed is the model, what is the resolution of the scan.
Layers	FILE_LAYERS	Does the model use layers? How many?
Colour and Texture	FILE_TEXTURES	Does the model contain colour or texture information? How is this stored? If raster texture files are used then these have to be archived separately.
Material	FILE_MATERIAL	Information about the material properties of the model and whether they match the physical properties of the actual object.

Light Source(s)	FILE_LIGHT	Number and accuracy of light sources used in the model.
Shader	FILE_SHADER	Have special or extended shaders been used?
Animation	FILE_ANIMATION	Whether animation is used in the model along with description of type (keyframe, motion capture).

Data Sharing

What are your plans for publishing data?

Data will be published through the University of Bristol Research Data Repository (data.bris). The data.bris Repository offers a means for Bristol's researchers to openly share non-confidential research data, without the need for external data users to undergo any form of authentication. Each deposit is accompanied by appropriate metadata and is assigned a unique Digital Object Identifier (DOI) via the DataCite scheme. All data published by the Repository is available under a permissive re-use license.

Are there any ethical, commercial, legal or IPR issues which might apply when publishing your data?

There are no ethical, commercial, legal or IPR issues with publishing this data.

Planned Research Outputs

Collection - "Photogrammetry Survey Dataset of Sea Mills Roman Ruins"

This dataset comprises results from a photogrammetry survey of the Sea Mills Roman Ruins. It includes 3D models, point clouds, and high-resolution photographs, capturing detailed features of the ruins. The dataset provides accurate spatial and geometric data, essential for reconstruction, analysis, and preservation studies of the site.

Data paper - "Sea Mills Roman Ruins Three-Dimensional Reconstructions (Technical Model)"

Building on the basic models, this dataset features higher-poly, technical 3D reconstructions of the Sea Mills Roman Ruins. These models provide more detailed representations, incorporating essential architectural elements while maintaining limited texturing. They are crucial for in-depth analysis and hypothesis testing related to the site's historical architecture.

Data paper - "Sea Mills Roman Ruins Three-Dimensional Reconstructions (Basic Model)"

This dataset includes basic 3D models of the Sea Mills Roman Ruins, focusing on exploring alternative reconstruction possibilities. These low-poly models are primarily untextured or minimally textured, serving as preliminary visualizations to guide further detailed reconstruction efforts.

Book chapter - "Lighting Analysis Results of Sea Mills Roman Ruins Models"

This dataset contains the results from Lighting Analysis tests conducted on both Basic and Technical Models of the Sea Mills Roman Ruins. Tests were performed at key astronomical events - Spring and Autumn Equinoxes, and Summer and Winter Solstices, capturing morning, solar noon, and evening times. The dataset consists of rendered images showing illumination levels in Lux, providing insights into the lighting conditions and shadow play at these significant times of the year. This data is valuable for understanding the interplay of light and structure historically and for potential future site presentations.

Interactive resource - "PhD Thesis "Virtual Ruins, Real Insights: Establishing A Framework for three-dimensional Modelling in Archaeology""

This PhD thesis from the University of Bristol's Department of Archaeology & Anthropology by Alexander T. R. Birkett critically re-evaluates three-dimensional modelling in archaeology. It shifts the focus from physical fidelity to methodological rigor and the rigor of interpretation in reconstructing historical architecture. The thesis advocates for prioritizing methodological soundness over striving for elusive objectivity. It integrates techniques like photogrammetry and Finite Element Analysis into a comprehensive framework to unify the field's diverse approaches. The thesis presents a novel framework for three-dimensional recording and reconstruction, aiming to enhance the quality, integration, and sustainability of archaeological research. By applying this framework in various case studies, it highlights the challenges and potential in digital archaeology and calls for a holistic approach to improve archaeological practice's legacy and understanding of the past.

Interactive resource - "Terrestrial and Photogrammetric Survey at the Roman Ruins at Sea Mills, Bristol."

This report details the findings from a comprehensive terrestrial and aerial photogrammetry survey of the Roman Ruins at Sea Mills, Bristol (ST55100 75800). Prepared for the local Historic Environment Record (HER), it provides an in-depth analysis of the site, leveraging advanced photogrammetry techniques. The report includes detailed observations, measurements, and 3D models derived from both ground-level and aerial survey data. It aims to enrich the HER with precise and detailed information about the site's current condition, layout, and features, thereby contributing valuable data for future archaeological and conservation efforts. The report serves as a crucial resource for local heritage management, academic research, and public awareness regarding the site's historical and cultural significance.

Collection - "Finite Element Analysis Models of the Sea Mills Roman Ruins"

This dataset consists of detailed 3D models created for structural analysis of the Sea Mills Roman Ruins using Finite Element Analysis (FEA). The models incorporate accurate geometries and material properties of the ruins, allowing for simulations under various stress conditions. These analyses aid in understanding the structural integrity and historical construction techniques of the ruins, and are vital for academic research and the creation of the Technical Models.

This dataset also includes results from structural analysis tests undertaken that informed the Technical Model.

Collection - "Survey Data Collection of Sea Mills Roman Ruins"

This collection includes a comprehensive set of survey data related to the Sea Mills Roman Ruins, presented in various formats for versatile use. It encompasses GIS shapefiles for geospatial analysis, CSV files for data manipulation and analysis, detailed CAD drawings for precise architectural and archaeological representations, and PDFs of these drawings for easy accessibility and distribution. This diverse dataset is crucial for in-depth archaeological research, site planning, and preservation efforts.

Planned research output details

Title	DOI	Type	Release date	Access level	Repository(ies)	File size	License	Metadata standard(s)	May contain sensitive data?	May contain PII?
Photogrammetry Survey Dataset of Sea Mills Roman R ...		Collection	2024-04-30	Open	data.bris Research Data Repository	3 GB	Creative Commons Zero v1.0 Universal	None specified	No	No
Sea Mills Roman Ruins Three-Dimensional Reconstruc ...		Data paper	2024-04-30	Open	data.bris Research Data Repository	4 GB	Creative Commons Zero v1.0 Universal	None specified	No	No
Sea Mills Roman Ruins Three-Dimensional Reconstruc ...		Data paper	2024-04-30	Open	data.bris Research Data Repository	4 GB	Creative Commons Zero v1.0 Universal	None specified	No	No
Lighting Analysis Results of Sea Mills Roman Ruins ...		Book chapter	2024-04-30	Open	data.bris Research Data Repository	1 GB	Creative Commons Zero v1.0 Universal	None specified	No	No
PhD Thesis "Virtual Ruins, Real Insights: Establis ...		Interactive resource	2024-04-30	Open	data.bris Research Data Repository	1 GB	Creative Commons Zero v1.0 Universal	None specified	No	No
Terrestrial and Photogrammetric Survey at the Roma ...		Interactive resource	2023-04-24	Open	data.bris Research Data Repository	500 MB	Creative Commons Zero v1.0 Universal	None specified	No	No
Finite Element Analysis Models of the Sea Mills Ro ...		Collection	2024-04-30	Open	data.bris Research Data Repository	2 GB	Creative Commons Zero v1.0 Universal	None specified	No	No
Survey Data Collection of Sea Mills Roman Ruins		Collection	2024-04-30	Open	data.bris Research Data Repository	2 GB	Creative Commons Zero v1.0 Universal	None specified	No	No