

Geophysical Survey:
Land at Coleg Sir Gar, Pibwrlwyd Capus, Carmarthen

April 2025



Report No. 2367



Geophysical Survey: Land at Coleg Sir Gar, Pibwrlwyd Campus, Carmarthen

April 2025

Prepared for Wepco Ltd

By
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Report No. 2360

Project No.3205

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Summary

In March 2025, Archaeology Wales Ltd was commissioned by Wepco Ltd to undertake a geophysical survey at land on Coleg Sir Gar- Pibwrlwyd Campus, Carmarthen, located 1.6km south of Carmarthen, centred on NGR SN 41164 18286.

The results indicate a low probability for archaeological features. Rather, the site shows evidence of agricultural and modern activity, especially in regard to local services, on the southern part of the site.

All work conformed to the Standard and Guidance for Archaeological Geophysical Survey (CIfA 2020).

Crynodeb

Ym mis Mawrth 2025, comisiynwyd Archaeology Wales Ltd gan Wepco Ltd i gynnal arolwg geoffisegol ar dir ar Gampws Coleg Syr Gar-Piburlwyd, Caerfyrddin, a leolir 1.6km i'r de o Gaerfyrddin, wedi'i ganoli ar NGR SN 41164 18286.

Mae'r canlyniadau'n dangos tebygolrwydd isel ar gyfer nodweddion archeolegol. Yn hytrach, mae'r safle'n dangos tystiolaeth o weithgarwch amaethyddol a modern, yn enwedig o ran gwasanaethau lleol, ar ran ddeheuol y safle.

Roedd yr holl waith yn cydymffurfio â'r Safon a'r Canllawiau ar gyfer Arolwg Geoffisegol Archeolegol (CIfA 2020).

1. Introduction

- 1.1.1. In March 2025, Archaeology Wales Ltd (henceforth, AW) was commissioned by Wepco Ltd (henceforth, 'the client') to undertake a geophysical survey on land to the immediate east of Coleg Sir Gar Pibwrlwyd South Campus, located north of Pibwrlwyd Lane, 1.6km south of Carmarthen town centre (NGR SN 41164 18286). The aim of the survey was to provide a better understanding of the nature and precise location of the archaeological resource of the area.
- 1.1.2. The work was managed by Charley James-Martin MCIfA, AW Project Manager, and the site work was undertaken by Jennifer Muller MA ACIfA, Daniel Morgan and Einir Griffiths. The survey was undertaken on the 2nd of March 2025.
- 1.1.3. All work conformed to the *Standard and Guidance for Archaeological Geophysical Survey* (CIfA 2020), and followed the methodology detailed by the Written Scheme of Investigation (WSI) (Muller 2025) prior to the survey. The WSI was approved by Henneb Development Management – Dyfed region (henceforth HDM-DR), archaeological advisors to the Planning Authority, prior to the commencement of the survey.

2. Site Description

- 2.1.1. The site is located north of Pibwrlwyd Lane, 1.6km south of Carmarthen town centre (Figure 1). The site is bounded by Pibwrlwyd Lane to the south and the existing Coleg Sir Gar Pibwrlwyd South Campus to the west. The land to the north and east is farmland. The site is centred on NGR SN 41164 18286.
- 2.1.2. The full area of proposed development is rectangular in shape. The western half incorporates existing buildings and car parking for the Coleg Sir Gar Campus while the eastern half is open land under pasture. The survey was undertaken on the eastern half of the site, which was 1.9 hectares in size.

- 2.1.3. The underlying geology comprises Tetragraptus Beds, which is a sedimentary mudstone bedrock formed between 477.7 and 465.5 million years ago during the Ordovician period. The superficial deposits are made up of, Devensian glaciofluvial deposits consisting of sand and gravel. These are sedimentary superficial deposits formed between 116 and 11.8 thousand years ago during the Quaternary period. In the open land to the east the superficial deposits are Devensian till a Sedimentary superficial deposit formed between 116 and 11.8 thousand years ago during the Quaternary period. (BGS 2025).

3. Archaeological and historical background

- 3.1.1. A complete historic background is available in the desk-based assessment (DBA) carried out for the proposed development by Brindle & Green (Hough 2024). However, the most relevant parts to the current application area are covered below.
- 3.1.2. Prehistoric activity within the immediate surrounds of the proposed site comes in the form of a single Bronze Age barrow, likely lost after the construction of the A48.
- 3.1.3. There are no sites of a Roman date within the immediate area. However, it is located 1.6km south of Carmarthen, which can trace its origins to the Roman settlement of Moridunum. A section of Roman Road bearing the modern name Tregynwr is also located to the north-west of the site.
- 3.1.4. The DBA identified that the site is located within an area with potential for archaeological remains of medieval date. The location of the first Carmarthen Castle, which was likely destroyed by the construction of the railway, lies within the 1km radius of the site. Pibwr Lwyd Farmhouse (LB 9733), a Grade II Listed Building first noted in the medieval period, lies to the south of the proposed

development area. Historic mapping also identified two potential medieval settlements of 'Pensarn', and 'Pibour mill' located within 1km of the development.

- 3.1.5. Post-medieval and modern activity is largely related to features and buildings seen on historical mapping, of which three are Listed Buildings.

4. Aims and Objectives

- 4.1.1. The primary objective of the work was to locate and describe, by means of a geophysical survey, archaeological features that may be present within the development area.
- 4.1.2. The survey attempted to elucidate the presence/absence of archaeological material that might be affected by the proposed development scheme, in particular its character, distribution, extent and relative significance within the agreed areas.
- 4.1.3. The present report provides information which is sufficiently detailed to allow informed planning decisions to be made that can safeguard the archaeological resource. The information could be used to determine further archaeological investigation or appropriate mitigation strategies for any archaeological remains within the area to be implemented.
- 4.1.4. The survey was carried out in accordance with the approved Written Scheme of Investigation. All works were undertaken in accordance with the standard required by The Chartered Institute for Archaeologists' *Standard and Guidance for Archaeological Geophysical Survey* (2020) and current Health and Safety legislation.

5. Methodology

- 5.1.1. The site grid was located by an e-survey High Precision GNSS Receiver. All survey points were plotted onto an OS base map.
- 5.1.2. The survey was carried out using a Bartington Grad601-2 dual sensor fluxgate gradiometer. This instrument was chosen due to its proven efficient and effective method of locating sub-surface archaeological anomalies on greenfield sites. The machine consists of two high stability fluxgate sensors suspended on a single frame, accurately aligned, that can detect localised magnetic anomalies compared with the general magnetic background. When mapped in a systematic manner this allows changes in the magnetic field resulting from differing features in the soil to be plotted. Strong magnetic anomalies will be generated by iron-based objects or areas modified by heat, such as hearths and kilns. More subtle anomalies may be generated by changes, typically in the iron-oxide content, of underlying soils, compared to the natural subsoil. This enables the detection of material infilling subsurface archaeological features such as ditches, pits and structural remains. Data from this may be mapped at closely spaced regular intervals, to produce an image that may be interpreted to locate buried archaeological features (Aspinall et al 2011). Moreover, Fluxgate gradiometry has the advantage of being able to identify the broadest range of sub-surface archaeological feature types and can detect such anomalies at a range of soil depths (typically 0.3-1m).
- 5.1.3. Detailed survey was carried out in grids of 30m x 30m along zig-zag traverses spaced at 1m intervals, recording data points spaced at 0.25m intervals to a maximum instrument sensitivity of 0.1nT in accordance with EAC Guidelines.
- 5.1.4. The survey mode was set to bi-directional (traverses walked alternately north-west/south-east). Incomplete survey lines resulting from irregular area boundaries or obstacles were completed using the 'dummy log' key. At regular

intervals, the data was downloaded in the field onto a laptop computer for storage and assessment.

- 5.1.5. Following the completion of the detailed survey, processing and analysis took place using the Terra Surveyor v.3 software package. A composite of each detailed survey area was created and processed using Terra Surveyor v.3.0.37.1. Every effort has been made to reduce the instrument directional sensitivity in the field rather than reliance on post data collection processing.
- 5.1.6. A limited number of standard operations can be carried out to process the data, including clipping and graduated shade. The data was analysed using a variety of parameters and styles and the most useful of these were saved as images and displayed using Adobe Illustrator software. The results have been presented at an appropriate scale tied to the Ordnance Survey National Grid. This was then used to produce interpretation figure.

6. Results

6.1. Introduction to the results

- 6.1.1. A number of response types with differing polarities were captured across the site. Polarity is the term used to describe the measurement of the magnetic response. Anomalies with positive polarity have values above 0nT, while anomalies with a negative polarity have values below 0nT. It is possible for anomalies to have values of both positive and negative polarity.
- 6.1.2. A number of terms are used below to describe the different types of anomalies recorded within the dataset. These are:
- Dipolar: these anomalies consist of a single positive anomaly with an associated negative response. There should be no separation between the two polarities of response. These anomalies will be created by a single

feature and the interpretation will depend on the magnitude of the magnetic measurements.

- Bipolar: these anomalies are comprised of both positive and negative responses. They can be made up of any number of positive and negative responses. The interpretation of the anomaly will depend on the magnitude of the magnetic field strength. A weak response may be caused by a clay field drain while a strong response will probably be caused by a metallic service.
- Positive: These anomalies are usually related to backfilled cut features, where the fill material is magnetically enhanced compared to the surrounding matrix. These anomalies can be caused by features of archaeological origin, but they can also be caused by former field boundaries and ploughing. It is possible that some may be of natural origin.
- Positive anomaly with associated negative response: These responses are caused by a single feature. Such responses could be caused by the cables of modern services, although magnetically weaker responses could relate to earthworks and field boundaries.
- Negative: These anomalies are generally caused by raised earthen features where material has built up that has a lower magnetic magnitude relative to the background soil.
- Magnetic debris: this consists of numerous dipolar responses spread over an area. Weaker responses could represent general ground disturbance with stronger responses being more indicative of a spread of ferrous debris. Moderately strong responses may be the result of a spread of thermoremanent material such as bricks or ash.

6.2. Data and Limitations

- 6.2.1. The final processed data was good but had to be 'destriped' due to slightly increased bobbing of the sensors while walking down the steeper parts of the slope.
- 6.2.2. There were two small areas where data could not be collected, one due to a vertical pipe sticking up out of the ground, and the other due to poor walking conditions from significantly soft, wet ground, both on the east end of the field.

6.3. Interpretation

- 6.3.1. The majority of the field, especially on the steeper slope, shows wide, diffuse areas of positive responses. Such responses are natural/geological in their origin (Figures 2 to 4).
- 6.3.2. There is a regular spread of dipolar responses throughout the field, which are generally caused by ferrous materials or remanent magnetic materials such as brick or other CBM.
- 6.3.3. A higher concentration of bipolar and dipolar responses are located in particular at the southern end of the field, indicating modern buried services (linear bipolar responses) and ferrous debris (dipolar responses), respectively. On the eastern side of the field, the clusters of low amplitude magnetic debris show a disturbed area, possibly from the insertion of the various services, including the vertical pipe which was visible on site.
- 6.3.4. A negative linear anomaly runs north-west to south-east at the north-eastern corner of the survey and could also represent a modern service such as a cable.
- 6.3.5. Occasional low amplitude positive linear and curvilinear anomalies appear in the western edge of the field, at the top of the hill at the centre of the field, and at the eastern end of the field. These are likely evidence of a combination

of natural and agricultural activity and are not likely to be of archaeological origin.

- 6.3.6. The 1943 Tithe map shows that the diagonal field boundary running north-east to south-west in the field to the east of the site used to continue through this field down to Pibwrlwyd Lane. There is no sign of that former field boundary in the data or on the LiDAR hillshade model. The linear positive anomaly with associated negative response running north-east to south-west on the east side of the field runs parallel to it, though is not in line with it.

7. Discussion and conclusions

- 7.1.1. In March 2025, Archaeology Wales Ltd was commissioned by Wepco Ltd. to undertake a geophysical survey at land on Coleg Sir Gar- Pibwrlwyd Campus, Carmarthen, located 1.6km south of Carmarthen, centred on NGR SN 41164 18286.
- 7.1.2. The survey was limited to the eastern part of the site in a field used for pasture. The results indicate a lack of probable activity of archaeological origin, with the responses likely being associated with geology and agricultural disturbance.

8. Bibliography

Aspinall, A, Gaffney, C & Schmidt, A. 2011. *Magnetometry for Archaeologists*. Altamira, London.

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Chartered Institute for Archaeologists. 2020. *Standard and Guidance for Archaeological Geophysical Survey*.

Muller, J. 2025. *Written Scheme of Investigation for an Archaeological Geophysical Survey at Coleg Sir Gar- Pibwrlwyd Campus, Carmarthen*.

Schmidt, A., Linford, P., Linford, N., David, A., Gaffney, C., Sarris, A. and Fassbinder, J. 2016. *EAC Guidelines for the Use of Geophysics in Archaeology: Questions to Ask and Points to Consider*. Europae Archaeologiae Consilium Guidelines 1.

Maps Consulted

Goode, G. 1843. Map of the Parish of Llangunnor in the County of Carmarthen.

OS Six-inch to the Mile, Carmarthenshire XXXIX.SE, 1887.

OS 25 inch to the Mile, Carmarthenshire XXXIX.11, 1906.

OS Six-inch to the Mile, Carmarthenshire XXXIX.SE, 1953.



Figures



Figure 1. Location of site and survey detail

— Development Area
 — Area to be surveyed



0 250m 500m

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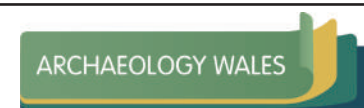
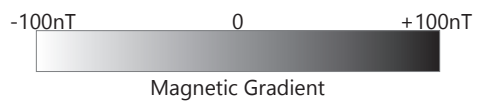




Figure 2. Raw magnetic gradiometry data

Google Earth (Airbus) Imagery 2024.



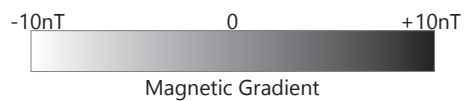
— Development Area





Figure 3. Processed data presented at ± 10 nT

Google Earth (Airbus) Imagery 2024.



— Development Area



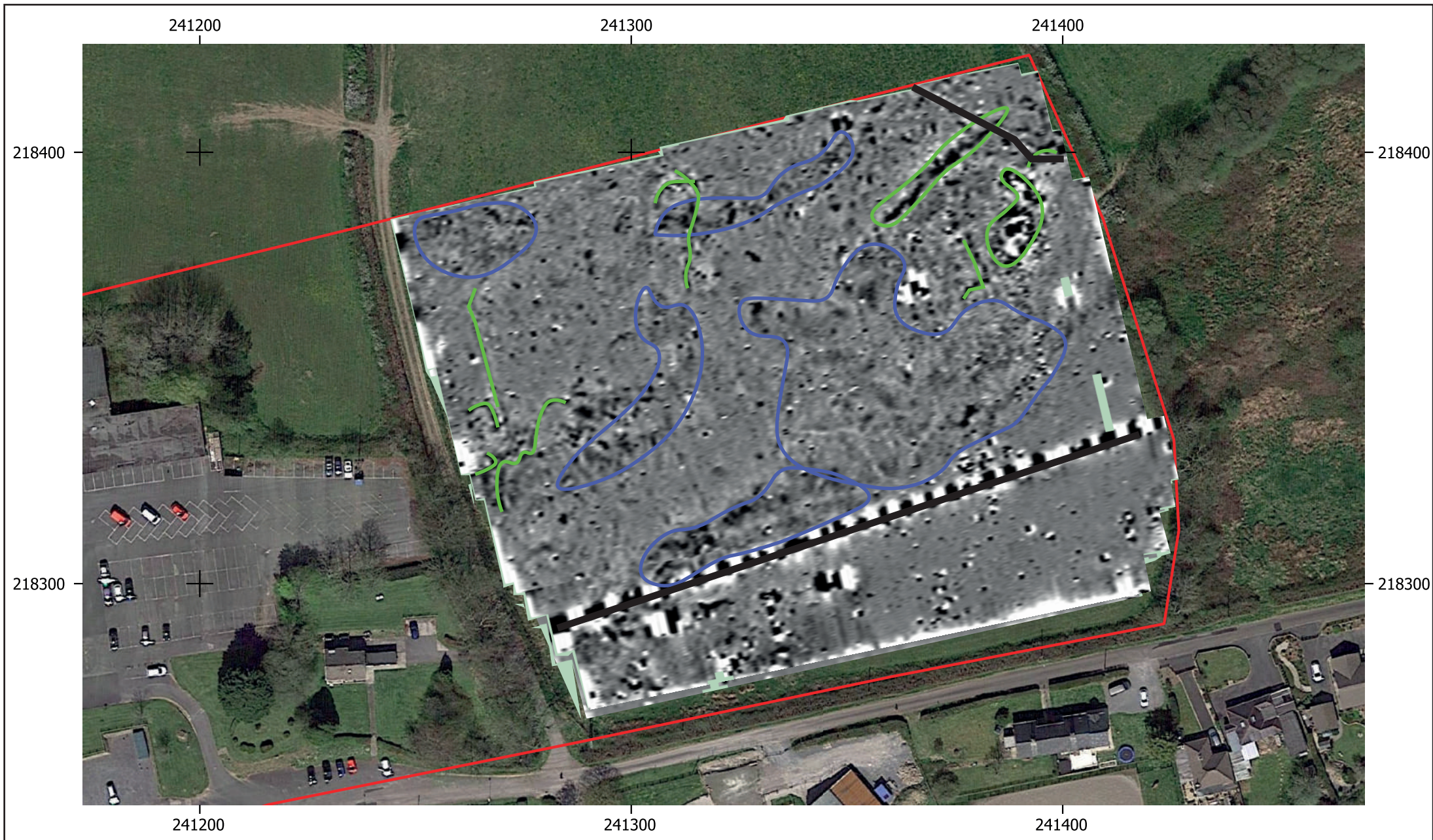
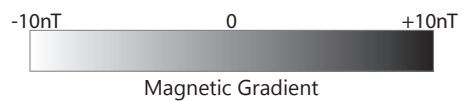


Figure 4. Processed data with interpretation

Google Earth (Airbus) Imagery 2024.



- General/agricultural disturbance
- Probable geology/natural features
- Buried services
- Development Area





Appendix I: Data Management Plan

Section 1: Project Administration

Project ID / OASIS ID
3205
Project Name
Coleg Sir Gar- Pibwrlwyd Campus, Carmarthen
Project Description
Geophysical survey on land located 1.6km south of Carmarthen, centred on NGR SN 41164 18286.
Project Funder / Grant reference
The Urbanists
Project Manager
Charley James-Martin – AW project manager charley@arch-wales.co.uk
Principal Investigator / Researcher
Archaeology Wales Ltd.
Data Contact Person
Rhiannon Philp, AW Post-excavation Manager rhiannon.philp@arch-wales.co.uk
Date DMP created
11/03/25
Date DMP last updated
11/03/25
Version
1
Related data management policies
This DMP is guided by the Project Brief, CifA Standards and guidance, trusted digital repository guidelines (RCAHMW) or other best practice guidance (see brief for details)

Section 2: Data Collection

What data will you collect or create?

The table below provides a summary of the data types, formats and estimated archive volume for data collected / created as part of this project. As the project progresses, more detail regarding files will be added to this DMP.

Type	Format	Estimated volume (Data Archived)
Text/documents	PDF (.pdf and .pdf/a)	2
Images	Photographs (.jpg)	14
GIS	Shapefiles (.shp plus associated files)	1
Geophysics data	.csv	1
	.xyz	TBC
	.tif	TBC
	.docx	1

How will the data be collected or created?

Data Standards / Methods

- Standard methods of data collection will be applied throughout the project, working to best practice guidance where applicable / available. In general, data acquisition standards are defined against RCAHMW Guidelines. Specific or additional guidance relevant to this project are listed below, and will
- Methods of collection are specified within the Project Design (see Archaeology Wales 2025) and will meet the requirement set out in the Project Brief, the organisation recording manual and relevant CIfA Standards and guidance.
- Where appropriate, project contributors external to the organisation will be required to include data standards, collection methodology and metadata with individual reports and data.
- Specific guidance:
 - Standard and Guidance for Geophysical Survey (CIfA, October 2020)

Data storage / file naming

- The data produced will be uploaded at regular intervals during the project as a way of backing up the information.
- The working project archive will be stored in a project specific folder on the internal organisational server. The internal organisation server is backed up to a cloud based storage system to maintain an up to date security copy of the organisation wide data.
- Project folders are named following established organisational procedures and the folder hierarchy and organisation devised will be understood by all members of staff involved in the project.

- Data collected will be downloaded and raw data will be stored in the appropriate folder.
- File naming conventions following established organisational procedures, based on RCAHMMW file naming guidance, and include version control management.
- The data stored will be checked by the project manager regularly as a means of quality assurance.

Section 3: Documentation and metadata

What documentation and metadata will accompany the data?

- Data collected will include standard formats which maximise opportunities for use and reuse in the future (see Section 2, above).
- A RCAHMMW metadata document will be included with the digital archive and include all data types included within the archive. A working copy will be kept on the organisational server in the Project Folder. A copy of the form containing HER required data will also be created.
- Data documentation will meet the requirement of the Project Brief, Museum Deposition Guidelines, Digital Repository Guidelines and the methodology described in the Project Design methodology.
- An archive catalogue documenting both physical and digital archive products will be maintained and submitted with both the Museum and Trusted Digital Repository

Section 4: Ethics and legal compliance

How will you manage any ethical, copyright and Intellectual Property Rights (IPR) issues?

- The project archive will include the names and contact details of individuals who intend to volunteer or participate in the excavation and post excavation stages. We have a GDPR compliant Privacy Policy which underpins the management of personal data; any personal data is managed through a secure cloud-based database and not retained on the project specific folders.
- Personal data will be removed from the archaeological project archive and permission to include individual's names in any reporting is gained prior to use.
- Copyright for all data collected by the project team belongs to the organisation, and formal permission to include data from external specialists and contractors is secured on the engagement of the specialist or contractor.
- Where formal permissions and/or license agreements are linked to data sharing, they will be included in the project documentation folders and will accompany the archaeological project archive.

Section 5: Data Security: Storage and Backup

How will the data be stored, accessed and backed up during the research?

- Organisational IT is managed by an external data management provider, who is also responsible for the management and verification of our daily back-ups and who supports access to security copies as needed
- Sufficient data storage space is available via the organisational server, which includes permissions-based access. The server is accessible by staff on and offsite through a secure log-in
- Off-site access to the project files on the organisation's server is provided to support back-up of raw data while fieldwork is ongoing. Where internet access for data back up is not possible, the raw data will be backed up to a separate media device (such as laptop and portable external hard drive).
- Project files will be shared with external specialists and contractors directly using the same system, with the wider project team gaining access to only the files needed using permissions-based access

Section 6: Selection and Preservation

Which data should be retained, shared, and/or preserved?

- The Selection Strategy and DMP will be reviewed and updated following the fieldwork. Updated documentation will be included in all reporting stages.
- Prior to deposition, the Selection Strategy and DMP will be updated and finalised in agreement with all project stakeholders (including the Local Planning Archaeologist, Client, Museum, RCAHMW).
- Selection will be informed by the Project Design, defined against the research aims, regional and national research frameworks, specialist advice and the significance of the project results.
- The project will be published as an online technical report (accessible via RCAHMW and as part of this the archive), with full access to research data.
- The data archive will be ordered, with files named and structured in a logical manner, and accompanied by relevant documentation and metadata, as outlined in Sections 2 and 3 of this DMP.
- Deselection will be undertaken automatically on any duplicate or unusable files, such as blurry or superfluous photographs.

What is the long-term preservation plan for the dataset?

- The digital archive will be deposited with the RCAHMW, which is working towards becoming a certified repository with Core Trust Seal.
- The archive will be prepared for deposition by the project team and the costs for the time needed for preparation, and the cost of deposition have been included in the project budget.

Have you contacted the data repository?

- RCAHMW have also been contacted as the intended repository for digital data.

Have the costs of archiving been fully considered?

- A costing estimate has been produced to allow for the preparation of the archive and has been included in the project budget.

Section 7: Data Sharing

How will you share the data and make it accessible?

- The digital archive repository and will be updated as the project progresses.
- The investigations are likely to result in a number of documents: Project Design and Final Report
- The final report is expected to be completed within three months of the completion of fieldwork.
- A final version of the project report will be supplied to the Historic Environment Record, and any data which they request can also be provided directly.
- The location (s) of the final Archaeological Archive will be included in the final report

Are any restrictions on data sharing required?

- A temporary embargo may be required on the sharing of the project results. If this is the case, specific details once agreed will be included in the updated version of this DMP and will be documented in the overarching Project Collection Metadata.
- Data specific requirements, ethical issues or embargos which are linked to particular data formats will be documented within the relevant metadata tables accompanying the project archive

Section 8: Responsibilities

Who will be responsible for implementing the data management plan?

- The Project Manager and Post Excavation Manager will be responsible for implementing the DMP, and ensuring it is reviewed and revised at each stage of the project.
- Data capture, metadata production and data quality is the responsibility of the Project Team, assured by the Project Manager and Post Excavation Manager.
- Storage and backup of data in the field is the responsibility of the field team.
- Once data is incorporated into the organisations project server, storage and backup is managed by an external company.
- Data archiving is undertaken by the project team under the guidance of the Post Excavation Manager, who is responsible for the transfer of the Archaeological Project Archive to the agreed repository.
- Details of the core project team can be found in the Project Design.



Appendix II: Written Scheme of Investigation

**Written Scheme of Investigation
for an Archaeological Geophysical Survey
at Coleg Sir Gar- Pibwrlwyd Campus, Carmarthen**

Project No: 3205

March 2025

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Summary

This Specification details the methodology for an archaeological geophysical survey on land Coleg Sir Gar- Pibwrlwyd Campus, Camarthen located 1.6km south of Carmarthen, centred on NGR SN 41164 18286. This Written Scheme of Investigation has been prepared by Archaeology Wales Ltd.

1. Introduction and Planning Background

- 1.1.1 This Written Scheme of Investigation has been prepared by Jennifer Muller ACIfA for Archaeology Wales Ltd (henceforth – AW). It provides information on the methodology that will be employed by AW during a geophysical survey of the site.
- 1.1.2 The geophysical survey is being undertaken as part of a staged approach of archaeological investigations to provide Heneb Development Management – Dyfed region (henceforth HDM-DR) – archaeological advisors to the Planning Authority – with the information they are likely to request in respect of the proposed redevelopment of the Coleg Sir Gar Pibwrlwyd Campus to deliver 15,000 sqm of education floorspace via a new arts and general teaching block and series of construction workshops. The redevelopment will require the demolition of existing campus buildings, reprovision of parking areas and associated drainage and landscape infrastructure. The survey will provide a better understanding of the nature and potential archaeological resource of the area.
- 1.1.3 All work will conform to the *Standard and Guidance for Geophysical Survey* (CIIfA, October 2020) and be undertaken by suitably qualified staff to the highest professional standards.

2. Site Description

- 2.1.1 The proposed development site is located north of Pibwrlwyd Lane, 1.6km south of Carmarthen town centre. The site, to the east. The site is bounded by Pibwrlwyd Lane to the south and the existing Coleg Sir Gar Pibwrlwyd South Campus. To the West the site is bounded by the A434 and a residential property. The land to the north and east is farmland. It is centred on NGR SN 41164 18286.
- 2.1.2 The area of proposed development is regular in shape and incorporates existing buildings and car parking for the Coleg Sir Gar Campus and an area of open land to the east currently under pasture (Figure 1).
- 2.1.3 The geology beneath the site comprises Tetragraptus Beds, which is a sedimentary mudstone bedrock formed between 477.7 and 465.5 million years ago during the Ordovician period. The superficial deposits are made up of, Devensian glaciofluvial deposits consisting of sand and gravel. These are sedimentary superficial deposits formed between 116 and 11.8 thousand years ago during the Quaternary period. In the open land to the east the superficial deposits are Devensian till a Sedimentary superficial deposit formed between 116 and 11.8 thousand years ago during the Quaternary period. (BGS 2025).

3. Archaeological and Historical Background

- 3.1.1 A complete historic background is available in the desk-based assessment (DBA) carried out for the proposed development by Brindle & Green (Hough 2024), however only the parts relevant to the current application area are covered below.
- 3.1.2 There are no known Scheduled Monuments or Historic Parks and Gardens within or 1km from the site. Three Listed buildings were identified within 1km

of the of the proposed development area.

- 3.1.3 Prehistoric activity within the vicinity of the proposed site is limited to a single Bronze Age barrow, likely lost after the construction of the A48.
- 3.1.4 There are no sites of a Roman date within the area, however it is located 1.6km south of Carmarthen, which can trace its origins to the Roman settlement of Moridunum. A section of Roman Road bearing the modern name Tregynwr is also located to the north-west of the site.
- 3.1.5 The DBA identified that the site is located within an area with potential for archaeological remains of medieval date. The location of the first Carmarthen Castle, likely destroyed by the construction of the railway lies within the 1km radius of the site. Pibwr Lwyd Farmhouse (LB 9733), a grade II listed building, with its origins in the medieval period lies to the south of the proposed development area. Historic mapping also identified a potential medieval settlement 'Pensarn', and 'Pibour mill' located within the 1km of the development.
- 3.1.6 Post-medieval and modern activity largely related to features and buildings seen on historical mapping, of which 3 buildings are listed. Although grade II listed Pibwr Lwyd Farmhouse (LB 9733), has its origins in the medieval period, the present building dates from 17th century it has been remodelled in the 19th century. Mount Hill (LB 82392) is a grade II listed Georgian villa built in 19th century. A grade II listed bridge (LB 82386) likely of mid-19th century date was also identified west of A484.

4. Objectives

- 4.1.1 This WSI sets out the methodology to ensure that the geophysical survey will meet the standard required by The Chartered Institute for Archaeologist's

Standard and Guidance for Archaeological Geophysical Survey (2020).

- 4.1.2 The primary objective of the work will be to locate and describe, by means of geophysical survey, archaeological features that may be present within the development area. The proposed archaeological work will attempt to elucidate the presence or absence of archaeological material that might be affected by the scheme, in particular its character, distribution, extent and relative significance within the agreed areas.
- 4.1.3 A report will be produced that will provide information which is sufficiently detailed to help inform a planning decision alongside other archaeological evaluative techniques (DBA, trial trenching, etc) as necessary. Together, the evaluative information could then be used to determine appropriate mitigation strategies for any archaeological remains within the area to be implemented prior to or during the proposed development if planning permission is given. The survey will also be carried out in accordance with the approved Specification.

5. Methodology for Geophysical Survey

- 5.1.1 The area to be surveyed will include all of the accessible development area. On-site adjustments may be required to avoid areas of magnetic interference or inaccessibility, for example wire fencing, areas of dense undergrowth and steeper slopes which may prove unsuitable for survey.
- 5.1.2 The site and all survey points will be located by GPS and plotted onto an O.S. base map. The survey will be carried out using a Bartington Grad601 Magnetometer. This is chosen as an efficient and effective method of locating archaeological anomalies on this type of site. The machine consists of two high stability fluxgates gradiometers suspended on a single frame, accurately

aligned, that can detect localised magnetic anomalies compared with the general magnetic background. When mapped in a systematic manner this allows changes in the magnetic field resulting from differing features in the soil to be plotted. Strong magnetic anomalies will be generated by iron-based objects or areas of heat-activity, such as hearths and kilns. More subtle anomalies may be generated by changes, typically in the iron-oxide content, of underlying soils, compared to the natural subsoil. This helps to detect infilling material of features such as ditches and pits, as well as overlying material such as wall lines.

- 5.1.3 Relatively level fields of low pasture provide good locations for this type of survey. Areas of significant slopes would preclude safe surveying, as would areas of dense vegetation, but previous site visits suggest the vast majority of the area should be open to survey.
- 5.1.4 Each survey area will be divided into 20m or 30m square grids along a common alignment. Within each grid, parallel traverses 1m apart will be walked at rapid pace along the same orientation. Instrument readings will be logged at 0.25m intervals, with an average cycle of 4 using an ST1 internal sample trigger. Incomplete survey lines resulting from irregular area boundaries or obstacles will be completed using the "dummy log" key.

5.2. Data processing and presentation

- 5.2.1 Following completion of the detailed survey, a composite of the survey area will be created and processed using the software package Terrasurveyor v.3. After downloading, the results will be plotted in 2D.
- 5.2.2 The most typical method of visualizing the data is as a greyscale image. In a greyscale, each data point is represented as a shade of grey, from black to white at both extremes of the data range. A variety of processing tools (including destriping and possibly despiking) will be used to enhance any

potential archaeology. The mean level of each traverse of data will be reduced to zero and all grids matched so that there will be no differences between background levels. The data will be analysed using a variety of parameters and styles and the most useful of these will be saved as JPEG/TIFF images and displayed using Adobe Illustrator software.

- 5.2.3 The final results will be presented at an appropriate scale tied to the Ordnance Survey National Grid. A level of interpretation of these results will also be displayed.

5.3. Monitoring

- 5.3.1 The client and the archaeological curator will be given access to the site so that they can monitor the progress of the work. They will be kept regularly informed about developments, both during the site works and subsequently during the post-fieldwork programme.
- 5.3.2 Any changes to this Method Statement that AW may wish to make after approval will be communicated to the archaeological curator for approval.

6. Post-Fieldwork Programme

- 6.1.1 The post-fieldwork programme is a critical phase that transforms the raw survey data into meaningful archaeological information:
- 1) Data processing and analysis: The collected data undergoes rigorous processing and analysis to identify potential archaeological features. This involves advanced filtering techniques to remove noise and enhance subtle signals and the application of various visualisation methods to highlight different aspects of the data.
 - 2) Report preparation: A comprehensive report will be produced, interpreting the geophysical anomalies in terms of their likely archaeological origin. This

report will include:

- A concise, non-technical summary of the results
- Introductory statements and project background
- Aims and purposes of the survey
- Detailed methodology description
- Processed survey results with accompanying explanations
- Written interpretation of results with illustrated site plans
- Discussion of the local and regional archaeological context
- Conclusions and recommendations for further investigation if appropriate
- Index to and location of the digital archive
- Relevant bibliography

3) Client consultation: Draft reports will be submitted to the Client and Heneb Development Management – Dyfed region (henceforth HDM-DR) for review and approval. Any necessary revisions or clarifications will be made based on their feedback.

6.1.2 The report and all relevant information will be submitted to the relevant Historical Environment Record following the guidelines and procedures laid out in the Guidance for the Submission of Data to the Welsh Historic Environment Records (Heneb 2024).

7. Site Archive

7.1.1 An ordered and integrated site archive will be prepared in accordance with The National Standard and Guidance to Best Practice for Collecting and

Depositing Archaeological Archives in Wales 2017 (National Panel for Archaeological Archives in Wales), EAC Guidelines for the Use of Geophysics in Archaeology (Schmidt et al., 2015) and the National Monuments Record (Wales) agreed structure and be deposited with the National Monuments Records, held and maintained by the RCAHMW, Aberystwyth, upon completion of the project.

- 7.1.2 This archive will include all raw data, processed data, field notes, and other relevant documentation. Copies of all reports, the digital archive and an archive index will be deposited with the National Monuments Record, RCAHMW, and will be uploaded to the ADS.
- 7.1.3 Although there may be a period during which client confidentiality will need to be maintained, copies of all reports and the final archive will be deposited no later than six months after completion of the work.
- 7.1.4 Wherever the archive is deposited, this information will be relayed to the HER. A summary of the contents of the archive will be supplied to the HER.

8. Staff and Timetable

- 8.1.1 The geophysical survey will be carried out by AW. The overall management of the project will be carried out by Charley James-Martin MCIfA, AW Project Manager.
- 8.1.2 The work will be undertaken at the convenience of the client. HDM-DR will be notified once a start date has been agreed. Initial data plots may be available during the survey work, and a draft report will be issued within five to ten working days from the completion of the survey work.

9. Health and Safety

9.1. Risk Assessment

- 9.1.1 Prior to the commencement of work, AW will carry out and produce a formal Health and Safety Risk Assessment in accordance with The Management of Health and Safety Regulations 1999. A copy of the risk assessment will be kept on site and be available for inspection on request.
- 9.1.2 A copy will be sent to the client (or their agent as necessary) for their information. All members of AW staff will adhere to the content of this document.

9.2. Other Guidelines

- 9.2.1 AW will adhere to best practice with regard to Health and Safety in Archaeology as set out in the FAME (Federation of Archaeological Managers and Employers) health and safety manual Health and Safety in Field Archaeology (2002).

10. Insurance

- 10.1.1 AW is fully insured for this type of work, and holds Insurance with Aviva Insurance Ltd and Hiscox Insurance Company Limited through Towergate Insurance. Full details of these and other relevant policies can be supplied on request.

11. Quality Control

11.1. Professional Standards

- 11.1.1 AW maintains high standards of quality assurance in all its operations:
- 11.1.2 The geophysical survey will comply with guidelines outlined by English

Heritage (now Historic England) (David et al. 2008), the Chartered Institute for Archaeologists (CIfA 2020) and Europae Archaeologiae Consilium (EAC) (Schmidt et al. 2016).

11.1.3 Work is carried out in accordance with BS 5930:2015 for site investigation.

11.1.4 Daily records will be maintained throughout the project for quality audit purposes, ensuring that all procedures remain effective and appropriate for the work being conducted.

11.2. Project Tracking

11.2.1 The designated AW manager will monitor all projects in order to ensure that agreed targets are met without reduction in quality of service.

12. Arbitration

12.1.1 Disputes or differences arising in relation to this work shall be referred for a decision in accordance with the rules of The Chartered Institute of Arbitrators' Arbitration Scheme for the Institute for Archaeologists applying at the date of the agreement.

13. References

Chartered Institute for Archaeologists. 2014. *Standards and guidance for the collection, documentation, conservation, and research of archaeological materials*.

Chartered Institute for Archaeologists. 2014. *Standards and guidance for the collection, compilation, transfer and deposition of archaeological archives*.

Chartered Institute for Archaeologists. 2020. *Standards and guidance for geophysical surveys*.

Hough, T. 2024. *Coleg Sir Gar- Pibwrlwyd Campus, Carmarthen: Archaeological Desk-Based Assessment*. Brindle & Green Report No. BG24.331

Schmidt AR, Linford P, Linford N, David A, Gaffney CF, Sarris A and Fassbinder J. 2015. *EAC Guidelines for the use of Geophysics in Archaeology: Questions to Ask and Points to Consider. EAC Guidelines 2*. Namur, Belgium: Europae Archaeologia Consilium (EAC), Association Internationale sans But Lucratif (AISBL). ISBN 978-963-9911-73-4. 135p.

Websites Consulted:

British Geological Survey, Geology viewer: <https://www.bgs.ac.uk/> - Accessed 11/03/25.

Figures

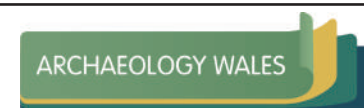


Figure 1. Location of site and survey detail

- Development Area
- Area to be surveyed



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Data Management Plan

Section 1: Project Administration

Project ID / OASIS ID
3205
Project Name
Coleg Sir Gar- Pibwrlwyd Campus, Carmarthen
Project Description
Geophysical survey on land located 1.6km south of Carmarthen, centred on NGR SN 41164 18286.
Project Funder / Grant reference
The Urbanists
Project Manager
Charley James-Martin – AW project manager charley@arch-wales.co.uk
Principal Investigator / Researcher
Archaeology Wales Ltd.
Data Contact Person
Rhiannon Philp, AW Post-excavation Manager rhiannon.philp@arch-wales.co.uk
Date DMP created
11/03/25
Date DMP last updated
11/03/25
Version
1
Related data management policies
This DMP is guided by the Project Brief, CifA Standards and guidance, trusted digital repository guidelines (RCAHMW) or other best practice guidance (see brief for details)

Section 2: Data Collection

What data will you collect or create?

The table below provides a summary of the data types, formats and estimated archive volume for data collected / created as part of this project. As the project progresses, more detail regarding files will be added to this DMP.

Type	Format	Estimated volume (Data Archived)
Spreadsheets	Excel (.xlsx)	TBC
Text/documents	PDF (.pdf and .pdf/a)	TBC
Images	Photographs (.jpg)	TBC
	Scanned drawings (.pdf)	TBC
GIS	Shapefiles (.shp plus associated files)	TBC
Geophysics data	.csv	TBC
	.xyz	TBC
	.tif	TBC
	.docx	TBC

How will the data be collected or created?

Data Standards / Methods

- Standard methods of data collection will be applied throughout the project, working to best practice guidance where applicable / available. In general, data acquisition standards are defined against RCAHMW Guidelines. Specific or additional guidance relevant to this project are listed below, and will
- Methods of collection are specified within the Project Design (see Archaeology Wales 2025) and will meet the requirement set out in the Project Brief, the organisation recording manual and relevant CIfA Standards and guidance.
- Where appropriate, project contributors external to the organisation will be required to include data standards, collection methodology and metadata with individual reports and data.
- Specific guidance:
 - Standard and Guidance for Geophysical Survey (CIfA, October 2020)

Data storage / file naming

- The data produced will be uploaded at regular intervals during the project as a way of backing up the information.
- The working project archive will be stored in a project specific folder on the internal organisational server. The internal organisation server is backed up to a cloud based storage system to maintain an up to date security copy of the organisation wide data.
- Project folders are named following established organisational procedures and the folder hierarchy and organisation devised will be understood by all members of staff involved in the project.
- Data collected will be downloaded and raw data will be stored in the appropriate folder.

- File naming conventions following established organisational procedures, based on RCAHMW file naming guidance, and include version control management.
- The data stored will be checked by the project manager regularly as a means of quality assurance.

Section 3: Documentation and metadata

What documentation and metadata will accompany the data?

- Data collected will include standard formats which maximise opportunities for use and reuse in the future (see Section 2, above).
- A RCAHMW metadata document will be included with the digital archive and include all data types included within the archive. A working copy will be kept on the organisational server in the Project Folder. A copy of the form containing HER required data will also be created.
- Data documentation will meet the requirement of the Project Brief, Museum Deposition Guidelines, Digital Repository Guidelines and the methodology described in the Project Design methodology.
- An archive catalogue documenting both physical and digital archive products will be maintained and submitted with both the Museum and Trusted Digital Repository

Section 4: Ethics and legal compliance

How will you manage any ethical, copyright and Intellectual Property Rights (IPR) issues?

- The project archive will include the names and contact details of individuals who intend to volunteer or participate in the excavation and post excavation stages. We have a GDPR compliant Privacy Policy which underpins the management of personal data; any personal data is managed through a secure cloud-based database and not retained on the project specific folders.
- Personal data will be removed from the archaeological project archive and permission to include individual's names in any reporting is gained prior to use.
- Copyright for all data collected by the project team belongs to the organisation, and formal permission to include data from external specialists and contractors is secured on the engagement of the specialist or contractor.
- Where formal permissions and/or license agreements are linked to data sharing, they will be included in the project documentation folders and will accompany the archaeological project archive.

Section 5: Data Security: Storage and Backup

How will the data be stored, accessed and backed up during the research?

- Organisational IT is managed by an external data management provider, who is also responsible for the management and verification of our daily back-ups and who supports access to security copies as needed

- Sufficient data storage space is available via the organisational server, which includes permissions-based access. The server is accessible by staff on and offsite through a secure log-in
- Off-site access to the project files on the organisation's server is provided to support back-up of raw data while fieldwork is ongoing. Where internet access for data back up is not possible, the raw data will be backed up to a separate media device (such as laptop and portable external hard drive).
- Project files will be shared with external specialists and contractors directly using the same system, with the wider project team gaining access to only the files needed using permissions-based access

Section 6: Selection and Preservation

Which data should be retained, shared, and/or preserved?

- The Selection Strategy and DMP will be reviewed and updated following the fieldwork. Updated documentation will be included in all reporting stages.
- Prior to deposition, the Selection Strategy and DMP will be updated and finalised in agreement with all project stakeholders (including the Local Planning Archaeologist, Client, Museum, RCAHMW).
- Selection will be informed by the Project Design, defined against the research aims, regional and national research frameworks, specialist advice and the significance of the project results.
- The project will be published as an online technical report (accessible via RCAHMW and as part of this the archive), with full access to research data.
- The data archive will be ordered, with files named and structured in a logical manner, and accompanied by relevant documentation and metadata, as outlined in Sections 2 and 3 of this DMP.
- Deselection will be undertaken automatically on any duplicate or unusable files, such as blurry or superfluous photographs.

What is the long-term preservation plan for the dataset?

- The digital archive will be deposited with the RCAHMW, which is working towards becoming a certified repository with Core Trust Seal.
- The archive will be prepared for deposition by the project team and the costs for the time needed for preparation, and the cost of deposition have been included in the project budget.

Have you contacted the data repository?

- RCAHMW have also been contacted as the intended repository for digital data.

Have the costs of archiving been fully considered?

- A costing estimate has been produced to allow for the preparation of the archive and has been included in the project budget.

Section 7: Data Sharing

How will you share the data and make it accessible?

- The digital archive repository, and will be updated as the project progresses.
- The investigations are likely to result in a number of documents: Project Design and Final Report
- The final report is expected to be completed within three months of the completion of fieldwork.
- A final version of the project report will be supplied to the Historic Environment Record, and any data which they request can also be provided directly.
- The location (s) of the final Archaeological Archive will be included in the final report

Are any restrictions on data sharing required?

- A temporary embargo may be required on the sharing of the project results. If this is the case, specific details once agreed will be included in the updated version of this DMP and will be documented in the overarching Project Collection Metadata.
- Data specific requirements, ethical issues or embargos which are linked to particular data formats will be documented within the relevant metadata tables accompanying the project archive

Section 8: Responsibilities

Who will be responsible for implementing the data management plan?

- The Project Manager and Post Excavation Manager will be responsible for implementing the DMP, and ensuring it is reviewed and revised at each stage of the project.
- Data capture, metadata production and data quality is the responsibility of the Project Team, assured by the Project Manager and Post Excavation Manager.
- Storage and backup of data in the field is the responsibility of the field team.
- Once data is incorporated into the organisations project server, storage and backup is managed by an external company.
- Data archiving is undertaken by the project team under the guidance of the Post Excavation Manager, who is responsible for the transfer of the Archaeological Project Archive to the agreed repository.
- Details of the core project team can be found in the Project Design.



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