



Cefn Road Wrexham

Written Scheme of Investigation for Archaeological Evaluation

Planning Ref.: N/A
Accession Number: TBA
Document Ref.: 247430.03
December 2021



© Wessex Archaeology Ltd 2021, all rights reserved

Portway House
Old Sarum Park
Salisbury
Wiltshire
SP4 6EB

www.wessexarch.co.uk

Wessex Archaeology Ltd is a company limited by guarantee registered in England, company number 1712772. It is also a Charity registered in England and Wales number 287786, and in Scotland, Scottish Charity number SC042630. Our registered office is at Portway House, Old Sarum Park, Salisbury, Wiltshire, SP4 6EB

Disclaimer

The material contained in this report was designed as an integral part of a report to an individual client and was prepared solely for the benefit of that client. The material contained in this report does not necessarily stand on its own and is not intended to nor should it be relied upon by any third party. To the fullest extent permitted by law Wessex Archaeology will not be liable by reason of breach of contract negligence or otherwise for any loss or damage (whether direct indirect or consequential) occasioned to any person acting or omitting to act or refraining from acting in reliance upon the material contained in this report arising from or connected with any error or omission in the material contained in the report. Loss or damage as referred to above shall be deemed to include, but is not limited to, any loss of profits or anticipated profits damage to reputation or goodwill loss of business or anticipated business damages costs expenses incurred or payable to any third party (in all cases whether direct indirect or consequential) or any other direct indirect or consequential loss or damage

Document Information


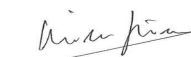
Document title Cefn Road, Wrexham
Document subtitle Written Scheme of Investigation for Archaeological Evaluation
Document reference 247430.03

Commissioned by Corylus Planning & Environmental Ltd.
Address Unit 3
The Old Dairy
Yanworth
Cheltenham
GL54 3LQ

Site location Cefn Road, Abenbury, Pentre Maelor, LL13 0PX
County Wrexham
National grid reference 336779, 348623
Planning Ref. TBC
Museum name Wrexham County Museum/RCAHMW
Museum accession code TBC

WA project code 247430
Project management by Milica Rajic
Document compiled by Bethany Watson
Graphics by Bethany Watson

Quality Assurance

Issue	Date		Author	Approved by
1	26/11/2021	Draft to client	BW	
2	01/12/2021	Draft to LPA	BW	



Contents

1	INTRODUCTION	1
1.1	Project and planning background.....	1
1.2	Scope of document.....	1
1.3	Location, topography and geology	1
2	ARCHAEOLOGICAL AND HISTORICAL BACKGROUND.....	2
2.1	Introduction.....	2
2.2	Previous non-intrusive investigations related to the proposed development.....	2
2.3	Archaeological and historical context.....	3
3	AIMS AND OBJECTIVES.....	4
3.1	General aims	4
3.2	General objectives	4
3.3	Site-specific objectives.....	4
4	FIELDWORK METHODS	5
4.1	Introduction.....	5
4.2	Setting out of the trenches	5
4.3	Service location and other constraints	5
4.4	Excavation methods	5
4.5	Recording	6
4.6	Survey	6
4.7	Monitoring.....	6
4.8	Reinstatement	6
4.9	Finds.....	6
4.10	Environmental sampling.....	7
5	POST-EXCAVATION METHODS AND REPORTING	8
5.1	Stratigraphic evidence	8
5.2	Finds evidence	8
5.3	Environmental evidence.....	8
5.4	Reporting.....	9
6	ARCHIVE STORAGE AND CURATION.....	9
6.1	Museum.....	9
6.2	Transfer of title.....	10
6.3	Preparation of archive.....	10
6.4	Selection strategy	10
6.5	Security copy	11
7	COPYRIGHT	11
7.1	Archive and report copyright	11
7.2	Third party data copyright	11
8	WESSEX ARCHAEOLOGY PROCEDURES.....	11
8.1	External quality standards.....	11
8.2	Personnel	11
8.3	Internal quality standards.....	12
8.4	Health and safety.....	12
8.5	Insurance.....	13
	REFERENCES	14
	APPENDICES	15
	Appendix 1 Finds and environmental specialists.....	15
	Appendix 2 Selection Strategy	16



Appendix 3 Data Management Plan..... 17

List of Figures

- Figure 1** Site location
- Figure 2** Trial trenching plan: eastern half of the Site
- Figure 3** Trial trenching plan: western half of the Site



Crynodeb

Mae Wessex Archaeology wedi cael eu comisiynu gan Corylus Planning and Environmental Ltd. i ysgrifennu Cynllun Ymchwilio Ysgrifenedig ar gyfer gwaith gwerthuso yn Cefn Road, Wrecsam. Mae'r safle wedi ei ffurfio o ddau barsel o dir â'r, sydd yn cynnwys ardal o 15.7 hectar, wedi ei ganoli ar NGR 336779, 348623.

Cynhaliwyd dau ddarn o waith archeolegol di-ymwthiol yn flaenorol a nodwyd nifer o nodweddion o ddiddordeb archeolegol sydd yn debygol o fod o fewn y Safle. Comisiynwyd Wessex Archaeology i ysgrifennu Asesiad Desg Amgylchedd Hanesyddol a nododd bod potensial i'r Safle gynnwys nodweddion a darganfyddiadau o ddiddordeb archeolegol tystiolaethol, yn ymwneud â thirwedd gynhanesyddol o bosibl i dirwedd ganoloesol. Mae lloc hirsgwar wedi ei nodi yng nghornel de-orllewinol y Safle ar awyrluniau sydd yn debygol o ddyddio i gyfnod yr Oes Haearn, a nodwyd crib a rhych helaeth ar yr HER gydag ardal is-orsaf arfaethedig y Safle.

Comisiynwyd Wessex Archaeology hefyd i gynnal arolwg graddiomedr o'r Safle yn 2021. Nodwyd nifer o nodweddion o ddiddordeb archeolegol uchel o fewn y Safle, gan nodi'r potensial ar gyfer tirwedd angladdol cynhanesyddol neu Sacsonaidd o fewn y Safle. Mae dau grug crwn wedi eu nodi, gyda'r un mwyaf i'r dwyrain â phwll wedi ei leoli yn ganolog ynddo, a allai o bosibl ddynodi claddedigaeth ganolog. Mae'r un llai i'r gorllewin wedi ei ddiffinio'n well, wedi ei leoli'n agosach at ardal gladdu dybiedig, oherwydd cyfeiriadedd ac aliniad nifer o nodweddion pwll. Mae'r ardal hon wedi ei hamgáu gan ffos lydan a rhagdybir ei bod yn dyddio o'r Oes Efydd. Ymhlith y nodweddion eraill a nodwyd yn yr arolwg hwn roedd crib a rhych, hen ffiniau caeau, a nodweddion ffos a phwll o ddyddiad anhysbys. Er nad oedd modd nodi nodau cnwd awyrluniau yn yr arolwg hwn, mae potensial i'r rhain fod yn bresennol o hyd ar y Safle oherwydd y dyddodion daearegol llifwaddodol a allai guddio dyddodion archeolegol o fewn y Safle.

Cynigir bod gwaith gwerthuso yn cael ei wneud ar y Safle cyn dechrau ar y gwaith. Bydd y ffosydd gwerthuso yn targedu nodweddion a nodwyd yn yr arolwg graddiomedr, yn ogystal ag ardaloedd sydd yn gysylltiedig â nodweddion posibl a nodwyd ar farciau cynydu. Cynigir y bydd 22 o ffosydd prawf, pob un yn mesur 1.8 m wrth 50 m.

Y nodau penodol ar gyfer y gwaith gwerthuso fydd:

- *profi canlyniadau'r arolwg geoffisegol (Wessex Archaeology 2021b);*
- *deall y dirwedd gynhanesyddol o fewn y Safle;*
- *deall swyddogaeth y nodweddion cylchol a hanner cylch a nodwyd ar yr arolwg graddiomedr, a dyddio unrhyw gladdedigaethau o fewn y Safle;*
- *pennu maint / cadwraeth crib a rhych ganoloesol / ôl-ganoloesol o fewn y Safle ac asesu a yw hyn wedi effeithio unrhyw olion cynharach; ac*
- *asesu a oes tystiolaeth archeolegol bellach na nodwyd o nodau cynydu yn yr awyrluniau nac yn yr arolwg graddiomedr blaenorol (Wessex Archaeology 2021b).*

Manylir ar y fethodoleg a ddefnyddir ar gyfer y gwaith yn y Cynllun Ymchwilio Ysgrifenedig hwn, gan gynnwys y cynllun rheoli data a strategaeth ddethol ar gyfer darganfyddiadau o fewn y Safle.



Summary

Wessex Archaeology has been commissioned by Corylus Planning and Environmental Ltd. to write a Written Scheme of Investigation for evaluation works at Cefn Road, Wrexham. The site is currently formed of two parcels of arable land, comprising an area of 15.7 hectares, centred at NGR 336779, 348623.

Two pieces of non-intrusive archaeological work have been conducted previously which have identified a number of features of archaeological interest that are likely to be within the Site. Wessex Archaeology was commissioned to write a Historic Environment Desk-based Assessment which identified that there is potential for the Site to contain features and finds of evidential archaeological interest, relating to potential prehistoric to medieval landscape. A rectangular enclosure has been identified within the south-western corner of the Site on aerial photography likely dating to the Iron Age period, and there has been extensive ridge and furrow identified on the HER with the proposed substation area of the Site.

Wessex Archaeology was also commissioned to conduct a gradiometer survey of the Site in 2021. There were a number of features identified of high archaeological interest identified within the Site, indicating the potential for a prehistoric or Saxon funerary landscape within the Site. Two round barrows have been identified, with the larger one to the east having a centrally located pit within it, which potentially indicates a central burial. The smaller one to the west is more well defined, located closer to a presumed burial area, due to the orientation and alignment of a number of pit features. This area is enclosed by a broad ditch and has been presumed to be Bronze Age in date. Other features identified in this survey included ridge and furrow, former field boundaries, and ditch and pit features of unknown date. Although the cropmarks from aerial photography were unidentifiable in this survey, there is potential for these still to be present within the Site due to the alluvial geological deposits which may mask archaeological deposits within the Site.

Therefore, it is proposed that evaluation works are undertaken within the Site prior to the commencement of works. The evaluation trenches will target features identified within the gradiometer survey, as well as areas associated with potential features identified on cropmarks. It is proposed that there will be 22 trial trenches, each measuring 1.8 m by 50 m.

The site-specific aims for the evaluation works will be to:

- *test the results of the geophysical survey (Wessex Archaeology 2021b);*
- *understand the prehistoric landscape within the Site;*
- *understand the function of the circular and semi-circular features identified on the gradiometer survey, and the dating of any burials within the Site;*
- *determine the extent/preservation of medieval/post-medieval ridge and furrow within the Site and assess if this has impacted on any earlier remains; and*
- *assess whether there is further archaeological evidence that has not been identified from cropmarks on aerial photography or within the previous gradiometer survey (Wessex Archaeology 2021b).*

The methodology that will be employed for the works is detailed within this Written Scheme of Investigation, including the data management plan and finds selection strategy for the Site.



Cefn Road Wrexham

Written Scheme of Investigation for Archaeological Evaluation

1 INTRODUCTION

1.1 Project and planning background

1.1.1 Wessex Archaeology has been commissioned by Corylus Planning and Environmental Ltd. ('the client'), to produce a written scheme of investigation (WSI) for a proposed archaeological evaluation area of 15.7 hectares, which comprises of two parcels of arable land, located on land north of Cefn Road, Wrexham, Wales (the Site). The evaluation area is centred on NGR 336779, 348623 (**Fig. 1**).

1.1.2 The proposed development comprises the construction of a solar farm with associated infrastructure, including palisade fencing, and vegetative plantings including hedgerows, woodland and scrub.

1.1.3 The evaluation will comprise the excavation, investigation and recording of 22 trial trenches (each measuring 1.8 m by 50 m).

1.1.4 This evaluation is part of staged approach in determining the archaeological potential of the site, and follows other non-intrusive archaeological work, including a gradiometer survey of the site, which identified circular anomalies which may represent prehistoric/Saxon enclosures and inhumations. Also, a number of anomalies have been identified associated with these semi-circular and circular features which have the potential for being burials (the dating of which is unknown at this time). Further detail on the results of the gradiometer survey can be seen below (**Section 2.2**).

1.2 Scope of document

1.2.1 This WSI sets out the aims of the evaluation, and the methods and standards that will be employed. In format and content, it conforms to current best practice, as well as to the guidance in *Management of Research Projects in the Historic Environment* (MoRPHE, Historic England 2015a) and the Chartered Institute for Archaeologists' (CIfA) *Standard and guidance for archaeological field evaluation* (CIfA 2014a).

1.2.2 This document will be submitted to archaeological advisor to the Local Planning Authority (LPA), for approval, prior to the start of the evaluation.

1.3 Location, topography and geology

1.3.1 The proposed evaluation area is located across two land parcels currently used as arable land, to the north of Cefn Road, adjacent to the Wrexham Industrial Estate (**Figure 1**). It is approximately 3.5 km south-east of the centre of Wrexham, 1.2 km north-west of the village of Marchwiell in the county of Wrexham, Wales.

1.3.1 The two agricultural fields to the north of Cefn Road both comprise agricultural land currently used for arable cultivation. The eastern field to the north of Cefn Road measures 6.8 ha and the western field approximately 6 hectares.



- 1.3.2 The two northern fields cover a roughly triangular area, divided by a central field boundary. These are bounded to the south by Cefn Road and to the east of the site are buildings from the Wrexham industrial estate. The northern extent is bounded by a wooded field boundary, leading to open pasture. The southern area is adjacent to a road leading to the water treatment works, and intersected by the River Clywedog, which traverses the area on an east-west orientation, close to Cefn Road.
- 1.3.3 The site slopes gradually towards the River Clywedog, from the north-west to south-east within the fields to the north of Cefn Road, ranging from 38 m above Ordnance Datum (aOD) to 32 m aOD. The smaller land parcel to the south of Cefn Road is relatively flat at approximately 38 m aOD.
- 1.3.4 The underlying geology of the Site comprises Salop Formation – Mudstone, Sandstone and Conglomerate with superficial deposits of River Terrace Deposits (Sand and Gravel) and Alluvium (Clay, Silt, Sand and Gravel) (British Geological Survey 2021).
- 1.3.5 The soils underlying the site are likely to consist of Typical Stagnogley soils of the 711h (Salop) association (SSEW SE Sheet 2 1983). Soils derived from such geological parent material have been shown to produce magnetic contrasts acceptable for the detection of archaeological remains through magnetometer survey.

2 ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

2.1 Introduction

- 2.1.1 The archaeological and historical background was assessed in a Historic Environment Desk-based Assessment (Wessex Archaeology 2021a), which considered the recorded historic environment resource within a 1 km study area of the proposed development. A summary of the results is presented below, with relevant entry numbers from the Clwyd-Powys Historic Environment Record (CPATHER) and the National Heritage List for England (NHLE) included. Additional sources of information are referenced, as appropriate.

2.2 Previous non-intrusive investigations related to the proposed development

Historic Environment Desk-based Assessment (Wessex Archaeology 2021a)

- 2.2.1 This assessment identified that there is potential for the Site to contain features and finds of evidential archaeological interest, relating to potential prehistoric to medieval landscape. A rectangular enclosure has been identified within the south-western corner of the Site on aerial photography likely dating to the Iron Age period, and there has been extensive ridge and furrow identified on the HER with the proposed substation area of the Site.

Gradiometer Survey (Wessex Archaeology 2021b; Figure 2-3)

- 2.2.2 Wessex Archaeology conducted a gradiometer survey across the area of proposed development, the results can be seen in **Figures 2-3**. There were a number of features identified of high archaeological interest identified within the site, indicating the potential for a prehistoric or Saxon funerary landscape within the Site. Two round barrows have been identified, with the larger one to the east having a centrally located pit within it, which potentially indicates a central burial. The smaller one to the west is more well defined, located closer to a presumed burial area. Semi-circular trends have been identified to the north and south of the larger round barrow, although their weaker magnetic response doesn't allow for a more confident interpretation. Several pits within this same area have been assumed by their elongated form and regular north-east to south-west orientation which have been identified as burials. This area is enclosed by a broad ditch that is clear at the north-eastern side and fades out on southern and western sides. The area has been



presumed to be Bronze Age in date, although further investigation would be required to determine this.

- 2.2.3 Cropmarks identified on aerial photography were not able to be identified through gradiometer survey. This may be due to an overburden of alluvial material that has obscured archaeological layers, which may mean better preserved archaeology may be located here (but is beyond the effective range of this survey technique). Alternatively, features may have been truncated by modern agricultural activities in this area.
- 2.2.4 Other features identifiable in the Site include several ditch and numerous pit features of unknown date, which may be the result of activities or natural processes. Furthermore, ridge and furrow is evident across the north of the site, on different alignments, as well as former field boundaries.

2.3 Archaeological and historical context

- 2.3.1 There are a small number of designated heritage assets within the study area, which are primarily comprised of listed buildings. This includes the Grade II listed 17th century farmhouse with Georgian remodelling at Pum-Rhyd (18058), which is located 575 m to the south-east of the site. In addition, the Grade II listed Llwyn Onn Hall Hotel (15530, and associated Ice-house (17275) are located approximately 970 m to the north-west of the site and has origins in the late 17th and 18th century.
- 2.3.2 Whilst there are limited records pertaining to periods prior to the early medieval period, the site has geoarchaeological potential for preserving early prehistoric remains. The River Clywedog runs through the substation area of the Site, which would likely indicate that this landscape would have been an attractive settlement location to prehistoric populations for its accessibility to natural resources. The River Terrace deposits adjacent to this have the broad potential to contain reworked Lower and early Middle Palaeolithic artefacts, as well as contemporary late Middle and Upper Palaeolithic archaeology. Moreover, where layers of peat are preserved in alluvium, organic material may be present, preserving a wide range of paleoenvironmental evidence (Howard et al. 2011). Such deposits are commonly located within palaeochannels and Historic aerial photography has indicated that there is potential for palaeochannels to exist within the northern part of the site.
- 2.3.3 A cropmark of a rectangular enclosure, as well as other linear features, has been identified from aerial photography. These are thought to be prehistoric in date suggesting that there is potential for as yet unidentified archaeological remains within the areas of the site to the north of Cefn Road.
- 2.3.4 There have also been a number of circular and semi-circular features identified within the Site, with
- 2.3.5 Aside from a singular Romano-British coin findspot approximately 405 m to the north-west of the site, there are no records dating to the Romano-British period. There is also no evidence for early medieval activity within this landscape, although Eyton, Sutton Green and Farnham were all identified as settlements within the Domesday Book. Wrexham and Marchwiell were part of the Kingdom of Powys, which would have been on the western side of Offa's Dyke and therefore has always been within Wales. There have been deer parks and enclosures identified within the Domesday Book for these settlements, and placename evidence for other local settlements (e.g. Holt, which means 'copse') indicate that the landscape was likely heavily wooded during this period.



- 2.3.6 Extensive areas of ridge and furrow have been identified on historic aerial photography, including within the southern area of the Site, where the proposed substation will be located. However, LiDAR analysis and historic Google Earth imagery has not identified evidence for ridge and furrow within the Site. However, there is one feature on the aerial photography that runs north to south within the western field, which may be a former field boundary.
- 2.3.7 The site of Five Fords Farm would have been adjacent to the substation area of the site and was constructed in the late 17th/early 18th century and demolished in 1973. This would have served during the early post-medieval period to help support the agricultural practices within this landscape.
- 2.3.8 The 1873 OS map shows that the Site comprised of irregularly shaped agricultural fields, with a historic hedgerow that divides the two that is still in place. Within the land parcel to the south of Cefn Road, a ford and an orchard can be seen to the south of the River Clywedog and Five Fords Manor House is visible to the west of the orchard. Aside from the addition of a small pond within the southern extent of the Site (to the north-east of the orchard/south of the River Clywedog), no further changes within the Site are noted on the 1899 OS map.

3 AIMS AND OBJECTIVES

3.1 General aims

- 3.1.1 The general aims (or purpose) of the evaluation, in compliance with the *CIfA Standard and guidance for archaeological field evaluation* (CIfA 2014a), are to:
- provide information about the archaeological potential of the site; and
 - inform either the scope and nature of any further archaeological work that may be required; or the formation of a mitigation strategy (to offset the impact of the development on the archaeological resource); or a management strategy.

3.2 General objectives

- 3.2.1 In order to achieve the above aims, the general objectives of the evaluation are to:
- determine the presence or absence of archaeological features, deposits, structures, artefacts or ecofacts within the specified area;
 - establish, within the constraints of the evaluation, the extent, character, date, condition and quality of any surviving archaeological remains;
 - place any identified archaeological remains within a wider historical and archaeological context in order to assess their significance; and
 - make available information about the archaeological resource within the site by reporting on the results of the evaluation.

3.3 Site-specific objectives

- 3.3.1 Following consideration of the archaeological potential of the site and the Welsh Archaeological Research Framework (IFA Wales 2008), the site-specific objectives of the evaluation are to:
- test the results of the geophysical survey (Wessex Archaeology 2021b);
 - understand the prehistoric landscape within the Site;



- understand the function of the circular and semi-circular features identified on the gradiometer survey, and the dating of any burials within the Site;
- determine the extent/preservation of medieval/post-medieval ridge and furrow within the Site and assess if this has impacted on any earlier remains; and
- assess whether there is further archaeological evidence that has not been identified from cropmarks on aerial photography or within the previous gradiometer survey (Wessex Archaeology 2021b).

4 FIELDWORK METHODS

4.1 Introduction

- 4.1.1 Health and safety will override archaeological considerations in all works since, as stated in ClfA guidance, *Health and Safety regulations and requirements cannot be ignored no matter how imperative the need to record archaeological information; hence Health and Safety will take priority over archaeological matters* (ClfA 2014a, 11)
- 4.1.2 All works will be undertaken in accordance with the detailed methods set out within this WSI. Any significant variations to these methods will be agreed in writing with Mark Walters and the client prior to being implemented.
- 4.1.3 The evaluation will comprise the excavation, investigation and recording of 22 trial trenches (each measuring 1.8 m by 50 m).

4.2 Setting out of the trenches

- 4.2.1 All trenches will be set out using a Global Navigation Satellite System (GNSS) in the approximate positions shown in **Figures 2-3**. Minor adjustments to the layout may be required to take account of constraints such as vegetation or located services, and to allow for machine manoeuvring. The trench locations will be tied into the Ordnance Survey (OS) National Grid and Ordnance Datum (OD) (Newlyn), as defined by OSTN15.

4.3 Service location and other constraints

- 4.3.1 The client will provide information regarding the presence of any below/above-ground services, and any ecological, environmental or other constraints.
- 4.3.2 Before excavation begins, the evaluation area will be walked over and visually inspected to identify, where possible, the location of any below/above-ground services. All trial trench locations will be scanned before and during excavation with a Cable Avoidance Tool (CAT) to verify the absence of any live underground services.

4.4 Excavation methods

- 4.4.1 The trenches will be excavated using a 360° tracked excavator equipped with a toothless bucket. Machine excavation will be under the constant supervision and instruction of the monitoring archaeologist. Machine excavation will proceed in level spits of approximately 50–200 mm until either the archaeological horizon or the natural geology is exposed. Where necessary, the base of the trench/surface of archaeological deposits will be cleaned by hand.
- 4.4.2 A sample of the archaeological features and deposits identified will be hand-excavated, sufficient to address the aims of the evaluation. Spoil derived from machine stripping and hand-excavation will be visually scanned for the purposes of finds retrieval, and where



appropriate will also be metal-detected by trained archaeologists. Artefacts and other finds will be collected and bagged by context.

4.4.3 If an exceptional number and/or complexity of archaeological deposits are identified, sample excavation will aim to be minimally intrusive, but sufficient to resolve the principal aims of the evaluation, to a level agreed with the county archaeologist and the client.

4.4.4 If human remains are uncovered, the specific methods outlined below (section 4.9.2) will be followed.

4.5 Recording

4.5.1 All exposed archaeological deposits and features will be recorded using Wessex Archaeology's pro forma recording system.

4.5.2 A complete record of excavated archaeological features and deposits will be made. This will include plans and sections, drawn to appropriate scales (generally 1:20 or 1:50 for plans, 1:10 for sections) and tied to the OS National Grid.

4.5.3 A full photographic record will be made using digital cameras equipped with an image sensor of not less than 16 megapixels. This will record both the detail and the general context of the principal features and the site. Digital images will be subject to managed quality control and curation processes, which will embed appropriate metadata within the image and ensure long term accessibility of the image set. Photographs will also be taken of all areas, including access routes, to provide a record of conditions prior to and on completion of the evaluation.

4.6 Survey

4.6.1 The real time kinematic (RTK) survey of all trenches and features will be carried out using a Leica GNSS connected to Leica's SmartNet service. All survey data will be recorded in OS National Grid coordinates and heights above OD (Newlyn), as defined by OSTN15 and OSGM15, with a three-dimensional accuracy of at least 50 mm.

4.7 Monitoring

4.7.1 Wessex Archaeology will inform the county archaeologist of the start of the evaluation and its progress. Reasonable access will be arranged for the site visits which will serve to inspect and monitor the progress of the evaluation. Any variations to the WSI, if required to better address the project aims, will be agreed in advance with the client and the county archaeologist.

4.8 Reinstatement

4.8.1 Trenches completed to the satisfaction of the client and the county archaeologist will be backfilled using excavated materials in the order in which they were excavated, and left level on completion. No other reinstatement or surface treatment will be undertaken.

4.9 Finds

General

4.9.1 All archaeological finds will be retained, although those of clearly very recent origin with negligible potential to provide information relevant to the project aims and objectives may be recorded on site and not retained. Where appropriate, soil samples may be taken and sieved to aid in finds recovery. Any finds requiring conservation or specific storage



conditions will be dealt with immediately in line with *First Aid for Finds* (Watkinson and Neal 1998).

Human remains

- 4.9.2 As there is high potential for human remains to be present within the site, a Ministry of Justice licence will be obtained prior to the commencement of works.
- 4.9.3 Initially the remains will be left *in situ*, covered and protected, pending discussions between the client, Wessex Archaeology's osteoarchaeologist and the county archaeologist regarding the need for excavation/removal or sampling. Where this is deemed appropriate, the human remains will be fully recorded, excavated and removed from site in compliance with the Ministry of Justice licence.
- 4.9.4 Excavation and post-excavation processing of human remains will be in accordance with Wessex Archaeology protocols and in-line with current guidance documents (eg, McKinley 2013 and 1993) and the standards set out in ClfA Technical Paper 13 *Excavation and post-excavation treatment of cremated and inhumed remains*. Appropriate specialist guidance/site visits will be undertaken if required, and a burial license will need to be in place prior to the works taking place.
- 4.9.5 The final deposition of human remains subsequent to the appropriate level of osteological analysis and other specialist sampling/examinations will follow the requirements set out in the Ministry of Justice licence.

Treasure

- 4.9.6 Wessex Archaeology will immediately notify the client and the county archaeologist on discovery of any material covered, or potentially covered, by the *Treasure Act 1996*. All information required by the *Treasure Act* (i.e., finder, location, material, date, associated items etc.) will be reported to the Coroner within 14 days.

4.10 Environmental sampling

- 4.10.1 All sampling will be undertaken following Wessex Archaeology's in-house guidance, which adheres to the principles outlined in Historic England's guidance (English Heritage 2011 and Historic England 2015b).
- 4.10.2 Bulk environmental soil samples, for the recovery of plant macrofossils, wood charcoal, small animal bones and other small artefacts, will be taken as appropriate from well-sealed and dateable contexts. In general, features directly associated with particular activities (eg, pits, latrines, cesspits, hearths, ovens, kilns, and corn driers) should be prioritised for sampling over features, such as ditches or postholes, which are likely to contain reworked and residual material.
- 4.10.3 If waterlogged or mineralised deposits are encountered, an environmental sampling strategy will be devised and agreed as appropriate. Specialist guidance will be provided by a member of Wessex Archaeology's geoarchaeological and environmental team, with site visits undertaken if required.
- 4.10.4 Any samples will be of an appropriate size – typically 40 litres for the recovery of environmental evidence from dry contexts, and 10 litres from waterlogged deposits.
- 4.10.5 Following specialist advice, other sampling methods such as monolith, Kubiena or contiguous small bulk (column) samples may be employed to enable investigation of



deposits with regard to microfossils (eg, pollen, diatoms) and macrofossils (eg, molluscs, insects), soil micromorphological or soil chemical analyses.

5 POST-EXCAVATION METHODS AND REPORTING

5.1 Stratigraphic evidence

5.1.1 All written and drawn records from the evaluation will be collated, checked for consistency and stratigraphic relationships. Key data will be transcribed into a database, which can be updated during any future analyses. The preliminary phasing of archaeological features and deposits will be undertaken using stratigraphic relationships and the spot dating from finds, particularly pottery.

5.1.2 A written description will be made of all archaeologically significant features and deposits that were exposed and excavated, ordered either by trench or by period as appropriate. Detail of all contexts will be provided in trench tables in the appendix of the report.

5.2 Finds evidence

5.2.1 All retained finds will, as a minimum, be washed, weighed, counted, labelled and identified. They will then be recorded to a level appropriate to the aims and objectives of the evaluation. Recording and reporting will conform to the Type 2 (Appraisal) level according to ClfA's *Toolkit for Specialist Reporting*, to include appropriate quantification, characterisation and assessment of significance and potential. The report will include a table of finds by feature/context or trench.

5.2.2 Metalwork from stratified contexts will be X-rayed and, along with other fragile and delicate materials, stored in a stable environment. The X-raying of objects and other conservation needs will be undertaken by Wessex Archaeology in-house conservation staff, or by another approved conservation centre.

5.2.3 Finds will be suitably bagged and boxed in accordance with the guidance given by the relevant museum and generally in accordance with the standards of the ClfA (2014b).

5.3 Environmental evidence

5.3.1 Bulk environmental soil samples will be processed by standard flotation methods. The residues will be fractionated into 5.6/4 mm and 1/0.5 mm and dried if necessary. The coarse residue fraction (>5.6/4 mm), and the fine fraction when appropriate, will be sorted and discarded, with any finds recovered given to the appropriate specialist. The flot will be retained on a 0.25 mm mesh and scanned to assess the range of environmental remains present and their preservation. Unsorted fine residues will be retained until after any analyses and discarded following final reporting (in accordance with the Selection policy, below).

5.3.2 In the case of samples from cremation-related deposits the flots will be retained on a 0.25 mm mesh, with residues fractionated into 4 mm, 2 mm and 1 mm. In the case of samples from inhumation burial deposits, the sample will be wet-sieved through 9.5 mm and 1 mm mesh sizes. The coarse fractions (9.5 mm) will be sorted with any finds recovered given to the appropriate specialist together with the finer residues.

5.3.3 Any waterlogged samples will be processed by standard waterlogged flotation methods.



5.3.4 Recording and reporting will conform to the Type 2 (Appraisal) level according to ClfA's *Toolkit for Specialist Reporting*, to include appropriate quantification, characterisation and assessment of significance and potential.

5.4 Reporting

General

5.4.1 Following completion of the fieldwork and the evaluation of the stratigraphic, artefactual and ecofactual evidence, a draft report will be submitted for approval to the client and the county archaeologist, for comment. Once approved, a final version will be submitted.

5.4.2 The report will include the following elements:

- Non-technical summary;
- Project background;
- Archaeological and historical context;
- Aims and objectives;
- Methods;
- Results – stratigraphic, finds and environmental;
- Conclusions in relation to the project aims and objectives, and discussion in relation to the wider local, regional or other archaeological contexts and research frameworks etc;
- Archive preparation and deposition arrangements;
- Appendices, including trench summary tables;
- Illustrations; and
- References.

5.4.3 A copy of the final report will be deposited with the HER, along with surveyed spatial digital data (.dxf or shapefile format) relating to evaluation.

Publication

5.4.4 If no further mitigation works are undertaken, a short report on the results of the evaluation will be prepared for publication in a suitable journal, if considered appropriate and agreed with the client and Mark Walters.

OASIS

5.4.5 An OASIS (online access to the index of archaeological investigation) record (<http://oasis.ac.uk>) will be created, with key fields completed, and a .pdf version of the final report submitted. Subject to any contractual requirements on confidentiality, copies of the OASIS record will be integrated into the relevant local and national records and published through the Archaeology Data Service (ADS) ArchSearch catalogue.

6 ARCHIVE STORAGE AND CURATION

6.1 Museum

6.1.1 It is recommended that the finds archive resulting from the evaluation be deposited with Wrexham County Museum/ Royal Commission on the Ancient and Historical Monuments of Wales (RCAHMW). The museum will receive notification of the project prior to fieldwork

commencing, and an accession number will be obtained if appropriate. The documentary archive will be deposited with the RCAHMW.

- 6.1.2 The site falls within the collecting area of Wrexham County Museum/RCAHMW. Every effort will be made to identify a suitable repository for the archive resulting from the fieldwork, and if this is not possible, Wessex Archaeology will initiate discussions with the local planning authority in an attempt to resolve the issue. If no suitable repository is identified, Wessex Archaeology will continue to store the archive, but may institute a charge to the client for ongoing storage beyond a set period.

6.2 Transfer of title

- 6.2.1 On completion of the evaluation (or extended fieldwork programme), every effort will be made to persuade the legal owner of any finds recovered (ie, the landowner), with the exception of human remains and any objects covered by the *Treasure Act 1996*, to transfer their ownership to the museum in a written agreement.

6.3 Preparation of archive

Finds archive

- 6.3.1 Any finds (artefacts and ecofacts) will be prepared following the standard conditions for the acceptance of excavated archaeological material by Wrexham County Museum/RCAHMW, and in general following nationally recommended guidelines (SMA 1995; ClfA 2014c; Brown 2011). The archive will usually be deposited within one year of the completion of the project, with the agreement of the client.

Documentary archive

- 6.3.2 The physical archive (paper records and graphics) and born digital data (site records, finds and environmental data, photographs, survey data and reports) will be prepared following the standard conditions for the acceptance of excavated archaeological material by Royal Commission on the Ancient and Historical Monuments of Wales (RCAHMW) and in general following nationally recommended guidelines (SMA 1995; ClfA 2014c; Brown 2011).

6.4 Selection strategy

- 6.4.1 It is widely accepted that not all the records and materials (artefacts and ecofacts) collected or created during the course of an archaeological project require preservation in perpetuity. These records and materials will be subject to selection in order to establish what will be retained for long-term curation, with the aim of ensuring that all elements selected to be retained are appropriate to establish the significance of the project and support future research, outreach, engagement, display and learning activities, ie the retained archive should fulfil the requirements of both future researchers and the receiving Museum.
- 6.4.2 The selection strategy, which details the project-specific selection process, is underpinned by national guidelines on selection and retention (Brown 2011, section 4) and generic selection policies (SMA 1993; Wessex Archaeology's internal selection policy) and follows ClfA's *Toolkit for Selecting Archaeological Archives*. It should be agreed by all stakeholders (Wessex Archaeology's internal specialists, external specialists, local authority, museum) and fully documented in the project archive.
- 6.4.3 In this instance, decisions on selection will be deferred until after the fieldwork stage, and no detailed strategy is presented here. Any material not selected for retention may be used for teaching or reference collections by the museum, or by Wessex Archaeology.



6.5 Security copy

- 6.5.1 In line with current best practice (eg, Brown 2011), on completion of the project a security copy of the written records will be prepared in the form of a digital PDF/A file. PDF/A is an ISO-standardised version of the Portable Document Format (PDF) designed for the digital preservation of electronic documents through omission of features ill-suited to long-term archiving.

7 COPYRIGHT

7.1 Archive and report copyright

- 7.1.1 The full copyright of the written/illustrative/digital archive relating to the project will be retained by Wessex Archaeology under the *Copyright, Designs and Patents Act 1988* with all rights reserved. The client will be licenced to use each report for the purposes that it was produced in relation to the project as described in the specification. The museum, however, will be granted an exclusive licence for the use of the archive for educational purposes, including academic research, providing that such use conforms to the *Copyright and Related Rights Regulations 2003*.
- 7.1.2 Information relating to the project will be deposited with the Historic Environment Record (HER) where it can be freely copied without reference to Wessex Archaeology for the purposes of archaeological research, or development control within the planning process.

7.2 Third party data copyright

- 7.2.1 This document, the evaluation report and the project archive may contain material that is non-Wessex Archaeology copyright (e.g., Ordnance Survey, British Geological Survey, Crown Copyright), or the intellectual property of third parties, which Wessex Archaeology are able to provide for limited reproduction under the terms of our own copyright licences, but for which copyright itself is non-transferable by Wessex Archaeology. Users remain bound by the conditions of the *Copyright, Designs and Patents Act 1988* with regard to multiple copying and electronic dissemination of such material.

8 WESSEX ARCHAEOLOGY PROCEDURES

8.1 External quality standards

- 8.1.1 Wessex Archaeology is registered as an archaeological organisation with the Chartered Institute for Archaeologists (CIfA) and fully endorses its *Code of conduct* (CIfA 2014d) and *Regulations for professional conduct* (CIfA 2014e). All staff directly employed or subcontracted by Wessex Archaeology will be of a standard approved by Wessex Archaeology, and archaeological staff will be employed in line with the CIfA codes of practice and will normally be members of the CIfA.

8.2 Personnel

- 8.2.1 The fieldwork will be directed and supervised by an experienced archaeologist from Wessex Archaeology's core staff. The overall responsibility for the conduct and management of the project will be held by one of Wessex Archaeology's project managers, who will visit the fieldwork as appropriate to monitor progress and to ensure that the scope of works is adhered to. Where required, monitoring visits may also be undertaken by Wessex Archaeology's Health and Safety manager. The appointed project manager will be involved in all phases of the investigation through to its completion.



8.2.2 The analysis of any finds and environmental data will be undertaken by Wessex Archaeology core staff or external specialists, using Wessex Archaeology's standard methods, under the supervision of the departmental managers and the overall direction of the project manager. A complete list of specialists is provided in Appendix 1.

8.2.3 The following key staff are proposed:

- Project Manager: Milica Rajic
- Fieldwork Director: TBC

8.2.4 Wessex Archaeology reserves the right, where necessary due to unforeseen circumstances, to replace nominated personnel with alternative members of staff of comparable expertise and experience.

8.3 Internal quality standards

8.3.1 Wessex Archaeology is an ISO 9001 accredited organisation (certificate number FS 606559), confirming the operation of a Quality Management System which complies with the requirements of ISO 9001:2015 – covering professional archaeological and heritage advice and services. The award of the ISO 9001 certificate, independently audited by the British Standards Institution (BSI), demonstrates Wessex Archaeology's commitment to providing quality heritage services to our clients. ISO (the International Organisation for Standardisation) is the most recognised standards body in the world, helping to drive excellence and continuous improvement within businesses.

8.3.2 Wessex Archaeology assigns responsibility to individual managers for the successful completion of all aspects of a project including reporting. This includes monitoring progress and quality; controlling the budget from inception to completion; and all aspects of health and safety for the project. At all stages, the project manager will carefully assess and monitor performance of staff and adherence to objectives, timetables and budgets, while the manager's own performance is monitored by the team leader or regional director. The technical managers in the Graphics, Research, GeoServices and IT sections provide additional assistance and advice.

8.3.3 All staff are responsible for following Wessex Archaeology's quality standards but the overall adherence to and setting of these standards is the responsibility of the senior management team who, in consultation with the team leaders/regional directors, also ensure projects are adequately programmed and resourced within Wessex Archaeology's portfolio of project commitments.

8.4 Health and safety

8.4.1 All works will be undertaken in accordance with the *Health and Safety at Work Act 1974*; the *Management of Health and Safety at Work Regulations 1999*; and all other applicable health and safety legislation.

8.4.2 Wessex Archaeology has a fully compliant health and safety management system that has year on year satisfied the criteria for SSIP certification (Safety Schemes in Procurement). SSIP itself is aligned with PAS91.

8.4.3 Wessex Archaeology will, for all projects, produce one or more task and site-specific risk assessments and method statements (RAMS), which will ensure our staff can work safely on the site. A copy of the RAMS and our Health and Safety Policy can be provided to the



client. All staff on our sites will be made fully familiar with the RAMS before work commences.

- 8.4.4 We aim to work collaboratively on health and safety with clients and, where separately appointed, with principal contractors. We expect clients to provide in good time all the necessary risk information about a site that may affect the archaeological work, such as locations of utilities or any known ground contamination. We will comply with the project specific Personal Protective Equipment (PPE) requirements, and any other specific additional requirements of the Principal Contractor.
- 8.4.5 All fieldwork staff are certified through the Construction Skills Certification Scheme (CSCS) and have undergone UKATA Asbestos Awareness Training. Staff who carry out specific tasks are suitably trained and competent to do so through training accredited by the Construction Industry Training Board (CITB), Institution of Occupational Safety & Health (IOSH) and the National Plant Operators Recognitions Scheme (NPORS).

8.5 Insurance

- 8.5.1 Wessex Archaeology holds Employers Liability (£10,000,000), Public Liability (£5,000,000) and Professional Indemnity (£5,000,000) policies.

REFERENCES

- British Geological Survey *Geology of Britain Viewer* <http://mapapps.bgs.ac.uk/geologyofbritain/home.html> (accessed November 2021)
- Brown, D H 2011 *Archaeological Archives: a guide to best practice in creation, compilation, transfer and curation* (revised edition). Archaeological Archives Forum
- Chartered Institute for Archaeologists [ClfA] 2014a *Standard and Guidance for Archaeological Field Evaluation* (revised edition June 2020). Reading, ClfA
- ClfA 2014b *Code of Conduct*. Reading, ClfA
- ClfA 2014c *Regulations for Professional Conduct*. Reading, ClfA
- ClfA *Toolkit for Selecting Archaeological Archives* <https://www.archaeologists.net/selection-toolkit> (accessed November 2021)
- ClfA *Toolkit for Specialist Reporting* <https://www.archaeologists.net/reporting-toolkit> (accessed November 2021)
- English Heritage 2011 *Environmental Archaeology: A Guide to the Theory, Practice of Methods, from Sampling and Recovery to Post-excavation* (second edition). Portsmouth, English Heritage
- Historic England 2015a *Management of Research Projects in the Historic Environment: the MoRPHE project managers' guide*. Swindon, Historic England
- Historic England 2015b *Geoarchaeology: Using Earth Sciences to Understand the Archaeological Record*. Swindon, Historic England
- IfA Wales 2008 *A research framework for the archaeology of Wales*. Available at: <https://www.archaeoleg.org.uk/intro.html>
- McKinley, J I 2013 Cremation: excavation, analysis and interpretation of material from cremation-related contexts, in S Tarlow and L Nilsson Stutz (eds) *The Oxford Handbook of the Archaeology of Death and Burial*. Oxford University Press 147–71
- McKinley, J I and Roberts, C 1993 ClfA Technical Paper 13 *Excavation and Post-excavation Treatment of Cremated and Inhumed Human Remains*
- Watkinson, D and Neal, V 1998 *First Aid for Finds: practical guide for archaeologists*. United Kingdom Institute for Conservation of Historic & Artistic Works
- Wessex Archaeology 2021a. *Cefn Road, Wrexham: Historic Environment Desk-based Assessment*. Unpublished rep. no. 247430.01
- Wessex Archaeology 2021b. *Cefn Road, Wrexham: Gradiometer Survey*. Unpublished rep. no. 247431.01



APPENDICES

Appendix 1 Finds and environmental specialists

Name	Qualifications	Specialism
Sander Aerts	BA, MSc	Archaeoentomological remains, animal bone, marine shell and archaeobotanical remains (carbonised)
Phil Andrews	BSc; FSA; MCIfA	Slag and metal working debris
Ceridwen Boston	BSocSc; MA; MSc; DPhil	Osteoarchaeology; funerary archaeology
Elina Brook	BA; MA; PCIfA	Later prehistoric and Romano-British pottery, and small finds
Alex Brown	BA; MSc; PhD	Geoarchaeology, palynology
Kirsten Egging Dinwiddy	BA; MA; MCIfA	Human remains (inhumations)
Erica Gittins	BA; MA; PhD	Prehistoric flint
Phil Harding	PhD	Prehistoric flint, particularly Palaeolithic flint
Lorrain Higbee	BSc; MSc; MCIfA	Animal bone
Grace Jones	BA; MA; PhD; MCIfA	Prehistoric and Roman pottery, ceramic building material, fired clay, and small finds
Matt Leivers	BA; PhD; ACIfA	Prehistoric pottery and flint
Inés López-Dóriga	BA; MA; PhD	Archaeobotanical remains
Erica Macey-Bracken	BA; ACIfA	Post-medieval finds, ceramic building material and worked wood
Katie Marsden	BSc	Pottery from prehistoric to post-medieval/modern. Metalwork of all periods, including coins. Small and bulk finds including fired clay, ceramic building material, worked bone
Jacqueline McKinley	BTech; FSA	Human remains (inhumations and cremations)
Lorraine Mephram	BA; MCIfA	Pottery and other ceramic finds of all dates, concentrating on later prehistoric and post-Roman; ceramic building material; clay tobacco pipe; glass of Saxon or later date; small finds
Nicki Mulhall		Geoarchaeology and archaeobotanical remains
David Norcott	BA; MSc; MCIfA	Geoarchaeology
Richard Payne	BSc; MSc; MPhil	Geoarchaeology
Holly Rodgers	BA; MSc	Geoarchaeology
Emma Robertson	BA; MSc	Human remains (inhumations)
Megan Scantlebury	BA, MSc	Archaeobotanical remains
Rachael Seager Smith	BA; MCIfA	Pottery with particular emphasis on Roman ceramics; and metalwork, fired clay, ceramic building material, stone, worked bone, shale, glass, and wall plaster
Andrew Shaw	BA; MA; PhD	Palaeolithic lithic artefacts and Pleistocene geoarchaeology
Amy Thorp	BA; MA	Pottery with emphasis on Roman ceramics, small finds
Ed Treasure	BSc; MRes; PhD	Archaeobotanical remains, including plant remains and charcoal/wood



Appendix 2 Selection Strategy

247430
Cefn Road, Wrexham
 [version 1, 15/11/2021]

Selection Strategy

Project Information

Project Management

Project Manager	Mili Rajic
Archaeological Archive Manager	Lorraine Mepham
Organisation	Wessex Archaeology (WA)

Stakeholders		Date Contacted
Collecting Institution(s)	TBC Archaeology Data Service	
Project Lead / Project Assurance	Lead: TBC Assurance: Mili Rajic	N/A
Landowner / Developer	TBC in consultation with Novus Renewable Service Ltd.	
Other (external)	External finds & environmental specialists (see WSI) CPAT	
Other (internal)	WA Finds Manager (Rachael Seager Smith) WA Environmental Officer (Inés López Dóriga) WA Geomatics & BIM Manager (Chris Breeden) WA internal finds & environmental specialists (see WSI)	N/A; briefed as part of standard project process

Resources

Resources required

WA Finds and Environmental specialists; external finds and environmental specialists; WA archives team

Context

This overarching selection strategy document is based on the ClfA Archives Selection Toolkit (2019) and relates to archaeological project work being undertaken by Wessex Archaeology as defined in the WSIs.

Relevant standards, policies and guidelines consulted include:

General

- *Selection, Retention and Dispersal of Archaeological Collections* (Society of Museum Archaeologists, 1993)
- *Archaeological archives: a guide to best practice in creation, compilation, transfer and curation* (AAF, revised edition 2011, section 4)
- *Wrexham County Museum guidelines*

Relevant research agendas

- A Research Framework for the Archaeology of Wales (IFA 2008)

Finds

- *Standard Guidance for the collection, documentation, conservation & research of archaeological materials* (CIFA, 2014)
- *A Standard for Pottery Studies in Archaeology* (Prehistoric Ceramics Research Group, Study Group for Roman Pottery, Medieval Pottery Research Group 2016)

Environmental

- *Environmental Archaeology: A Guide to the Theory, Practice of Methods, from Sampling and Recovery to Post-excavation* (English Heritage 2011)
- *Geoarchaeology: Using Earth Sciences to Understand the Archaeological Record* (Historic England 2015)
- *Guidelines for the Curation of Waterlogged Macroscopic Plant and Invertebrate Remains* (English Heritage 2008)
- *Waterlogged Wood: Guidelines on the Recording, Sampling, Conservation and Curation of Waterlogged Wood* (English Heritage 2010)
- *Waterlogged Organic Artefacts: Guidelines on their Recovery, Analysis and Conservation* (Historic England 2018)

Research objectives of the project

Following consideration of the archaeological potential of the site and the regional research framework (IFA 2008), the research objectives of the excavation are to:

- test the results of the geophysical survey (Wessex Archaeology 2021b);
- understand the prehistoric landscape within the Site;
- understand the function of the circular and semi-circular features identified on the gradiometer survey, and the dating of any burials within the Site;
- determine the extent/preservation of medieval/post-medieval ridge and furrow within the Site and assess if this has impacted on any earlier remains; and
- assess whether there is further archaeological evidence that has not been identified from cropmarks on aerial photography or within the previous gradiometer survey (Wessex Archaeology 2021b).

REVIEW POINTS

Consultation with all Stakeholders regarding project-specific selection decisions will be undertaken at a maximum of three project review points:

- Data gathering: on site, if any unforeseen discovery necessitates an amendment to the proposed collection strategy, or if adjustments are made to any sampling strategy
- End of data gathering (assessment stage)
- Archive compilation

1 – Digital Data

Stakeholders

WA Project Manager; WA Archives Manager; WA Geomatics & BIM Manager; Wrexham County Museum; CPAT; ADS

Selection

Location of Data Management Plan (DMP)

This document is designed to link to the project Data Management Plan (DMP), which can be supplied on request.

To promote long-term future reuse deposition file formats will be of archival standard, open source and accessible in nature following national guidance from ADS 2013, ClfA 2014c and the requirements of the digital repository.

Any sensitive data to be handled according to Wessex Archaeology data policy to ensure it is stored and transferred securely. The identity of individuals will be protected in line with GDPR. If required, data will be anonymised and redacted. Selection and retention of sensitive data for archival purposes will occur in consultation with the client and relevant stakeholders. Confidential data will not be selected for archiving and will be handled as per contractual obligation.

Document type	Selection Strategy	Stakeholders	Review Points
Site records	Most records will be completed digitally on site (with the exception of registers). All will be selected for deposition.	As above	3
Reports	To include WSIs, Interim reports, post-excavation assessment reports, publication reports. Final versions only will be selected for deposition.	As above	2, 3
Specialist reports	Specialist reports will generally be incorporated in other documents with only minimal editing (reformatting, etc), and will be selected only if the original differs significantly from the incorporated version.	As above	2, 3
Photographic media (site recording)	Substandard and duplicate images will be eliminated; pre-excavation images may not be selected where duplicated by post-excavation shots; working shots will be very rigorously selected to include only good quality images with potential for reuse and those integral to	As above	2, 3

	understanding features, their inter-relationships and location on site; site condition and reinstatement photos will not be selected.		
Photographic media (objects)	Images of individual or groups of objects, to include those of significance selected for publication and reporting. Substandard and duplicate images will be eliminated; all others will be selected.	As above	3
Photographic media (photogrammetry)	All terrestrial photogrammetry recording will generate orthographic photos. For those features or finds which are particularly archaeological significant, 3D models will be generated and deposited but raw photos will only be selected where models have been selected and OBJs are to be deposited, where re-processing may have some archaeological value (eg very significant features, or where the model is less accurate than the surveyed georeference targets or of lower quality and the quality of the original photos is good enough to represent a reasonable chance of better future outcomes). Aerial photogrammetry topographic surveys will generate 3D models and orthographic photos, and the final outputs in the form of the report. These will all be selected, but not the raw photos from aerial surveys.	As above	2, 3
Photographic media (community engagement and other activities)	General shots, promotional videos, etc. None will be selected, unless images are generated that are not duplicated in the main site record, but which have specific archaeological value.	As above	3
Survey data	Site survey data will be used to generate CAD/GIS files for use in post-excavation activities. Shapefiles of both the original tidied survey data, and the final phased drawings will be selected.	As above	2, 3
Databases and spreadsheets	Context, finds and environmental data in linked databases. Final versions will be selected. Any	As above	2, 3

	specialist data submitted separately will also be selected.		
LIDAR data	All will be selected	As above	2, 3
Laser Scan data	All will be selected	As above	2, 3
Geophysical data	RAW data and Interpretation Geotiffs	As above	2, 3
Administrative records	Includes invoices, receipts, timesheets, financial information, email correspondence. None will be selected, with the exception of any correspondence relating directly to the archaeology.	As above	3

De-Selected Digital Data

De-selected data will be stored on WA secured servers on offsite storage locations. The WA IT department has a backup strategy and policies that involves daily, weekly and monthly and annual backups of data as stated in the DMP. This strategy is non-migratory, and original files will be held at WA under their unique project identifier, as long as they remain useful and usable in their final version format. This data may also be used for teaching or reference collections by the museum, or by WA unless otherwise required by contractual or copyright obligations.

Amendments

Date	Amendment	Rationale	Stakeholders

2 – Documents

Stakeholders

WA Project Manager; WA Archives Manager; RCHAMW; CPAT

Selection

A security copy of all paper/drawn records is a requirement of ClfA guidelines. This will be prepared on completion of the project, in the form of a digital PDF/A file. If the security copy is not required for deposition by Stakeholders, it will be retained on backed-up servers belonging to Wessex Archaeology.

Note that some information may be redacted to comply with GDPR legislation (personal data).

Document type	Selection Strategy	Stakeholders	Review Points
Site records	Selected records only will be	As above	3

	completed in hard copy on site (registers, some graphics). All will be selected for deposition.		
Reports	Hard copies of all reports (SSWSIs, Interim reports, post-excavation assessment reports, publication reports). All will be selected for deposition, with the exception of earlier versions of reports which have been clearly superseded.	As above	2, 3
Specialist reports & data	Specialist reports will generally be incorporated in other documents with no significant editing. Supporting data is more likely to be included in the digital archive, but if supplied in hard copy and not incorporated elsewhere, this will be selected.	As above	2, 3
Photographic media	X-radiographic plates: all will be selected.	As above	3
Secondary sources	Hard copies of secondary sources will not be selected.	As above	3
Working notes	Rough working notes, annotated plans, preliminary versions of matrices etc, will not be selected.	As above	3
Administrative records	Invoices, receipts, timesheets, financial information, hard copy correspondence. None will be selected, with the exception of any hard copy correspondence relating directly to the archaeology.	As above	3

De-Selected Documents

De-selected sensitive analogue data will be destroyed (shredded) subject to final checking by the WA Archives team with the remainder recycled. Possible exceptions include records retained for business purposes, including promotional material, teaching and internal WA library copies of reports.

Amendments

Date	Amendment	Rationale	Stakeholders

3 – Materials

Material type

Artefacts (bulk and registered finds)

Section 3.

3.1

Stakeholders

WA Archives Manager; WA Finds Manager; WA internal specialists; external specialists; Wrexham County Museum; CPAT; landowner

Selection

Note that human remains are not included in this selection strategy; their recovery and subsequent treatment and curation will be governed by a Ministry of Justice licence(s).

The on-site finds recovery strategy is given below; it is of necessity fairly generic. It is anticipated that this will be reviewed and updated at the project assessment stage, once all collected finds have been processed and quantified. Amendments may be made prior to that on site in the event of unforeseen discoveries necessitating adjustments to recovery or sampling strategies (eg production sites, large concentrations of building debris, 'burnt mounds').

Throughout the following section, 'stratified' is taken to include topsoil deposits, while 'unstratified' indicates anything completely separated from context eg spoilheap finds, or surface finds other than those directly associated with underlying features.

Find Type	Selection Strategy	Stakeholders	Review Points
Animal bone	All will normally be collected from stratified contexts. Selection could be recommended at next review point, dependent on stratigraphic integrity, condition and size of assemblage.	As above	2, 4
Building materials (other, eg, mortar, plaster, <i>opus signinum</i>)	If found <i>in situ</i> , these should be recorded on site and, if appropriate, a small sample of <i>opus signinum</i> or wall plaster (not mortar) retained for further examination. Loose fragments of mortar or <i>opus signinum</i> should not be collected, but their presence on site should be noted. All loose wall plaster will be collected from stratified contexts. Selection likely to be recommended at next review point.	As above	2, 4
Burnt (unworked) flint	All will normally be collected from stratified contexts. Selection likely to be recommended at next review point.	As above	1 (if large quantities encountered), 2, 3

Ceramic building material	All CBM from stratified contexts will be collected and reviewed at the processing stage. If <i>in situ</i> structures are encountered, these should be fully recorded on site, but samples of components may be collected for a closer examination of form, fabric and dimensions. Selection likely to be recommended at next review point.	As above	1 (if large quantities encountered), 2, 3
Ceramic objects	Includes spindlewhorls, loomweights, slingshot, portable kiln furniture, etc. All will be collected, including any unstratified examples.	As above	2, 3
Clay tobacco pipes	All will normally be collected from stratified contexts. Selection likely to be recommended at next review point.	As above	2, 3
Coins	All will be collected, including unstratified finds.	As above	2, 3
Fired clay	Includes structural material ('daub') as well as briquetage, and undiagnostic fragments. All will be collected from stratified contexts. Selection likely to be recommended at next review point.	As above	2, 3
Glass, vessel and window	All will normally be collected from stratified contexts. Unstratified post-medieval/modern material will not be collected, unless of intrinsic interest. If large-scale post-medieval/modern bottle dumps are encountered, items will be recorded <i>in situ</i> as far as possible, and a small sample collected. Selection likely to be recommended at next review point.	As above	1 (if large quantities encountered), 2, 3
Glass, objects	All will be collected, including unstratified finds	As above	2, 3
Jet, shale, amber	All will be collected, with the possible exception of unstratified unworked shale or shale-working waste. Selection could be recommended at next review point, dependent on condition.	As above	2, 3

Leather and textile	All will be collected, including unstratified finds. Selection could be recommended at next review point, dependent on date and condition.	As above	2, 3
Marine shell	All will normally be collected from stratified contexts. If large-scale dumps are encountered, an appropriate sampling strategy may be employed with the aim of characterising the shell assemblage (species, condition, potential sources, management of oyster beds, etc). All shell-working waste will be collected. Selection likely to be recommended at next review point.	As above	1 (if large quantities encountered), 2, 3
Metalwork	All will be collected from stratified contexts, with the exception of obviously modern (19 th -/20 th -century) objects found in topsoil/overburden or unstratified. Selection likely to be recommended at next review point.	As above	2, 3
Metalworking residues	All will be normally collected from stratified contexts. Selection likely to be recommended at next review point.	As above	2, 3
Pottery, prehistoric	All will be collected, including unstratified finds.	As above	2, 3
Pottery, all other periods	All will be collected from stratified contexts. From unstratified contexts, only pieces of intrinsic interest will be collected, unless this is the only datable material recovered. Selection could be recommended at next review point.	As above	2, 3
Stone, building	<i>In situ</i> architectural fragments and other building material may be recorded on site rather than collected, and samples taken for geological identification. Other building stone will be collected from stratified contexts. From unstratified contexts, only pieces of intrinsic interest (eg, architectural fragments). Selection likely to be recommended at next review point.	As above	2, 3

Stone, portable objects	All will be collected from stratified contexts. From unstratified contexts, only identifiable objects.	As above	2, 3
Stone, unworked	Unworked stone will only be collected if considered to be archaeologically significant, ie included in features intentionally, or thought to have fulfilled a specific function.	As above	2, 3
Worked bone and antler	Includes finished objects as well as boneworking waste. All will be collected, including unstratified finds.	As above	2, 3
Worked flint	All will be collected.	As above	2, 4
Worked wood	This includes all structural timbers as well as any portable objects (e.g. vessels, implements, etc). Structural timbers found <i>in situ</i> should be recorded stratigraphically but may be sampled for species identification and/or dating without full recovery. All other will be collected, with the exception of unstratified and undiagnostic pieces. Selection could be recommended at next review point.	As above	1 (if <i>in situ</i> finds encountered), 2, 4

Uncollected Material

Finds which fall outside the categories proposed for on-site collection will not normally be recorded beyond a general comment on site recording sheets on the presence and nature of large concentrations (eg building materials, modern debris), but if specific sampling strategies are employed to deal with, for example, production waste, then a more accurate guide to the actual size of the parent assemblage (and thus the sample percentage) will be given.

Any uncollected material will be left *in situ* or (if collected and then de-selected), re-incorporated into the site.

De-Selected Material

Consideration will be given to the suitability for use for handling or teaching collections by the museum or Wessex Archaeology, or whether they are of particular interest to the local community. De-selected material will either be returned to the landowner or disposed of. All will be adequately recorded to the appropriate level before de-selection.

Amendments

Date	Amendment	Rationale	Stakeholders

3 – Materials

Material type	Palaeoenvironmental material	Section 3.	3.2
----------------------	------------------------------	-------------------	-----

Stakeholders

WA Archives Manager; WA Environmental Officer; WA internal specialists; external specialists; Wrexham County Museum; CPAT

Selection

All contexts suitable for environmental sampling will be considered for sampling. All environmental sampling will be undertaken following Wessex Archaeology's in-house guidance, which adheres to the principles outlined in Historic England's guidance (English Heritage 2011 and Historic England 2015a) and as stated in relevant WSI.

Env Material Type	Selection Strategy	Stakeholders	Review Points
Unprocessed samples	In the event of any samples being eliminated from processing due to lack of archaeological significance, these will not be retained.	As above	2, 3
Unsorted residues	Residues from samples not proposed for further analysis will be de-selected, with the possible exception of any taken for the recovery of human remains.	As above	2, 3
Assessed flots with no extracted materials	Assessed flots with no extracted materials are considered to be devoid of any significant environmental evidence and will be de-selected.	As above	2, 3
Assessed or analysed flots with extracted materials	All analysed samples will be selected; assessed flots with extracted materials with no further research potential (to be established on a sample by sample case) may be de-selected.	As above	2, 3
Charred & waterlogged plant remains	All extracted plant remains will be selected	As above	3
Mollusca	All extracted mollusca will be selected	As above	3
All other analysed material (eg insects,	All material will be selected	As above	3

pollen)			
---------	--	--	--

Uncollected Material

Any uncollected material will be left *in situ* or re-incorporated into the site.

De-Selected Material

De-selected material from samples will be disposed of after processing and post-excavation recording. All processed material will be adequately recorded to the appropriate level before de-selection.

Amendments

Date	Amendment	Rationale	Stakeholders



Appendix 3 Data Management Plan



Cefn Road Data Management Plan

247430.04
November 2021



Data Management Plan

1 WESSEX ARCHAEOLOGY STANDARDS AND PROCEDURES

Standard Wessex Archaeology procedures include pro-forma digital and paper recording, fieldwork/survey manuals, context/finds database guidance and archive procedure manual. company quality management protocols and implementation of a competence management system in line with ISO 10018, data management guidelines and data protection and security policy.

2 NATIONAL STANDARDS AND GUIDANCE

2.1 Formal standards for data management

ADS 2013 *Caring for Digital Data in Archaeology: a guide to good practice*. Archaeology Data Service & Digital Antiquity Guides to Good Practice

Brown, D H 2011 *Archaeological Archives: A guide to best practice in creation, compilation, transfer, and curation* (2nd edition). Reading, Institute of Field Archaeologists/Archaeological Archives Forum

CifA 2014 *Standard and guidance for the collection, documentation, conservation, and research of archaeological materials* (revised edition June 2020). Reading, Chartered Institute for Archaeologists

English Heritage 2012 *MIDAS: the UK Historic Environment Data Standard Version 1.1. Best practice guidelines. Forum on Information Standards in Heritage* (FISH)

Forster, M 2019 *Work Digital / Think Archive. A Guide to managing Digital data generated from archaeological investigations*. Dig Ventures

Historic England 2015 *Digital Image Capture and File Storage*. Swindon, Historic England

3 SCOPE OF DIGITAL DATA CREATION AND FILE TYPES

3.1 Digital data creation and standardised Open Source/Archival format file types to be used will include

Survey data (raw and tidied) in Esri shapefiles (.shp), points, lines, and polygons, and site plans in an AutoCAD .dwg or .dxf format, where requested

Interpreted geophysical survey data in .tif, .tiff or shapefiles and .xyz data files

Light detection and ranging (LiDAR) and laser scan data, where produced for deposition, will consist of GeoTiff .tif and .E57 files respectively

Digital site photographs – record, working and condition monitoring, in addition to aerial photos plus UAV photos all captured in high resolution .jpeg with a minimum 16-megapixel sensor

Photogrammetry and UAV photogrammetry – captured in high resolution .jpeg with a minimum 16-megapixel sensor with the resulting model, if created, archived as open source .obj files and orthographic or isometric .tif or high quality .jpeg



Digital pro forma fieldwork records created on tablet in .pdf format and automatically exported into server-held project data spreadsheets

Digital security copy scans of site permatrace drawings will be produced in .tif format at a minimum 300 dpi and all site paper register in pdf format

Excel spreadsheet .csv or .xlsx data files containing site stratigraphic data, environmental data, finds specialist assessment and analysis data and general finds quantification and retention data

Specialist data – conservation (x-ray etc.), radiocarbon dating data and certificates in Microsoft Word .docx or .pdf format

Specialist and project reports and figures produced in Microsoft Word .docx or .pdf format stored in Union Square (US) a proprietary project management system (PMS) used by Wessex Archaeology. Upon completion of the work, these will be incorporated into the relevant report.

3.2 Wessex Archaeology procedures

All data types are industry standard and can be accessed by most data-specific software. If this is not the case, data can be converted to other common formats. As advised by ADS, all .pdf files selected for archive will be converted to archival standard PDF/A on deposition.

Standardised file naming conventions to include project number, type of work undertaken and title/unique identifiers eg, WAProjectNumber_CameraNumber_ImageNumber.. For example: 12345_D999_54321.jpg

Standardised project folder structure used to organise and compartmentalise various project elements from set up to archiving.

Project reporting document management system (DMS) with versioning and version control handled automatically.

3.3 Guidance

Chartered Institute for Archaeologists [CIfA] 2014, Standards and Guidance, Codes of Conduct and Regulations. CIfA, Reading

Historic England 2015 *Digital Image Capture and File Storage*. Swindon, Historic England

Historic England 2015 *Metric Survey Specifications for Cultural Heritage*. Swindon, Historic England

4 SCOPE OF DIGITAL DATA COLLECTION

The exact scope of digital data collection will be dependent upon the type of project, as well as the nature and extent of archaeological remains found. Digital data will be used, in conjunction with other data, in interpretation and reporting of the site.

4.1 Digital data collection methods

Archaeological site survey

Will be used as the primary method of recording the 3D spatial location of the investigated area(s) and any archaeological remains found within. It may also be used to geo-reference



other data types, such as photogrammetry and drawn plans. This data will then be used in the production of report figures.

Site survey would be conducted with a real time kinematic (RTK) Global Navigation Satellite System (GNSS) or a Total Station Theodolite (TST), set to a 3D coordinate quality of at least 50 mm. Where an RTK connection is not possible, post-processed kinematic surveying or a Total Station Theodolite (TST) will be used instead. All data will be collected within Ordnance Survey National Grid with heights calculated as distance above Ordnance Datum (Newlyn), as defined by OSGM15 and OSTN15. Data shapefiles or .txt files (where created) will be sent via File Transfer Protocol to the office for processing and back up at the end of each day; this facilitates data security, quality management and faster access to the data for the field and post-excavation teams.

Photography

Will primarily be used as a visual record of any archaeological deposits. It may also be used for general site views and condition monitoring photographs suitable for display or reporting, recording the state of site(s) prior to Wessex Archaeology access, recording reinstatement and other general shots as necessary. Photography would be conducted with DSLRs and captured in high resolution .jpeg with a minimum 16-megapixel sensor. Photographs will be regularly backed up onto company servers to ensure data security.

Finds photography will be undertaken using a DSLR with at least a 16-megapixel sensor. Images will be captured in JPEG format .jpg files at the highest quality settings available on the camera. Particularly small artefacts and ecofacts may also be photographed by means of a camera attached to a microscope.

Photogrammetry

Where appropriate, archaeological remains or areas of investigation may be recorded with photogrammetry. This will be determined on a case-by-case basis. Where conducted this may be carried out with a handheld DSLR or with a UAV mounted camera, the exact specifications of which will be dependent upon airspace restrictions on the site. The ground sample distance of any data collected will be dependent upon the recording aims and expected reproduction scale, as per Historic England standards. Photogrammetric data may be used to produce line drawings of complex deposits, orthographic images (plan or section) of remains, illustrative images and, where deemed appropriate, textured colour 3D models.

Pro forma sheets

Archaeological record sheets, for example context or environmental sample records, will be produced using a digital recording system loaded onto tablet devices. This data will be synced with an online data storage system to allow for quick access to the data by the post-excavation team and the automated production of certain records. These record sheets will follow established standards and include all the information found on a paper counterpart.

Environmental data

Environmental sample locations are recorded in the field using a GNSS or TST in Ordnance Survey (OS) National Grid and Ordnance Datum (OD) Newlyn, as defined by OSGM15 and OSTN15, to a three-dimensional coordinate quality of ± 30 mm.

Data pertaining to the environmental sample processing procedure is recorded in an .xlsx file for future reference. these will be stored in US. environmental specialist analysis of the ecofacts recovered is recorded in .docx files stored in union square.

Pollen is analysed using tiliat's tilia software. this software utilises .tgx and .tlx format files. data can be output as .emf, .csv and .txt files for incorporation into reports.

Scientific dating

When undertaken results are calibrated and modelled using oxford radiation accelerator unit's oxcal software. modelled data is output in .csv or .txt format files, and images as .png files, ready for incorporation into reports.

Geoarchaeology data

Geoarchaeological fieldwork uses the Wessex Archaeology tablet recording system

Any archaeological borehole data is recorded using a defined borehole recording pro forma, whilst test pits and trenches utilise the standard pro forma for the archaeological recording of these interventions.

The locations of interventions are recorded using a GNSS or TST in Ordnance Survey (OS) National Grid and Ordnance Datum (OD) Newlyn, as defined by OSGM15 and OSTN15, to a three-dimensional coordinate quality of ± 50 mm.

4.2 General notes

It is not expected that other digital data collection methods will be employed for recording the site, however, should the need arise for other digital techniques to be used, these will be undertaken according to national standards and Wessex Archaeology's procedures.

Existing data that may be used to contribute to the project could include desk-based assessment, geophysical data, prior and relevant archaeological results and reporting, HER, NRHE and other archival data. Data volumes will be dependent on the size, number of sites and nature of investigation undertaken, and techniques used.

4.3 Wessex Archaeology procedures

Standardised survey, photographic, photogrammetric and archaeological recording procedures. Stratigraphic data entry/creation, post-excavation data recording and digital archiving following guidance and good practice outlined below.

Quality Management System (QMS) policy and procedures including quality assurance and control procedures. Quality assurance for the digital data will be provided by Wessex Archaeology's Quality Management System, including data quality monitoring and logging during survey, and quality control assessments during processing and interpretation. This will be conducted by the project supervisory and post-excavation teams, and the Geomatics department.

4.4 Guidance

ADS 2013 *Caring for Digital Data in Archaeology: a guide to good practice*. Archaeology Data Service & Digital Antiquity Guides to Good Practice

Chartered Institute for Archaeologists [CIfA] 2014 Standards and Guidance, Codes of Conduct and Regulations. Reading, CIfA

Historic England 2015 *Digital Image Capture and File Storage*. Swindon, Historic England

Historic England 2015 *Metric Survey Specifications for Cultural Heritage*. Swindon, Historic England



Historic England 2017 *Photogrammetric Applications for Cultural Heritage*. Swindon, Historic England

4.5 General notes

Data volumes are dependent on the size of site and specific equipment used.

All data types are industry standard and can be accessed by most data specific software. If this is not the case, data can be converted to other common formats.

5 SCOPE OF DIGITAL DATA PROCESSING

5.1 Wessex Archaeology procedures

Wessex Archaeology uses standardised survey, photographic, photogrammetric, and archaeological recording procedures, stratigraphic data entry/creation, post-excavation data recording, digital archiving. QMS policy and procedures as summarised below;

Archaeological site survey – Raw GNSS/TST data as shapefiles

These will be processed through a survey data processing programme in order to create CAD files. The data may be edited using AutoCAD 2018 to correct errors in the survey data collection, such as missed points, incorrect coding. Edited working drawings will be saved as .dwg CAD drawings and backed up on Wessex Archaeology's secure servers.

Once fieldwork survey data has been processed and quality checked, it will be exported as Shapefiles into Wessex Archaeology's Ladybird software. Ladybird combines the written records collected via the Butterfly site recording software with the survey data, linking each record to the surveyed features. All data which is collated in Ladybird is synchronised to Wessex Archaeology's Arc GIS online (for future reuse and metadata production) and then exported into AutoCAD for editing and figure production.

Combined survey data shapefiles, with accompanying metadata, and .dwg CAD file(s) will be produced for archiving.

Photography

Captured as .raw and/or .jpeg files, site photographs are unlikely to undergo processing, except, where necessary format conversion from raw for post-excavation and reporting use and archiving.

Photogrammetry

Captured as .jpeg files, photogrammetric data may undergo some processing prior to photogrammetric processing. This may include colour correction and masking. Each photogrammetric dataset will be processed using photogrammetric software to produce, a textured 3D mesh, from which other outputs will be derived. This will be in a proprietary format. The nature of the outputs will be dependent upon the requirements for each instance of photogrammetric recording.

All outputs will be in open formats and will include an .obj per dataset (if deemed significant enough), .jpeg or .tif images (orthographic or isometric) and CAD drawings in .dwg or .dxf format. Archaeological features recorded using photogrammetry but not modelled as a deliverable will be archived as ortho-rectified plans in a .tif or high quality .jpeg format



Site records

Written records created during the archaeological fieldwork, such as context records, trench sheets and day books will be created on site in tablet pro forma sheets. All pro forma sheets will be converted into PDF format and information extracted to create spreadsheets, tables, and databases.

Fieldwork drawings will be created using pencil and permatrace. These will then be scanned at a minimum DPI of 300 and saved as .tif files. These files will constitute the digital security copy. Digital security copies will be kept on Wessex Archaeology's servers until they are deposited as part of the project archive. Some scanned drawings may be incorporated into project reports, where deemed appropriate.

Geoarchaeology

Data from the recording sheets is exported into a .docx file, for incorporation into the fieldwork episode's report, and an .xlsx file for the purposes of modelling and interpretation.

ArcGIS, Rockware Rockworks and Golden Software Strater are all used for the purposes of geoarchaeological modelling, utilising the data collected in the field. Data is exported as .emf format image files and Shapefiles ready to be incorporated into report figures.

5.2 Guidance

ADS 2013 *Caring for Digital Data in Archaeology: a guide to good practice*. Archaeology Data Service & Digital Antiquity Guides to Good Practice

Chartered Institute for Archaeologists [CIfA] 2014 Standards and Guidance, Codes of Conduct and Regulations. Reading, CIfA

Forster, M 2019 *Work Digital / Think Archive. A Guide to managing Digital data generated from archaeological investigations*. Dig Ventures

Historic England 2015 *Digital Image Capture and File Storage*. Swindon, Historic England

Historic England 2015 *Metric Survey Specifications for Cultural Heritage*. Swindon, Historic England

Historic England 2017 *Photogrammetric Applications for Cultural Heritage*. Swindon, Historic England

6 QUALITY MANAGEMENT

6.1 Wessex Archaeology procedures

Standardised naming conventions and folder structures alongside (US) document version control will be used for consistent and clear data recording and management. Consistency and quality of data collection will be controlled and documented via on site supervision/QA, post-excavation/reporting QA and digital archiving/QA. This may include processes such as calibration, repeat samples or measurements, standardised data capture or recording, data entry validation, peer review of data or representation with controlled vocabularies.

Wessex Archaeology is an ISO 9001 accredited organisation (certificate number FS 606559) independently audited by the British Standard Institution (BSI), confirming the operation of a Quality Management System which complies with the requirements of ISO 9001:2008 – covering professional archaeological and heritage advice and services.



Wessex Archaeology is registered as an archaeological organisation with the Chartered Institute for Archaeologists (CIfA) and fully endorses its Code of Conduct and Regulations for Professional Conduct.

7 MANAGING ACCESS AND DATA SECURITY

7.1 Wessex Archaeology procedures

Risks to data security will be managed in accordance with Wessex Archaeology's data security policy and procedures. Access will be controlled by secure user accounts and the implementation of document and folder level security.

All Wessex Archaeology office networks are secured behind managed firewalls which are upgraded, updated, and reviewed on a regular basis. All internal core systems are Microsoft licensed products (Windows 10, Windows Server 2016, Windows Server 2019) and we implement Active Directory to manage all user accounts, security, services and access to systems data and resources.

External access to Wessex Archaeology's systems and network is controlled via secured Virtual Private Network connections (encrypted and security controlled). Access is granted to Wessex Archaeology staff only.

Collaboration will be enabled via data access and sharing protocols that do not jeopardise data security. When creating the primary archive or collecting data in the field, data will be backed up daily onto Wessex Archaeology's main secured systems.

Wessex Archaeology's IT department has a backup strategy and policies that involve daily, weekly, monthly, and annual backups of data. Data will be stored on secured servers and within offsite storage locations.

7.2 Data protection

Wessex Archaeology has a privacy policy and procedures for dealing with personal information which meets the requirements of the *Data Protection Act 2018*. These detail what information Wessex Archaeology collects, the purpose for collecting this data, how it will be processed, stored, transferred, and disposed of. These documents are available on request.

Wessex Archaeology takes appropriate technical and organisational steps to ensure the security of relevant personal data. We have implemented security measures to protect the personal data that we have under our control from:

- Unauthorised access;
- Improper use or disclosure; and
- Unauthorised modification.

The Company ensures that all staff are aware of their responsibilities under GDPR and the *Data Protection Act 2018*, and provides them with the necessary advice, guidance, and awareness training in handling personal data.

Wessex Archaeology is committed to complying with the *General Data Protection Regulation* (GDPR) and the *Data Protection Act 2018* in fulfilling its duty to the rights of

individuals and in the collection, processing, and transfer of personal information to ensure that personal data is:

- Processed lawfully, fairly and in a transparent manner;
- Collected for specific, explicit, and legitimate purposes only;
- Adequate, relevant, and limited to what is necessary in relation to the purposes for which it is collected;
- Accurate and, where necessary, kept up to date. We will take every reasonable step to erase or rectify inaccurate personal data;
- Not kept in a form which allows identification of the subject for longer than is necessary for the specified purpose(s);
- Processed in an appropriately secure manner including protection against unauthorised use, accidental loss, destruction, or damage; and
- Where required, personal data will be redacted prior to the exchange of project documents or data with external organisations and individuals.

All relevant data collected as part of the project will be curated in line with these principles.

8 DATA RETENTION, SHARING AND PRESERVATION

8.1 Storage and preservation

All data will be retained forming the digital element of the overall working project archive. Digital data will be securely stored by Wessex Archaeology, with consideration of client confidentiality, GDPR restrictions and technological developments. Data will be stored in a logical, manageable way using Wessex Archaeology's methodology and storage systems. This will allow easy access throughout the duration of the project and for archive collation and consolidation once the project has ended.

For long-term storage preservation and accessibility, files will be converted to an open-source format, e.g., .csv and .dxf, where necessary or required. Data for all sites investigated as part of the project should be retained for as long as it is deemed to have potential for archaeological reuse. At a minimum, project reports that do not contain confidential information should be made available. It is recommended that data supporting these reports be made publicly accessible.

8.2 Selection and retention

The digital archive may include where created, site records, reports (including Written Scheme of Investigation (WSI) , post-excavation reports etc.), photographs, photogrammetric data, GNSS survey data, completed survey drawings, geoarchaeological data, environmental data, and post-excavation databases.

The digital archive may also include TST data, geophysics data and additional specialist data, depending on the final requirements of the project fieldwork and the resultant archaeological finds.



Not all born digital data will be archived. In order to create a high quality, sustainable, concise, and easily intelligible archive, all archaeological data/material will undergo a process of selection.

All data will be subject to this selection and retention process, as defined by the project-specific Selection Strategy, and as agreed with all project stakeholders during the course of the project.

Relevance of data considered for the archaeological archive will also be dependent upon and defined by the nature and significance of archaeological deposits, methods of recording, outputs created and potential for reuse. Some data may be redacted in order to comply with GDPR legislation.

This process will be reviewed with project stakeholder agreement and documented at project review and archival stages and updated as necessary. Such documentation will be included in the deposited archaeological archive. All digital data selected for deposition will be deposited as agreed with stakeholders with a Trusted Digital Repository and subject to good practice and repository guidelines.

Data will be kept in line with obligations to retain certain data, the potential reuse value, what is economically sustainable, and any additional effort required to prepare the data for data sharing and preservation. Data will be reused to validate research findings, conduct new studies, and for teaching. File formats will be stable cross-industry standard formats and deposited following good practice guidance.

Deselected digital files, those not being archived will be held on backed-up Wessex Archaeology servers for an appropriate and sustainable period of not less than a year following project completion, submission, and archive deposition.

8.3 Specific data type selection

Survey

Survey data in shapefiles and site plans in a CAD .dwg or .dxf format will be deposited in final file versions representing the data collection and data processing stages of work respectively and phased post-excavation interpreted data where created. Final file versions of survey data from various phases of work may also be consolidated into an overarching master survey drawing for archival concordance and sustainability following good practice guidance. Interpreted survey data in .tif, .tfw or shapefiles will be subject to the same selection procedure.

Photogrammetry

Photogrammetry and UAV photogrammetry models, if created, will be archived following good practice guidance as open source .obj files (where created) and orthographic or isometric georeferenced .tif or high quality .jpeg with component .jpg images will be archived along with the .obj along with a .pdf of the PhotoScan report (where created). Where not modelled an orthographic or isometric georeferenced .tif or high quality .jpeg, will be deposited along with a .pdf of the PhotoScan report (where created) and a .dwg CAD drawing. The deselected component images will be held on Wessex Archaeology's backed up servers.

Digital photographs

Digital site photographs in addition to aerial photos plus UAV photos (where created) will be deposited as taken in high quality jpeg. These will comprise a selection of all the digital



images taken across the project, inclusion based upon quality control, weeding of superfluous working shots and extraneous non-archaeological shots as well as excluding pre- and post-excavation site condition shots for the sustainability and potential for archaeological reuse of the archive. De-selected images will be retained on Wessex Archaeology's backed up servers.

Site records

Digital pro forma fieldwork records created on tablet in proforma .pdf format and automatically exported into server held project data spreadsheets. All final file versions of these records and the data exported from them will be digitally archived in .pdf and .xlsx formats respectively. The extracted data will form part of the project data submission spreadsheets specified below. Digital Security copy scans of site permatrace drawings will be produced in .tif format at a minimum 300 dpi and all site paper registers in pdf format.

Security copies of all paper/drawn records will be produced as per ClfA guidelines. These will be prepared on completion of a fieldwork episode as PDF format files. This will also ensure their security and accessibility for the project team. These will be stored on the Wessex Archaeology servers and undergo the same backup processes as other project data. Upon deposition, these will be converted into PDF/A.

Project data

Project data selection will be overseen at every stage throughout the course of the project during post-excavation data creation and processing by those responsible from fieldwork reporting and post-excavation to data storage and archiving. This will be subject to company quality control measures and guidance.

Selected project archive data will comprise Excel spreadsheet .csv or .xlsx data files containing site stratigraphic data, environmental data, finds specialist assessment and analysis data and general finds quantification and retention data. For archiving combined final file version .xlsx archival spreadsheets will be produced with component sheets representing the data type and/or project stage of data processing e.g.: Stratigraphic, Finds or Environmental data or different post-excavation specialist assessment or analysis records where created.

All other specialist data, for example conservation records, x-rays and registers, radiocarbon dating data and certificates and environmental analysis tables, where not included in project reporting, will be archived in Microsoft Word .docx or .pdf format.

Reporting

All final client reports and specialist archive reports produced will be archived as final file versions in .pdf or Microsoft Word .docx format. Early versions, drafts will not be selected for archive but will be held on Wessex Archaeology servers. Project reporting is subject to a document management system (DMS) with versioning and version control handled automatically. Digital images used as project client final report images will also be archived separately as high resolution .jpeg files and cross-referenced.

Data types

All data types used for archiving are industry standard and can be accessed by most data specific software. If this is not the case, data can be converted to other common formats. As advised by ADS all .pdf files selected for archive will be converted to archival standard PDF/A on deposition.

8.4 Guidance

ADS 2019 *Guidance on the Selection of Material for Deposit and Archive Online* guidance <https://archaeologydataservice.ac.uk/advice/selectionGuidance.xhtml> (accessed 31/08/21)

Brown, D H 2011 *Archaeological Archives: a guide to best practice in creation, compilation, transfer, and curation* (revised edition). Archaeological Archives Forum

Forster, M 2019 *Work Digital / Think Archive. A Guide to managing Digital data generated from archaeological investigations*. Dig Ventures

Whyte, A and Wilson, A 2010 *How to Appraise & Select Research Data for Curation* (revised 15/08/16, v.1.1), Digital Curation Centre, <https://www.dcc.ac.uk/guidance/how-guides/appraise-select-data> (accessed 31/08/21)

9 DATA SHARING

Data will be shared via a range of accessible media and portals as broadly as possible and via a Core Seal trusted repository. Data will be shared in accordance with project stakeholder requirements and any restrictions, if imposed and shared with consideration of client confidentiality and GDPR restrictions.

An OASIS form will be completed for each phase of archaeological work associated with the project. For some projects with negative archaeological results, this, alongside selected images deposited with OASIS, would form the archaeological archive as agreed with project stakeholders.

A final version of the project reporting will be supplied to the Historic Environment Record directly and/or via OASIS, and any data which they request can also be provided directly if they are manageable and sustainable. Data will be made available as soon after collection as possible, provided it is in accordance with stakeholder agreed requirements and any restrictions. Data archived with the ADS will have a persistent Digital Object Identifier (DOI) after deposition.

In agreement with project stakeholders, the digital archaeological archive and required metadata will be deposited with a Core Trust Seal trusted repository at a level commensurate with its potential for archaeological reuse, value for future research and public benefit. This will follow national and repository guidelines and ClfA standards, as outlined in this DMP.

Wessex Archaeology will attempt to minimise data restrictions as far as practicable. Exclusive use of the data may be required for limited periods where client approval is required, or longer term where sensitivities exist in discussion with project stakeholders. A data sharing agreement (or equivalent) will be adhered to via a deposition licence.

Data for deposition will be shared digitally via downloads accessible by the general public via the specific repository's data sharing guidelines and deposition licence with acknowledged long-term value. The methods used to share data will be dependent on several factors such as the type, size, complexity, and sensitivity of data. Open source and standard formats will form the basis of files comprising the archaeological archive to best enable future data sharing and ease of reuse.

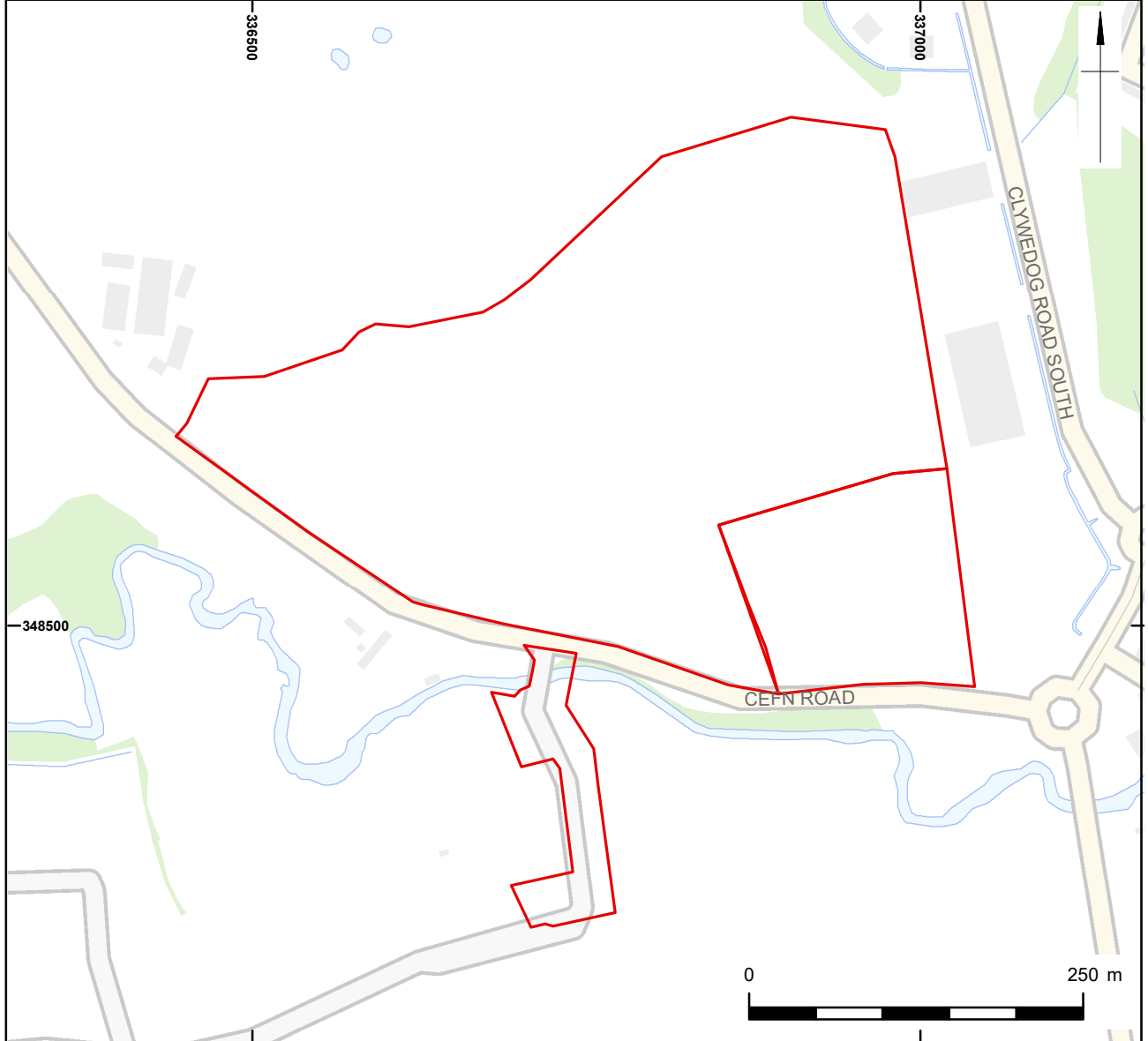
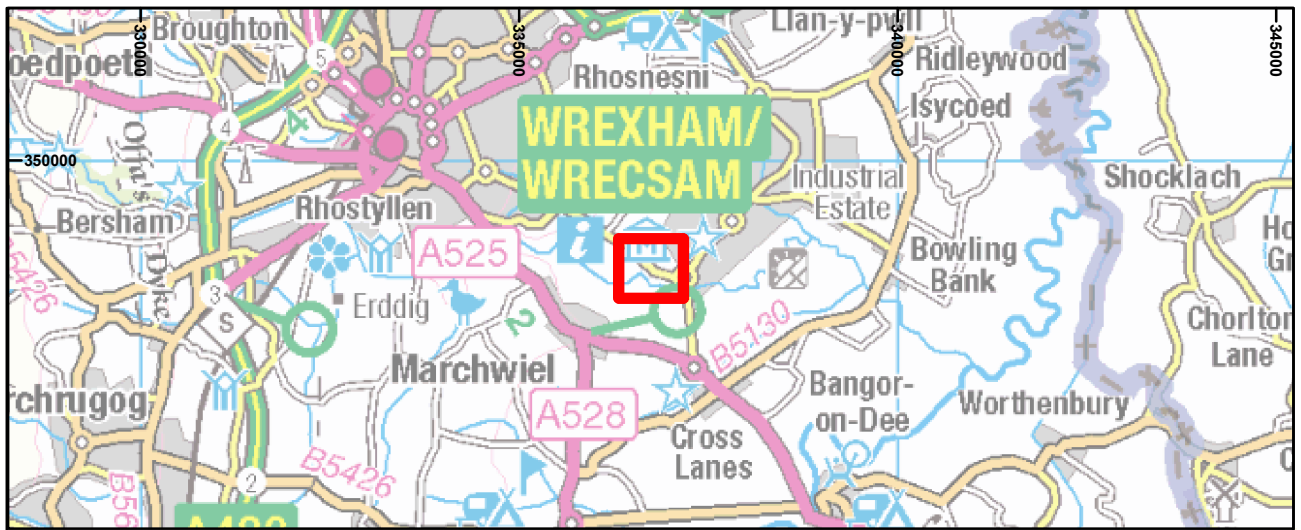
If deposition is not possible at the time of project completion, the archive will be retained by Wessex Archaeology, until a suitable repository is agreed between project stakeholders.





Wessex Archaeology Ltd registered office Portway House, Old Sarum Park, Salisbury, Wiltshire SP4 6EB
Tel: 01722 326867 Fax: 01722 337562 info@wessexarch.co.uk www.wessexarch.co.uk



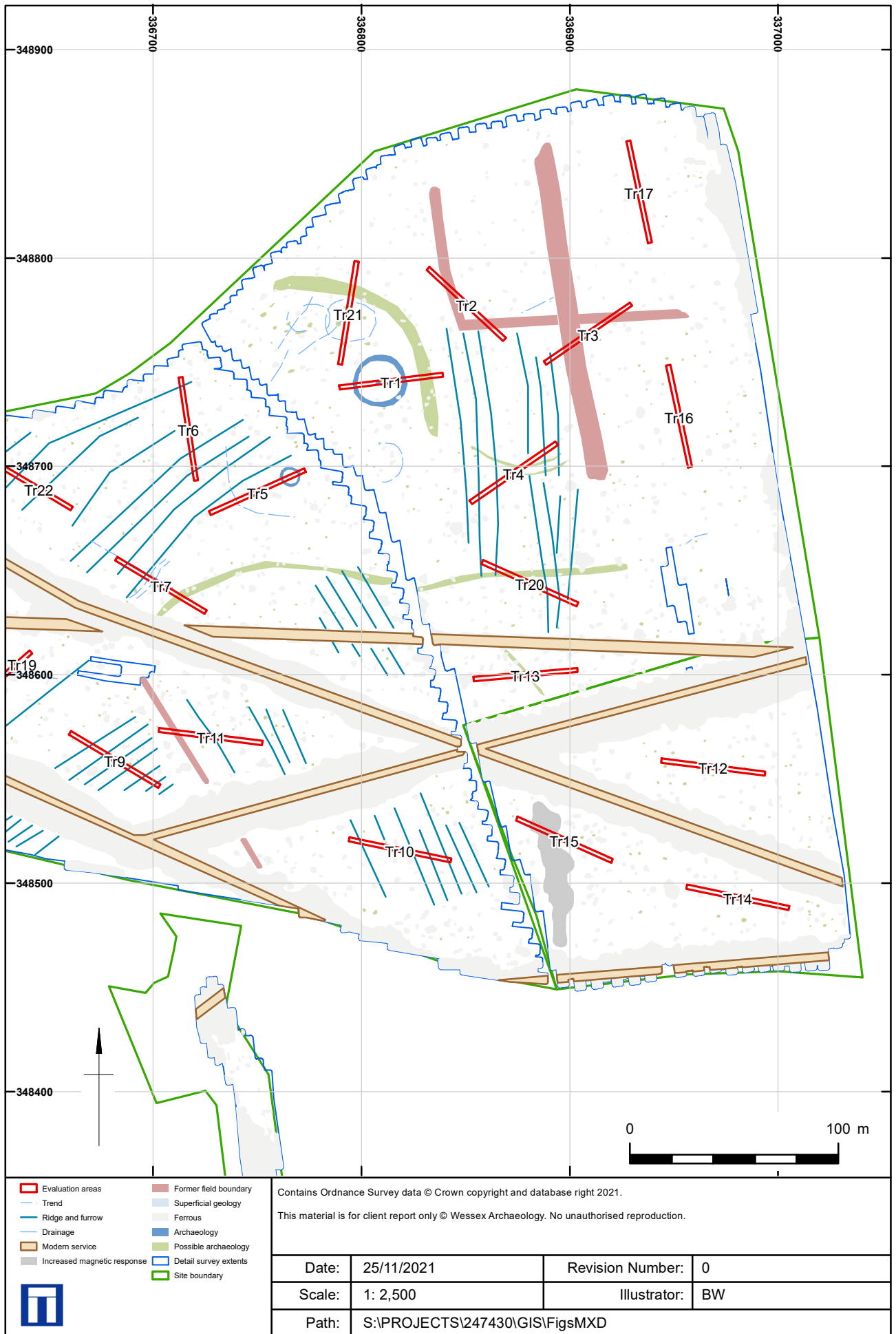
FS 606559



	 Site Boundary		Contains Ordnance Survey data © Crown copyright and database right 2021. This material is for client report only © Wessex Archaeology. No unauthorised reproduction.	
	Date:	29/11/2021	Revision Number:	0
	Scale:	1:5000	Illustrator:	m.donovan
	Path:	S:\PROJECTS\247430\GIS\FigsMXD		

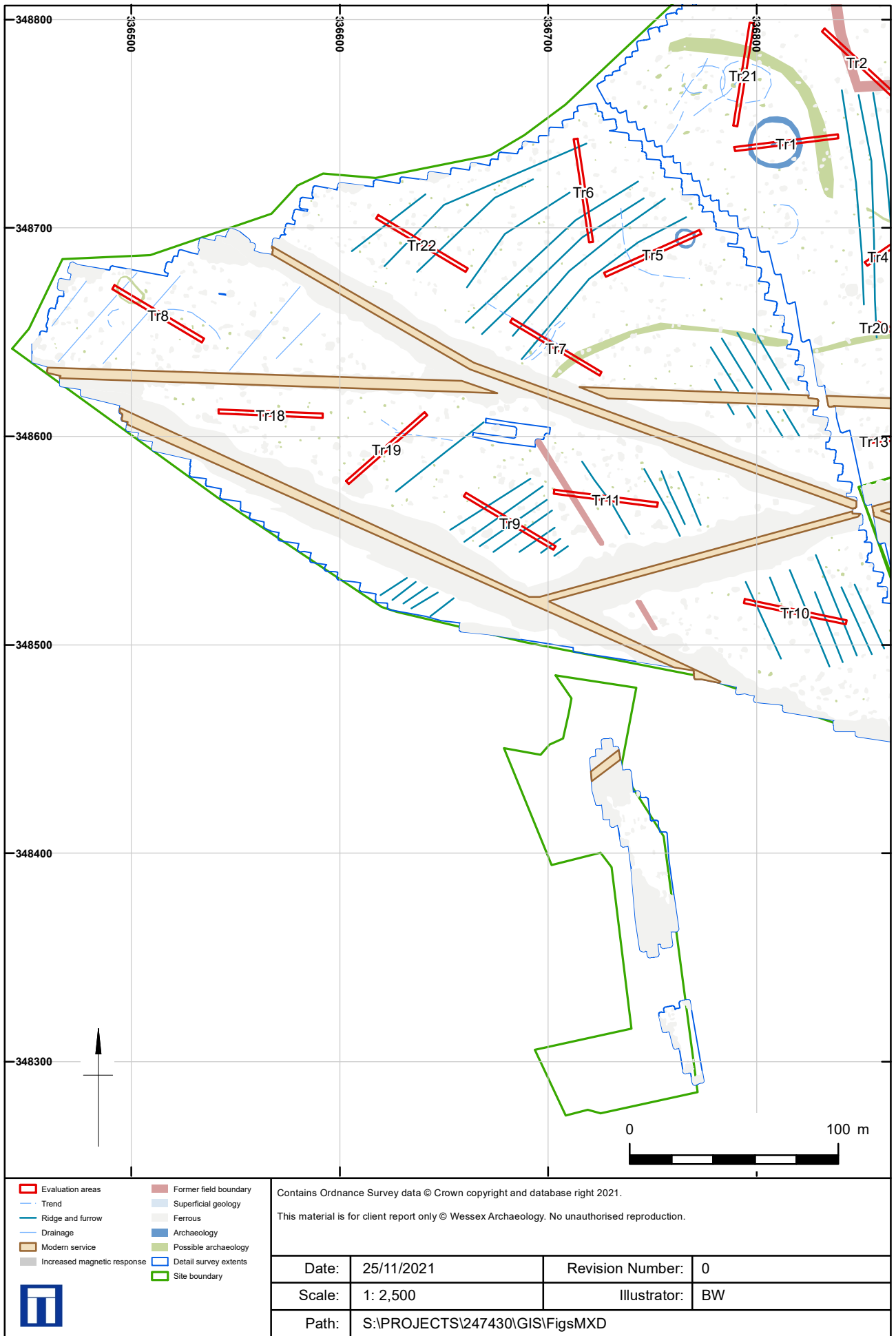
Site Location

Figure 1



Trial trenching plan: eastern half of the Site

Figure 2



Trial trenching plan: western half of the Site

Figure 3



Wessex Archaeology Ltd registered office Portway House, Old Sarum Park, Salisbury, Wiltshire SP4 6EB
Tel: 01722 326867 Fax: 01722 337562 info@wessexarch.co.uk www.wessexarch.co.uk



FS 606559