



Lindisfarne: The Holy Island Archaeology Project

Updated Project Design 2018-2019

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Updated Project Design

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Purpose of document

This document has been prepared as an Updated Project Design the Lindisfarne, Holy Island project. The purpose of this document is to provide an updated outline of work to be undertaken in 2020, including aims and objectives of the work, and methodology to be employed.

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Project summary

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The project is managed for DigVentures by Brendon Wilkins with Lisa Westcott Wilkins in the role of Project Executive. The project is supported by Dr David Petts from Durham University, who jointing directs the fieldwork with Chris Casswell, DigVentures. The project was funded exclusively by voluntary contributions from the public, so final thanks must go to our community of Venturers, without whom this work would never have taken place:

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Executive summary

This document is submitted in support of continued fieldwork on the Lindisfarne research project on Holy Island, carried out by DigVentures in partnership with Durham University. The purpose of the document is to provide an Updated Project Design on reflection of the assessment results, providing recommendations and directions for the fieldwork to be undertaken in Year 4 of the Lindisfarne, Holy Island, project. The planned fieldwork will take place between 8th and 20th September 2020 and will comprise a community-based archaeological investigation at Sanctuary Close, immediately east of the Priory church.

A MORPHE/PRINCE2 compliant document has been produced outlining key archaeological research questions, roles, procedures, stages, and outputs. The overarching aim of this fieldwork is to provide baseline information to contribute to the future management, research, and presentation of the site – creating multiple educational and participatory learning experiences for community participants. This will be achieved through a community-based archaeological research project designed to:

- define the results of previous non-invasive surveys, refining the chronology and phasing of the site with a programme of trenching; and
- understand the site's archaeological and palaeoenvironmental conditions.

This Updated Project Design builds on from this result assessment to outline a proposal for work to be undertaken in 2020. This includes a proposed methodology, key sources and activities required to support the delivery of the proposal's outcomes, identifying responsibilities of individual project staff members and outlines the tasks and programme. The Updated Project Design provides an outline of methodology and planned intervention to complete:

Targeted excavation Excavation of one archaeological trench within Sanctuary Close, immediately east of the Priory church. The full extent of Trench 2 from 2019 will be reopened, targeting a suspected building foundation, cemetery, and an area with evidence of heating and possibly related to industry activity.

Public engagement The project is supported by a comprehensive learning, engagement and activity plan. An innovative digital recording system will be used to enable volunteers to record and publish on smartphones or tablets in the field; specifically developed learning materials will be used to deliver schools sessions, with a dedicated project website, underpinned by a digital and audience building strategy.



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1 INTRODUCTION

1.1 Project summary

1.1.1 DigVentures, in partnership with Durham University, were invited to undertake a crowdfunded community-based archaeological research project at Lindisfarne (hereafter 'the Site' – Figure 1). The project has been designed in collaboration with Dr David Petts, Durham University, using a MoRPHE framework (Management of Research Projects in the Historic Environment - 2006). The project is a multi-staged and multi-disciplinary field research project, incorporating geophysical survey, archaeological evaluation and excavation, and geoarchaeological landscape analysis. The community-focused project was initiated in 2016 and is now expected to run to at least 2023.

1.1.2 This report provides an Updated Project Design following initial post-excavation assessment following archaeological evaluations undertaken in Years 3-4, undertaken during 2018 and 2019 (Casswell et al. 2020). This document builds on the aims and objectives articulated in the original Project Design (Wilkins and Petts 2016) and subsequent Updated Project Design (Casswell et al. 2017)(see below Section 2).

2 RESEARCH AIMS AND OBJECTIVES REVISITED

2.1 Background

2.1.1 The principle purpose of the research was first defined in the Project Design (Wilkins and Petts 2016) and was articulated as four overarching aims. These were to define and characterise the physical extent of the site through a programme of non-intrusive (Aim 1) and intrusive excavation (Aim 2), obtaining baseline data that would facilitate the future management of the site (Aims 3 and 4). Following subsequent excavations the project aims have been refined and expanded, with an additional aim introduced to expand community engagement and participation (Aim 5) (Casswell et al. 2017).

2.1.2 The following

2.2 Aims and objectives

2.2.1 The following aims and questions are based on those outlined in the initial Project Design (Wilkins and Petts 2016) and refined following excavation in the Updated Project Design (Casswell et al. 2017). They reflect on the results and recommendations for further work outlined in the initial Post-Excavation Assessment of the 2018-2019 excavations (Casswell et al. 2020):

2.2.2 Aim 1 – Define and establish the precise physical extent and condition of the Site with a programme of remote sensing and metric survey

- Q1: Can the layout of the site and associated sub-surface archaeology be established by remote survey?



2.2.3 Aim 2 – Characterise the results of non-invasive survey, refining the chronology and phasing of the site with a programme of trenching

- Q2: What can we say about the scale and nature of any structural remains? Can we fully characterise the large circular feature and how does it relate to other structural remains found in proximity?
- Q3: Can we corroborate chronological phasing for the site, including the presence of earlier and later features and structures, as defined in Aim 1? Can we establish an absolute and relative chronology for the layers found beneath the large circular feature?

2.2.4 Aim 3 – Understand the site’s archaeological and palaeoenvironmental conditions

- Q4: What is the current state of the archaeological and palaeoenvironmental material across the site? How well does the large circular feature survive?
- Q5: Can the palaeoenvironmental data recovered from sampling in the trenches inform us about farming, food processing, industrial or medical activities? Can samples be recovered from the large circular feature and the layers associated with the earliest activity so far exposed at the site?
- Q6: Can we increase our understanding of the local environment in the medieval period?
- Q7: How well do the deposits survive, and how deeply are they buried? How well does archaeology survive beneath the large circular feature related to the earliest activity at the site?

2.2.5 Aim 4 – Making recommendations, analysis and publication

- Q8: In light of the evidence recovered from this and previous work, can we articulate a link between the multi-phased use of the site and its different areas?
- Q9: Formulate recommendations for further archaeological and palaeoenvironmental analysis at Lindisfarne based on Aims 1-3 and implement a programme to publish and disseminate the results.

2.2.6 Aim 5 – Creating opportunities for people and communities

2.2.7 Public Engagement is central to the Holy Island Archaeology Project, from the initial project set up through to dissemination and beyond. The project offers a range of opportunities for local community members, school children and visitors to the area to get involved and learn more about the archaeology of Lindisfarne. Working closely with the wider project team and the Durham University, participation opportunities will include excavation, finds processing, photogrammetry and social media.

2.2.8 Volunteers will be invited to join the excavations and will be trained in archaeological skills, co-producing the archaeological archive using DigVentures unique Digital Dig Team software. Results will be recorded directly onto the project microsite, providing live updates of both technical data and social media.



3 BUSINESS CASE

3.1.1 The 2020 Updated Project Design outlined here fits within the remit of the business case provided within the original Project Design (Wilkins and Petts 2016, Section 12.0) and subsequently revisited in the 2017 Integrated Post-Excavation Updated Project Design (Casswell et al. 2017, Section 9.0). Emphasis is placed on fulfilling the priorities articulated in the North-East Regional Research Framework for the Historic Environment (NERRF) (Petts and Gerrard 2006), Holy Island Extensive Urban Survey (Finlayson and Hardie 1995-7 revised 2010), and SHAPE Strategic Framework for Historic Environment Activities and Programmes in England Heritage (Historic England 2008), and Historic England Action Plan 2015-18, (superseded and revised by the Corporate Plan 2020-23, Historic England 2020).

4 INTERFACES

4.1.1 This project will interface with a series of other projects, stakeholders, and initiatives, summarised in the table below:

Interfaces	Description
Remote sensing team	Initial geophysical survey has been carried out by Archaeological Services Durham University, with plans for further survey by Dr Brian Buchanan (Durham University). This was supported with an Aerial photogrammetry survey completed by Adam Stanford (Easter Island Project; Stonehenge Riverside Project; Marden Henge Project) ensuring that multidisciplinary approach was at the forefront of current remote sensing research.
Academic Advisory Board	An informal academic advisory group of subject area experts (in Early Ecclesiastical and Monastic Archaeology) is being formed to ensure that the project remains pertinent to relevant research questions and agendas, interfacing with other teams working in similar landscapes in the UK. These include Professor Rosemary Cramp (Durham University), Dr Sarah Semple (Durham University), Dr Rob Young (independent researcher) with others to be appointed.
Core Project Team	The core project team and specialist staff have consulted widely during the project planning and previous execution stages, and will continue to build on this as the project develops, forging strong links with local, national and international professionals and institutions actively engaged in a broad range of ecclesiastical sites.
Heritage at Risk	The only Heritage Risk monument within the study area is the Chapel and associated building on St Cuthbert's Isle. The project will liaise with Historic England, Holy Island of Lindisfarne Community Development Trust (the landowners) and HLF Peregrini concerning planning and timing of planned survey and recording work to ensure subsequent rapid consolidation of any eroding features. The site is a Scheduled Ancient Monument so Scheduled Monument Consent is required from

Interfaces	Description
	HE – an initial enquiry has been made to the Inspector (Case Ref. PA00425505).
Local Stakeholders	The key local stakeholder is the owner of the land on which the fieldwork will take place. Sanctuary Close is owned by the Crossman Estate and Mr J. Patterson the tenant farmer. The Holy Island of Lindisfarne Community Development Trust own St Cuthbert’s Island and the Heugh. The ruins of the Priory are owned by English Heritage and the church and churchyard of St Mary’s are owned by the Diocese of Newcastle. Contacts have been made with all landowners and their local representatives and appropriate permissions have been secured. Major community projects engaging with heritage, natural history and geology were being run on the island as part of the HLF Peregrini Landscape Partnership – the community archaeology programme was contracted out to the Archaeological Practice, Newcastle. The project liaised with management of HLF Peregrini (Helen Griffiths; David Suggett) and with Richard Carlton (Archaeological Practice).

Table 1: Project interfaces

5 COMMUNICATIONS

5.1 Project team

- 5.1.1 Funding will be exclusively through the DigVentures crowdfunding platform, with Project Assurance undertaken by the Project Executive (Lisa Westcott Wilkins, DigVentures) who will monitor compliance against the deliverables detailed in this document, with formal and informal progress reports submitted to the HLF. The Project Manager (Manda Forster, DigVentures) will act as the primary contact point for the project and ensure that stakeholders and clients are regularly updated as to progress.
- 5.1.2 The project team have all worked closely together over a number of research projects, including Leiston Abbey (2013-2016), Barrowed Time (community investigation of a Bronze Age hoard site, 2016-2017), Elmswell Farm (community investigation of Roman ‘villa’ sites in East Yorkshire, 2017-present) and Pontefract Castle (2019-2020). There will be four core DigVentures archaeological staff and at least two community archaeologists on site throughout the fieldwork. Lisa Westcott Wilkins (Managing Director) will provide oversight of the project delivery and Manda Forster (Director of Operations) will undertake day-to-day management of the project. Chris Casswell (Head of Fieldwork) will direct fieldwork with David Petts (University of Durham). Maiya Pina-Dacier (Head of Community) and Harriet Tatton (Community Archaeologist) will liaise with and coordinate volunteer and visitors to the site. Johanna Ungemach (Community Archaeologist) will oversee the finds and sample processing on-site, and supervise volunteer activities in the finds hut. Core staff will remain consistent and will be retained throughout the post-excavation phase of the project. All core staff are employed in line with ClfA guidelines, and are practicing field archaeologists at PCIfA level or above. Senior project staff are all Members of ClfA in good standing.

5.1.3 The Expert team is drawn from various university departments and laboratories with a considerable range of experience in the undertaking and delivery of similar research projects. The Academic Advisory Board provides an extra layer of expertise to help advise as the project progresses.

5.2 Project management

5.2.1 DigVentures operates a computer-assisted project management system. Projects are undertaken under the direction of the Projects Director who is responsible for the successful completion of all aspects of the project. All work is monitored and checked whilst in progress on a regular basis, and the Projects Director / Site Director checks all reports and other documents before being issued. A series of guideline documents or manuals form the basis for all work.

5.2.2 The DigVentures management team are all full members of the Chartered Institute for Archaeologists (MCI(A)). DigVentures is a ClfA Registered Organisation (No. 102), and fully endorses the *Code of Conduct*, the *Code of Approved Practice for the Regulation of Contractual Arrangements in Field Archaeology*, and the Standards and Guidance documents of the Institute for Archaeologists. All DigVentures staff are employed in line with the Institute's Codes and will usually be members of the Institute.

5.3 Outreach and engagement

5.3.1 Engagement will be both on and offline, with a dedicated *Digital Dig Team* project website developed to engage a new local and global audience, inviting external communities (and those not usually engaged with archaeology) to take an active role in knowledge production. *Digital Dig Team* is a cloud-based, open-source software platform enabling participants to publish data directly from the field using any web-enabled device (such as a smartphone or tablet) into a live relational database. The implications of this new approach is the subject of research in its own right, as the born-digital archive enables geographically dispersed specialist teams to collaborate in real time during the data collection stage of field projects (Wilkins, PhD Research with Leicester School of Museum Studies).

5.3.2 All major social media channels will be used to amplifying daily blog content. A digital video specialist will be on site throughout the excavation, and broadcast quality footage will be uploaded to YouTube daily. The project will feature regular evening lectures open to the public where the day's findings will be discussed, followed by presentations by the wider specialist team in addition to the on-site specialist team. These will also be filmed and broadcast live, with the recorded archive made available on the project website.

5.3.3 The impact of this outreach work will be measured with a quantitative and qualitative evaluation of all participants to establish baseline audience awareness data and assist with future management strategies and promotion. This will be undertaken with a visitor survey conducted throughout the field season, targeting both excavation participants and casual visitors, and critically assessing the breadth, depth and diversity of engagement.



5.4 Dissemination and reporting

5.4.1 Rapid dissemination of the results to, and involvement of, stakeholders of the project is vital throughout. This will take place through multiple channels, addressing a multitude of established and new audiences. Dissemination outlined below will all be undertaken during 2020, and will include, but not be limited to:

- Dedicated website with daily news updates on a blog and all major social media channels (Facebook, Twitter, Google+, Flickr and Instagram) amplified through third-party coverage by the networked blogging community.
- Dedicated digital archive of the excavation data.
- Wide circulation of the project assessment and the final report, and links to the OASIS record.
- Site publication in an appropriate local/national journal commensurate with the final results.
- Wide circulation of Assessment and Final Report, Updated Project Design and links to the OASIS record.
- Final site publication in an appropriate local/national journal commensurate with the final results.

5.5 Project archive

5.5.1 The project archive will be prepared in accordance with DigVentures guidelines for Archive Preparation, following Appendix 1, P1 of MoRPHE PPN 3 (Historic England 2012), fulfilling the Guidelines for the preparation of excavation archives for long term storage (UKIC 1990). All reports produced by the project will be openly and freely disseminated through County Council Historic Environment Record, Archaeological Data Service, OASIS portal and Scribd website. Copyright on all reports submitted will reside with DigVentures, although a third party in-perpetuity licence will automatically be given for reproduction of the works by the originator, subject to agreement in writing with Historic England.

6 PROJECT REVIEW

6.1.1 The project will be continually reviewed by the Project Executive and Project Manager, with a formal review undertaken at the end of each Stage as follows:

Stage	Description	Review Point	Completion Date
Initiation	Consideration of Project Proposal, HLF	RV1 – Assemble Project Team and liaise with stakeholders	Completed – December 2015
Stage 1	Project Start-up, finalising Project Design and definition of scope	RV2 – Sign-off on MoRPHE Project Design, and liaison with stakeholders and landowners	Completed – May 2016
Stage 2	Archaeological Fieldwork	RV3 – assemble site archive and distribute pertinent data to specialists	Completed – July 2016

Stage	Description	Review Point	Completion Date
Stage 3	Assessment Report & Updated Project Design	RV4 – critically review findings, making recommendations for further work or closure	Completed – October 2016
Stage 4	Archaeological Fieldwork	RV5 – assemble site archive and distribute pertinent data to specialists	Completed – July 2017
Stage 5	Assessment Report & Updated Project Design	RV6 – critically review findings, making recommendations for further work or closure	Completed – August 2018
Stage 6	Archaeological Fieldwork	RV7 – assemble site archive and distribute pertinent data to specialists	Completed – September 2018
Stage 7	Archaeological Fieldwork	RV8 - assemble site archive and distribute pertinent data to specialists	Completed – September 2019
Stage 8	Assessment Report & Updated Project Design	RV9 – critically review findings, making recommendations for further work or closure	Completed – August 2020
Stage 9	Archaeological Fieldwork	RV10 - assemble site archive and distribute pertinent data to specialists	Proposed – September 2020
Stage 10	Assessment Report & Updated Project Design	RV11 – critically review findings, making recommendations for further work or closure	Proposed – April 2021
Stage 11	Closure or continuation to next execution	RV12 – final publication sign-off, and prepare archive for accession, or continue to further excavation	Proposed – September 2021

Table 2: Project review stages

7 HEALTH AND SAFETY

7.1.1 DigVentures will undertake the works in accordance with Health and Safety requirements and a Health and Safety Plan. This document will take account of any design information pertaining to above and below ground hazards. DigVentures will ensure that all work is carried out in accordance with its company Health and Safety Policy, to standards defined in *The Health and Safety at Work etc. Act 1974*, and *The Management of Health and Safety Regulations 1992*, and in accordance with the SCAUM (Standing Conference of Archaeological Unit Managers) health and safety manual *Health and Safety in Field Archaeology* (1996).

8 PROJECT TEAM STRUCTURE

8.1 Team and responsibilities

8.1.1 DigVentures' Project Team is outlined in Table 3. A summary CV, setting out the skills and expertise of DigVentures core team members, with CVs for the wider specialist team available on request.

Name	Initials	Project Role	Key Responsibility
Lisa Westcott Wilkins	LWW	Project Executive	Overall project responsibility, budget responsibility and project assurance
Brendon Wilkins	BW	Projects Director	Overall responsibility for the direction of the project
David Petts	DP	Archaeological Site Director	Archaeological co-direction (on-site), liaison with project team, partners and Stakeholders. Reporting.
Chris Casswell	CC	Archaeological Site Director	Archaeological co-direction (on-site), liaison with project team, partners and Stakeholders. Reporting.
Manda Forster	MF	Director of Operations	Archaeological co-direction (off-site), liaison with project team, partners and Stakeholders
Maiya Pina-Dacier	MPD	Head of Community	Developing content management strategy
Nat Jackson	NJ	Community Archaeologist	Supervising on-site fieldwork
Johanna Ungemach	JU	Community Archaeologist	On-site fieldwork, and responsible for post excavation processing.
Harriet Tatton	HT	Community Archaeologist	On-site fieldwork
Maggie Eno	ME	Community Archaeologist	On-site fieldwork
Ben Swain	BS	Community Archaeologist	On-site fieldwork
Indie Jago	IJ	Community Archaeologist	On-site fieldwork
David Wallace	DW	Community Archaeologist	On-site fieldwork
Josh Hogue	JH	Off-site support	Off-site digital and logistical support

Table 3: Team and responsibilities

9 METHODOLOGY

9.1 Introduction

9.1.1 The methods reflect the project Stages set out above (Section 6), and a task list, with allocation of staff time and team members in Section 10 below, setting out a provisional programme. Detailed method statements relating the specific techniques or approaches can be found in Appendix A and the initial Project Design (Wilkins and Petts 2016).

9.2 Stage 8 - Updated Project Design

9.2.1 A Project Design (this document) has been prepared (Review Point 9).

9.3 Stage 9 - Archaeological Fieldwork

9.3.1 Stage 7 fieldwork (scheduled from 3rd to 22nd September) will comprise the fourth fieldwork stage required to meet Aims 1 and 2, and will entail a combination of 3D photogrammetry survey, topographical survey, geophysical survey and targeted trenching. It will aim to answer the following research questions:

- Q1: Can the layout of the site and associated sub-surface archaeology be established by remote survey?
- Q2: What can we say about the scale and nature of any structural remains? Can we fully characterise the large circular feature and how does it relate to other structural remains found in proximity?
- Q3: Can we corroborate chronological phasing for the site, including the presence of earlier and later features and structures, as defined in Aim 1? Can we establish an absolute and relative chronology for the layers found beneath the large circular feature?

9.3.2 Specific archaeological intervention will include the excavation re-opening Trench 2. Trench 2, measuring 17m x 15m, will be reopened over the footprint of the 2019 excavation area to continue investigation of the cemetery, the as yet undated structural remains and the remains of high temperature industrial activity, including a large circular feature to the northwest of the trench.

9.4 Stage 10 - Assessment Report & Updated Project Design

9.4.1 This Stage will address Aim 3, culminating in Review Point 11, and focusing on answering the following research questions:

- Q4: What is the current state of the archaeological and palaeoenvironmental material across the site?
- Q5: Can the palaeoenvironmental data recovered from sampling in the trenches inform us about farming, food processing, industrial or medical activities?
- Q6: Can we increase our understanding of the local environment in the medieval period?
- Q7: How well do deposits survive, and how deeply are they buried?



9.5 Stage 11 -Closure or continuation to next stage

9.5.1 Following the success of the Years 1-3 excavations and planned excavations in Year 4, it is now envisaged that fieldwork excavations will for at least additional season of fieldwork. Years 1-3 have helped to clarify some of the questions originally set out in the Project Design (Wilkins and Petts 2016) and refined in the 2017 Integrated Post-Excavation Assessment and Updated Project Design (Casswell et al. 2018), yet in order to maximize on the research potential of the site and clarify outstanding aims and objectives of the project is envisaged that the project be extended beyond the 5 year project cycle. The Updated Project Design at the end of the 2020 fieldwork season (Stage 10) will give an opportunity for reflecting on the project so far and serve as a midpoint at which to outline the specific details of additional fieldwork and reporting stages.

9.5.2 Addressing Aim 4, this is the main reporting and recommendation stage of the project, culminating in Review Point 12 will occur following the completion of all fieldwork, and will focus on the following research questions:

- Q8: In light of the evidence recovered from this and previous work, can we articulate a link between the multi-phased use of the site and its different areas?
- Q9: Formulate recommendations for further archaeological and palaeoenvironmental analysis at Lindisfarne based on Aims 1-3, and implement a programme to publish and disseminate the results.

10 STAGES, PRODUCTS AND TASKS

10.1 Methodological Linkages

10.1.1 It is anticipated that the 2020 work will be undertaken in four stages. These are set out in the table below and are set against the project aims and questions that will be met at each stage, the products that will be produced and the tasks undertaken.

Stage	Description	Project Aims/ Questions	Products	Task & ID Number
Stage 8	Project Start-up and Design	Aims 1-5 Q1-9	1. Permissions (planning application & stewardship derogations) 2. Finalised UPD & Risk Log 3. Educational Plan & Information Pack 4. Digital Communication Plan 5. Risk Assessment & Health and Safety Plan	1. Consult with wider project team and stakeholders to define milestones and delivery timetable. 2. Core Archaeology Team Meeting. 3. Design project database. 4. RV9 – Sign off on MoRPHE

Stage 9	Archaeological Fieldwork	Aim 1 Q1 Aim 2 Q2-3 Aim 5	6. Field Archive 7. Survey Archive 8. 3D Survey Archive	8. Site Preparation 9. Fieldwork (remote sensing, survey & excavation) 10. RV10 – assemble site archive & distribute to specialists
Stage 10	Assessment Report & Updated Project Design	Aim 3 Q4-7	9. Stratigraphic & Assessment Report	13. Specialist finds and palaeoenvironmental assessments 14. Integrated assessment report 15. RV11 – recommendations for further work
Stage 11	Closure or continuation to next execution stage	Aim 1-4 Q1-9	10. Final report 11. Publication 12. Completed and accessioned archive	18. Specialist analysis 19. Finalise report and publication 20. Prepare data and archive for deposition 21. RV12 – final sign-off 22. Closure

Table 4: Methodological Linkages

11 OWNERSHIP

11.1.1 The Copyright on all reports submitted will reside with DigVentures, although a third party in-perpetuity licence will automatically be given for reproduction of all products, subject to agreement with DigVentures. The original copyright holder will retain copyright in pre-existing data.

12 RISK LOG

Risk number	1	2	3	4
Description	Inclement weather - prolonged periods of rain	Exceptional weather (drying exposed archaeology)	Absence of core team member	Absence of specialist team member
Probability	Medium	Medium-low	Low	Low
Impact	Delay programme of work	Slow progress	Delay programme of work	Delay programme of work
Countermeasures	Provision of site hut, and planned indoor archiving tasks with flexible programme	Provision of water bowser + spray	Reallocate responsibilities or appointment of alternative	Reallocate responsibilities or appointment of alternative
Estimated time/cost	3 Days	None	Minimal if done by adjustment	Minimal if done by adjustment
Owner	BW/MF/CC	BW/MF/CC	BW/MF/CC	BW/MF/CC
Risk number	5	6		
Description	Equipment theft/breakages	Serious site injury		
Probability	Medium	Medium		
Impact	Delay programme of work	Delay programme of work		
Countermeasures	Removal of finds material and digital equipment from site	Detailed H&S Risk Assessment + daily safety briefing		
Estimated time/cost	3 days	3 days		
Owner	BW/MF/CC	BW/MF/CC		

Table 5: Risk log



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Appendix A: Method statements

The methods for the proposed project will involve a combination of Lidar survey, geophysical survey (resistivity and ground penetrating radar) GIS modelling, archaeological excavation, sampling, palaeoenvironmental sampling and assessment. The methods are linked directly to the project aims and objectives (see Table 6) and detailed below.

Key Questions and Objectives	Lidar Survey	Photogrammetry and Digital Terrain Modelling	Auger Survey	Earthwork Survey and GIS Modelling	Archaeological Excavation	Sampling	Environmental Assessment	Finds Assessment	Synthesis and Data integration
Q1	✓	✓							
Q2	✓								
Q3	✓	✓							
Q4				✓					
Q5				✓	✓		✓		
Q6				✓	✓				
Q7				✓	✓	✓	✓		
Q8			✓		✓	✓	✓	✓	
Q9			✓			✓	✓	✓	
Q10			✓			✓	✓		
Q11							✓		✓
Q12							✓		✓
Q13									✓

Table 6: Linking methods with objectives

Topographic survey and GIS modelling

Topographical survey work will be carried out using a Trimble Real Time Differential GPS survey system. The Trimble VRS system is used in conjunction with a GPS Rover unit. It allows for surveying without the use of a site specific fixed base station. This is achieved by connecting to Trimble's network of fixed base stations by means of mobile phone communication. This method is highly efficient and accurate (+/- 2cm) when good signal is available. The survey

data is exported from the data logger as a comma delimited file (csv) and a Trimble data collector file (dc). Either of these files can be imported into Trimble GeoSite Communicator, which recognises the feature code library and plots all strings, polygons and labels as intended. All survey and excavation data will be stored within a GIS environment, which will remain the principle conduit for all spatial data throughout the project.

Photogrammetry survey

Photogrammetry survey will utilize Agisoft PhotoScan 3D Modelling software to detect the feature points of the structure, and match these in different images to create a point cloud. The camera positions will be calculated automatically by the software and a dense reconstruction or geometric model will be built to create a DSM. The resulting model can then be. The resulting DSM can be manipulated for viewing from any angle using a variety of artificial light and shading techniques to highlight certain features, or overlaid or draped with the original photographs for true colour representation.

Images will be captured perpendicular to the structure using telescopic mounted cameras, to deliver optimum results requiring little or no rectification. All images are taken with a 16 megapixel Nikon D7000 digital camera (unless other cameras are specified) with a variety of standard and other lenses and are captured in RAW format for later processing into high resolution JPG and TIF files, and downloaded directly on to the hard disk of the laptop.

Where vehicular access is possible Aerial-Cam can be used to record the larger areas of a structure using perpendicular positioning, as well as going to a greater height to provide general overview and context aerial perspectives. Surface boards will be laid down where necessary to minimise surface impact. Where access is restricted the Pole-Cam operated in the space of a single person, can be used for perpendicular positioning and for close up detailed images of masonry features etc. The methods used to generate raw data in advance of DSM processing are detailed below.

Ground Penetrating Radar (GPR) survey

The GPR survey will be undertaken using a MALÅ Geoscience GX450 or MALÅ MIRA; the choice will be dependent upon ground conditions and access within the designated survey areas at the time of survey. The GX450 is a single channel, 450MHz, cart-mounted GPR system utilising HDR (high dynamic range) technology, which can provide better resolution and depth penetration when compared with traditional GPR technology, thus offering the opportunity to record significantly better results than previously possible. The MIRA system is a multi-channel GPR system providing true 3D data collection; data are collected at the same resolution in-line and cross-line, at around $\frac{1}{4}$ of the centre wavelength of the antennas, in this instance 400MHz.

If the GX is used, data will be collected using a sample interval no greater than 0.05m along 0.5m separated traverses across a common baseline which will be tied-in to either fixed reference points (such as elements of the standing remains), the local site grid, or recorded using Ordnance Survey co-ordinates via a total station or RTK GPS. Data will be processed and presented as radargrams and depth-slices using a combination of proprietary (MALÅ) software and either Sandmeier ReflexW or Goodman Archaeometry Laboratory's GPRslice as necessary.

If the MIRA system is employed, multi-channel swathes will be collected every ~0.5m resulting in a data set with traverse spacing of 0.08m, with a sample interval no greater than 0.08m. Realtime positioning of all swathes is achieved using an RTK GPS unit. Data processing and



presentation will be conducted using a combination of MALÅ rSlicer and/or Goodman Archaeometry Laboratory GPRSlice as required to produce radargrams and depth slices.

Survey results will be reported on, conforming to current standards and guidance available from the relevant heritage bodies.

Interventions

All machine excavation will be carried out under constant archaeological supervision using a toothless bucket, and will include visually scanning spoil for artefacts. As soon as archaeological deposits or features are recognised, machining will be stopped and trenches excavated by hand. Each trench will be cleaned by hand where appropriate, planned and photographed prior to any hand-excavation. A representative section, not less than 1m in width, of the entire deposit sequence encountered will be recorded.

If complex stratigraphy and/ or significant remains (e.g. structural remains, artefact scatters, remains clearly of a funerary nature etc.) are encountered, following consultation with HE, these may only be excavated to the minimum requirement in order to satisfy the project objective, to avoid compromising the integrity of remains that may be either (a) preserved in situ, or (b) excavated in detail during any next phase of research excavation. Interventions will focus on feature intersections in order to establish relative chronologies, and 'clean' sections to maximise retrieval of stratigraphically secure dating evidence and environmental samples.

Full written, drawn and photographic records will be made of each trench and test pit, even where no archaeological remains are identified. A plan at an appropriate scale (1:50 or 1:100) will be prepared, showing the areas investigated and their relation to more permanent topographical features, and the location of contexts observed and recorded in the course of the investigation. Plans, sections and elevations of archaeological features and deposits will be drawn as necessary at an appropriate scale (normally 1:20, or 1:10 for complex features). Drawings will be made in pencil on permanent drafting film.

Written records will be made using pro forma record sheets for each trench or test pit, following the DigVentures single context recording system. Digital photography will be used for all photography of significant features, finds, deposits and general site working. The photographic record will illustrate both the detail and the general context of the principal features and finds excavated, and the Site as a whole.

Palaeoenvironmental sampling

All deposits with good palaeoenvironmental potential will be sampled; bulk samples shall be taken from the section as appropriate, under advisement from the project specialist. Context specific samples will be taken by the most appropriate means (kubiena tins, contiguous columns, incremental block, bulk etc.) for multi-disciplinary analysis. All aspects of the collection, selection, processing, assessment and reporting on the environmental archaeology component of the evaluation shall be undertaken in accordance with the principles set out in *Environmental Archaeology: a guide to the theory and practice of methods, from sampling and recovery to post-excavation* (Historic England 2012) and with reference to the *Association for Environmental Archaeology's Working Paper No. 2, Environmental Archaeology and Archaeological Evaluations* (1995).



Bulk sampling strategy

Bulk samples will usually be 60 litres in size, depending on the likely density of macrofossils. Ten litre samples will only be used for the recovery of plant macrofossils from waterlogged contexts. Samples will be stored in ten litre plastic buckets with lids and handles. A waterproof label will be fixed to the bucket and will record site code, context number and sample number and number of buckets in comprising the sample. A duplicate label will be retained inside the bucket. Samples will be protected from temperatures below 5° and above 25° Celsius and will be prevented from either wetting or drying out.

- Bulk samples selected for processing shall be wet-sieved/floated and washed over a mesh size of 250 microns for the recovery of palaeobotanical and other organic remains, and refloated to maximise recovery;
- Non-organic residues shall be washed through a nest of sieves of 10mm, 5mm, 2mm, 1mm and 250 micron mesh to maximise finds recovery;
- Both organic and non-organic residues shall be dried under controlled conditions;
- The dried inorganic fractions shall be sorted for small finds or any non- buoyant palaeoenvironmental remains, and scanned with a magnet to pick up ferrous debris such as hammerscale;
- The dried organic fractions shall be sorted under a light microscope to identify the range of species or other material on a presence/absence basis, the degree of preservation of the bio-archaeological material and the rough proportions of different categories of material present;
- In the event that waterlogged deposits are identified and sampled, further processing shall be undertaken as appropriate and agreed, including paraffin flotation to recover insect remains. Any such remains shall be scanned to identify and assess their potential;
- Selection of other types of sample for processing and the methods to be used for processing and assessment shall be undertaken on the advice of the relevant specialist and shall be agreed with the Consultant before implementation.

Contexts that are well stratified and potentially datable are all of value, so a systematic approach to selecting samples for processing and assessment will be taken. These will be divided into three categories:

- Category A (always sampled): contexts where the composition of the sediments are likely to inform us of the use of a particular structure or feature or if the deposits are waterlogged. These will include: *in situ* occupation deposits and fills/layers associated with particular activities; hearths; destruction deposits; basal pit/slot trench fills; waterlogged deposits, cesspits or latrines.
- Category B (always sampled, though discretion should be exercised): deposits identified as containing material that could yield information regarding their origin or the process that produced them. These will include: dumps, middens, upper pit fills with evidence for charred material, shell, bone and industrial waste.
- Category C: deposits containing material which is not necessarily related to the function of the feature to which they are related, but which can characterise deposits from different areas of the site. These will include: secondary and tertiary fills, postholes, levelling deposits, spreads etc.

Category A and B deposits should always be sampled, and Category C deposits sampled on a random basis (such as 1 in 5). These samples can help to characterise the background noise of a site, so as to highlight spatial or temporal trends and provide material that can be directly



compared with those from Category A and B. All samples will be taken in large white 10 litre tubs, with labels placed inside with the deposit and attached to the bucket. All samples will be processed on site in a dedicated floatation and wet sieving area.

Zooarchaeology

If large deposits of bone or marine shell are encountered advice of the project zooarchaeologist (Matilda Holmes) will be sought as regards further sampling. If large deposits of bone or marine shell are encountered the project zooarchaeologist advice will be sought as regards further sampling. If articulated groups of bones are encountered they will be surveyed, recorded in situ, (including digital photography and planning), and then excavated to retain the group's integrity. Bones from each articulated limb will be bagged separately. If inhumations or cremation burials are encountered and excavated the surrounding soil will be sampled to retrieve any loose teeth or bone fragments.

All hand collected animal bones and bones from processed samples will be assessed, following English Heritage Environmental Archaeology guidelines (2002). If warranted by the size of the recovered assemblage, it will be assessed using two different quantification methods to determine the most suitable for full analysis, taking into account methods used in comparative assemblages. The assessment will not distinguish between certain taxonomic groups, for example equids (horse and donkey); full speciation should be carried out as part of any recommended analysis, using a vertebrate comparative collection. In addition to quantification of domestic species and occurrence of wild species, the assessment will consider the number of articulated bone groups, and the prevalence of aging, sexing and osteometric data available for full analysis, following standard published conventions. The assessment report will comment on the potential of the assemblage, particularly in the context of the excavation's research questions and current understanding of comparative assemblages. It will also provide recommendations for any necessary future analysis.

Human osteoarchaeology

In the event of the discovery of human remains (inhumations, cremations and disarticulated fragments) they should be left in situ, covered and protected, until the English Heritage Inspector of Ancient Monuments has been informed. If a decision is taken to remove them, they will be fully recorded and excavated in compliance with the relevant Ministry of Justice Licence. The excavation of human remains will be carried out in accordance with the procedures detailed in the document Excavation and post-excavation treatment of cremated and inhumed human remains (McKinley and Roberts 1993, IFA Technical Paper 13). Significant assemblages of human remains will be subject to an assessment of DNA preservation to establish potential familial relationships.

Inhumations will be scanned with a metal detector prior to excavation, and the position of possible metallic grave goods will be noted. Wherever possible, each burial will be excavated within a single working day, particularly with regard to visible grave goods. To minimise unauthorised disturbance of human remains, partially exposed remains will be covered overnight, though in such a way as to not draw undue attention, using loose excavated spoil.

Excavation of inhumations will be undertaken using a trowel, plasterer's leaf, plastic spoon and paintbrush as appropriate depending on the condition of the bones. When lifted the bones will be bagged by skeletal area (skull, axial, upper and lower limbs) with separate bags for the left and right side. A standard series of samples will be taken from each inhumation burial to ensure full recovery of any remaining osseous tissues or small artefacts. Once human remains

are removed from inhumation graves, any soil residue remaining at the base of the grave will be retrieved for bulk processing.

Inhumations and cremations will be drawn at a scale of 1:10 and photographed prior to lifting. They will be recorded on Skeleton Record Sheets that form an integral part of the site pro forma recording system. The recording will include condition, completeness, articulation, orientation and posture. Fragile objects found within graves will be lifted with appropriate care and handling to minimise breakage. This may include subsequent controlled excavation under laboratory conditions. A trained conservator will be employed on the site if necessary.

All cremation burials and cremation-related contexts will be excavated and sampled in quadrants to ascertain the distribution of any archaeological components within the fills, with division into spit also if appropriate. Cremation-related features other than burials may be subject to more detailed sub-divisions, the appropriate strategy being developed by a specialist as the size and nature of the remains becomes clear. Undisturbed and slightly disturbed, but largely intact, urned cremation burials will be lifted *en masse* for excavation under laboratory conditions. The urns will be wrapped in crepe bandages and securely boxed for transportation. Where a vessel has been crushed, thereby disrupting any original internal deposition of the cremated remains, it will be lifted *en masse* after separate recovery of displaced sherds. All cremation-related contexts will be subject to whole-earth recovery from the point at which any cremated bone or other pyre debris is observed. If deposits of placed human bone are encountered in features, these may be excavated in spits if appropriate. The soils from these features will be bulk sampled.

Finds

Finds will be treated in accordance with the relevant guidance given in the *Chartered Institute for Archaeologist's Standard and Guidance for Archaeological Evaluation* (2008), excepting where statements made below supersede them. All artefacts will be retained from excavated contexts, except features or deposits undoubtedly of modern date. In these circumstances sufficient artefacts will only be retained to elucidate the date and function of the feature or deposit. All artefacts from the evaluation works will, as a minimum, be washed, marked, counted, weighed and identified. Any stratified ironwork will be X-rayed and stored in a stable condition along with other fragile and delicate material. X-rays of objects and other conservation needs will be undertaken by appropriately qualified conservation specialists. Suitable material, primarily the pottery and non-ferrous metalwork, will be scanned to assess the date range of the assemblage.

Conservation

Artefacts will be recovered as a matter of routine during the excavation. When retrieved from the ground finds will be kept in a finds tray or appropriate bags in accordance with *First Aid for Finds* (Walker 1990). Where necessary, a conservator may be required to recover fragile finds from the ground depending upon circumstances.

After the completion of the fieldwork stage, a conservation assessment will be undertaken which will include the X-radiography of all the ironwork (after initial screening to separate obviously modern debris), and a selection of the non-ferrous finds (including all coins). A sample of slag may also be X-rayed to assist with identification and interpretation. Wet-packed material, including glass, bone and leather will be stabilised and consolidated to ensure their long-term preservation. All finds will be stored in optimum conditions in accordance with *First Aid for Finds and Guidelines for the Preparation of Excavation Archives for Long-Term Storage* (Walker, 1990).



The conservation assessment report will include statements on condition, stability and potential for further investigation (with conservation costs) for all material groups. The conservation report will be included in the updated project design prepared for the analysis stage of the project.

Scientific dating

Where uncontaminated deposits are recorded which are able to inform understanding of the research aims (in particular, relating to the construction of the banks and ditches), appropriate samples will be taken. Radiocarbon dating will be appropriate for clarifying and linking aspects of archaeological and environmental chronologies, and a strategy for this will be agreed following discussion with HE Science Advisor and the relevant specialists.

Synthesis and data integration

The results of the project will be integrated and synthesised with those from the previous investigations and other relevant work within the region and further afield (see Section 1 and 2 above). This will include a literature review of other pertinent sites.