DigVentures

Penplediau / Caerfai Promontory Fort

2023 Updated Project Design for a Community Archaeology Project

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Penplediau / Caerfai Promontory Fort

Updated Project Design for a Community Archaeology Project

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Purpose of document

This document has been prepared as an Updated Project Design for continuing community-based research excavations at Penplediau / Caerfai Promontory Fort, Pembrokeshire. The purpose of the document is to provide an outline of planned fieldwork for 2023, specifying the aims and objectives of the work and methodology to be employed.

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This document has been produced in advance of the required Schedule Monument Consent to be requested for the works in 2023.

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Acknowledgements

We'd like to begin with a sincere thank you to the CHERISH team for inviting us in 2021 to be part of such an exciting project. Thanks are also extended to the National Trust, the Royal Commission on the Ancient and Historic Monuments Wales, Cadw, the Pembrokeshire Coast National Park Authority, and other stakeholders for their assistance in the project and for their continued support.

We would also like to thank Rob Griffiths, proprietor of St David's Bunk Barns, for his assistance in granting land access to the fort and for aiding with the logistical side of the excavation.

The Project Executive for DigVentures is Lisa Westcott Wilkins, with Manda Forster as Project Manager and Brendon Wilkins as Projects Director. The project will be managed by Kimberley Teale, Programme Manager, who will also attend the fieldwork delivery along with Stephanie Duensing acting as Site Director with assistance from Maiya Pina-Dacier as Director of Engagement, and Jodie Hannis and Talia Dalton as Community Archaeologists.

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Executive summary

This document has been complied in support of further archaeological investigation at Penpleidiau / Caerfai Promontory Fort to be carried out by DigVentures. An initial season of archaeological evaluation was undertaken in 2021 at the scheduled Caerfai Camp focusing on the isthmus of the fort as well as the defensive ramparts to the north (PE294). The investigation was undertaken as part of the CHERISH project and was supported by RCAHMS staff. The evaluation was comprised of two trenches over the ramparts to understand the effects of animal burrowing and erosion, a U-shaped trench over the isthmus and two small test pits on the headland beyond the camp to establish the presence of archaeological remains. A second season of fieldwork comprised of targeted excavations, photogrammetric survey and geophysical survey took place in September 2022. The excavations primarily focused on returning and extending the two trenches dug the previous year, one between the ramparts to fully characterise the depth and composition of the ditch between the two banks, and a trench opening the middle of the U-shaped trench over the isthmus to investigate the full area. Additionally, two smaller trial trenches were placed on the headland beyond the isthmus guided by initial results from test pitting from 2021 and targeting anomalies seen in early results from the resistivity survey carried out in the first week of the excavations in 2022.

This Updated Project Design supports a third and final season of fieldwork comprising further targeted excavation, trenching and photogrammetric survey. The fieldwork is proposed to take place between the 27th of July and the 12th of August 2023. The approach to this work is evidenced through the following document, 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 and research 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 continue the ground-breaking research undertaken by the CHERISH project, and to:

- Build on the results of 2021 and 2022 to recover data to improve our understanding of the chronology and use of the fort
- Target areas shown to be the most at risk, or to recover data to enable a comprehensive understanding before it is eroded further
- the extents of the anomalies discovered by the geophysical survey in 2022 by ground truthing and by collecting a secondary complementary dataset across the headland
- the relationship of these remains in a wider landscape setting and as part of the prehistoric coastline of St Davids and Pembrokeshire.

This community-based archaeological research project has been designed to provide:

- a stimulus for encouraging local tourism and growth in the blue economy
- an improved evidence base for statutory protection, decision making and adaptation strategies for the monument's continued management
- increased knowledge and awareness of heritage assets on the previously understudied and remote reefs, islands, headlands and across the Irish Sea
- innovative data capture, modelling and visualisation projects including integration of open access shared spatial data infrastructure.

The investigative works will take place as outlined in this document and following the approval of scheduled monument consent application for 2023 (in progress). The work will take place as a field school crowdfunded by project supporters the DigVentures community.

The results of an aerial survey and 3D model, a geophysical survey undertaken in 2019, and our excavations in 2021 and 2022 have informed the locations of the trenches for the community excavation.

This Project Design provides an outline of methodology and planned intervention to complete:

Targeted excavation Targeted archaeological investigation will aim to date and characterise key aspects of the monument and its immediate environs. It is proposed that three trenches are investigated this season with focus on the isthmus and headland. The 2021 and 2022 trenches on the isthmus will be re-opened and expanded, aiming to establish the archaeological dating, sequence and character of extant features previously recorded. Targeted trenching will provide new data about the extent of the site and deposits across the isthmus, expanding on geophysical survey and preliminary ground truthing in previous years.

Public engagement The project is supported by a comprehensive learning, engagement and activity plan which aims to both raise awareness to the site and provide tangible learning outcomes. An innovative digital recording system will enable participants to record and publish results from 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, aiming to engage the local community and a global audience in the project.

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1 INTRODUCTION

1.1 Project background

1.1.1 DigVentures are embarking on the third fieldwork stage of a research project investigating the scheduled archaeological remains at Caerfai Camp - a promontory fort in Pembrokeshire (Scheduled Monument PE294). The site was initially investigated through remote sensing and community excavations in 2021 as part of the CHERISH project (Climate, Heritage and Environments of Reefs, Islands and Headlands). A primary aim of the project is to characterise and record the archaeology of the site as the promontory and isthmus is subject to active coastal and terrestrial erosion, which threatens both the archaeology and access to the site. The results stimulated a second season of excavation, delivered as a crowdfunded and community-based research investigation by DigVentures with continued partner support. The third season of community-based research investigation will provide new information and add to data about the site, contributing to the better management of the archaeology as a result.

1.1.2 The CHERISH project is a 6-year European funded initiative led by the Royal Commission on the Ancient and Historical Monuments of Wales, in partnership with the Discovery Programme: Centre for Archaeology and Innovation Ireland, Aberystwyth University: Department of Geography and Earth Sciences and Geological Survey, Ireland. The project began in January 2017 and will run until June 2023 and will benefit from €4.9 million through the Ireland-Wales 2014-2020 Programme. This year's planned excavations will continue the work funded by the CHERISH project at the promontory fort and contribute to the continued management of the site by the National Trust in Pembrokeshire, the Pembrokeshire Coast National Park Authority, Cadw and the Royal Commission.

1.1.3 This document provides an Updated Project Design for the delivery of a community-based archaeological investigation of Caerfai Camp, Pembrokeshire (hereafter 'the site', Figure 1, NGR SM 76289 24007). It defines how DigVentures intends to deliver this phase of the project, and outlines how research aims and participation targets will be met. The field investigations are proposed to take place between the 27th of July and the 12th of August 2023. The project is being managed using Historic England's MoRPHE project model (Management of Archaeological Research Projects in the Historic Environment).

1.1.4 The Updated Project Design is presented in two parts; *Part 1: Description of the project* provides the project context, including a summary of proposed methodology, key sources, and intrusive and non-intrusive activities, required to support the delivery outcomes. *Part 2: Resources and Programming* identifies responsibilities of individual project staff members and outlines the tasks and programme. The detailed method statement for the proposed work is included here in Appendix 1.

Part 1: Description of the project

2 BACKGROUND

2.1 Caerfai Camp

2.1.1 The scheduled promontory fort site of Caerfai Camp (PE294) occupies a very large and visually dominant natural coastal promontory approximately 1.3km to the south-east of St David's, Pembrokeshire, Wales (NGR SM 76280 23980; Figure 1. Site and trench location). The site is located on a coastal headland, defended by cliffs on the west, south and eastern sides. The monument is described as a crescent of three to four lines of banks and ditches, about 100m in length, having what appears to be a former entrance gap, about 30m across, on the east, blocked by two lesser banks, the whole set across the northern, landward approaches to a 45m wide neck of land that opens onto a roughly 100m east-west by 50m cliff-girt promontory; emplacements for circular structures have been reported but not confirmed in the interior and there is said to be a good natural, small-boat harbour to the south (https://coflein.gov.uk/en/site/305396/).

2.1.2 The ramparts are covered in vegetation, but show clear lines of bank and ditch, the inner bank standing 3m above the interior and 3.5 over the ditch on the outside. At the western end are vertical cliffs, and the eastern end terminating at the entrance. The entrance lies between the eastern end the banks and ditches and a steep coastal slope which runs down to the top of vertical sea cliffs. The grass-covered interior slopes gently down from north to south and is rectangular c.100m N-S and 120m E-W. On the south-west, southern and eastern sides the interior slopes down gently before ending in sea cliffs, indicating perhaps that not a great deal has been lost to erosion. However, on the northwest side a vertically sided gully has removed a large portion (c.20%) of the interior as well as a little of the inner bank https://coflein.gov.uk/en/site/305396/).

2.1.3 As highlighted on the Coflein site record, the Penplediau / Caerfai Promontory Fort has clearly been impacted by coastal erosion, with substantial gullies appearing between the late 19th and mid-20th centuries exacerbated by post medieval mining activity. It offers a significant case study looking at the impacts of coastal erosion and the potential to quantify both the loss (from comparison with historic mapping) and the level of active erosion the site continues to undergo. The land cover across the banks offers a second threat to the cohesion of the archaeological record, and a clear record of the impact of bracken and blackthorn will contribute to the management of the site in the future. The investigations at Caerfai therefore present a substantial opportunity to understand this never-before-investigated promontory fort, and to also contribute to wider knowledge and understanding of the danger of coastal erosion to Wales's cherished heritage assets.

2.2 Previous research

2.2.1 In March 2019, SUMO Services carried out a geophysical magnetometer survey on 2.5Ha of land across the promontory fort and unscheduled headland to the north (SUMO, 2019). Archaeological anomalies were identified within and outside of the fort,

including several targets which the 2021 fieldwork focussed upon. This year's investigations aim to continue the investigation of these anomalies, as well as improving and complementing the geophysical dataset across the headland with supplementary geophysical survey techniques.

2.2.2 The CHERISH Project completed an analytical earthwork survey of the promontory fort in 2019, as well as a UAV photogrammetric survey. The survey focused on all visible archaeological remains as well as gathering evidence for coastal erosion, resulting in a Digital Elevation Model and a scaled 3D model and orthophoto. This will be repeated and monitored over the years b the CHERISH team to establish the rate of coastal erosion on the headland and the danger it presents to the archaeological remains.

2.2.3 A dissertation undertaken by Daniel Hunt in 2020 (Hunt, 2020) evaluated the use of combined archaeological survey approaches in researching the coastal promontory forts of Pembrokeshire, including that of Caerfai Camp. The study presented a new analytical survey and UAV survey for the camp, which identified a possible earlier ditch across the isthmus of the fort and clarified the nature of the earthworks and severe coastal erosion across the isthmus.

2.3 2021 Fieldwork

2.3.1 In 2021 DigVentures carried out a community evaluation excavation (Figure 3. 2021's evaluation excavations) in partnership with the CHERISH project on the ramparts and eroding isthmus of the Scheduled Caerfai / Penpleidiau Camp (PE294) (Teale, 2021; Duensing & Teale, 2022). The site was selected due to the ongoing erosion on the site, and due to the 'data gap' and lack of knowledge presented by the site which had not before been excavated prior to the CHERISH project intervention in 2018-2019.

2.3.2 The excavation formed one component of a new collaborative approach to conservation management at the unexcavated and under-researched eroding promontory fort by Cadw, Pembrokeshire Coast National Park Authority (PCNPA), the National Trust (NT) and the CHERISH project (Royal Commission on Ancient and Historic Monuments of Wales).

2.3.3 Evaluation Trench 1 recovered a rare example of Iron Age pottery, evidence for industry and craft working, possible structural features and waste relating to human occupation. Specific finds included iron and copper slag showing evidence for smelting and metal working, a fragment of crucible, pottery, cow and pig bones, a flint end scraper, a spindle whorl, and stone tools including whetstones, hammerstones and slingshots. These finds were discovered towards the edge of the eroding isthmus and, whilst they provide clues that the site was occupied in the Iron Age, evidence for defensive structures or settlement proved to be elusive. A possible stone structure was found on the headland beyond the isthmus in a 1m² test pit. The evaluation also revealed a stone floor, post holes suggesting the presence of a structure, evidence for burning suggesting the presence of a hearth and possible walls and rampart terracing.

2.3.4 Trench 2, was located over two ramparts to the north of the isthmus, recorded extensive structural damage to the larger northern rampart from bracken roots and animal burrows. The trench also revealed the method of construction for the northern trench, which differed to the construction of the southern trench, suggesting several

building phases for the four ramparts associated with this fortification. Further examination of the isthmus and on the headland beyond is planned with an aim to understand the character of the site and its meaning, as well as providing more information to compare with neighbouring sites along the coastline of St Davids.

2.4 2022 Fieldwork

2.4.1 DigVentures held a second season of community archaeological excavation in 2022 to further understand, record, and preserve the scheduled Caerfai Camp before it is lost to coastal erosion (Teale, 2022; Duensing & Teale, 2023).

2.4.2 Fieldwork in 2022 comprised the expansion of Trenches 1 and 2 and the addition of two trenches, one expanding on a test pit dug in 2021 and one investigating geophysical anomalies on the headland, as illustrated in the accompanying figures (Figure 2. Proposed trench locations). Further geophysical survey was also undertaken on the headland to locate evidence for occupation or structures and to clarify data collected in 2019, before the land is cut off from the main headland through erosion. The season investigated four areas:

- Trench 3 formed an extension to Trench 1 (2021) and recorded a round, timber-post structure as suggested by the post holes found in 2021, as well as the occupational zone and hearth. Occupational material recovered from this area included pot sherds, slag, charcoal and metal working evidence.

- Trench 4 targeted an alignment of stone recorded on the headland (Test Pits 1 and 2), where evidence of a hearth bottom was suggested through analysis of the slag. The trench found foundations and post holes surrounding an area of level terracing on the natural slope.

- Trench 5 was placed to investigate a circular anomaly on the headland identified in the 2019 geophysical data. Due to limited survival of interior deposits, little was able to be established from this trench regarding the nature, date, and character of the potential anomaly. However, an alignment of stones was seen corresponding to the circular anomaly seen in the results of the geophysical survey.

- Trench 6 further examined the defensive ramparts to the north of Caerfai fort, originally investigated as Trench 2 in 2021, by continuing down into the ditch between the ramparts to find evidence for their construction. This excavation revealed the ditch was cut 2m below current ground level into nature bedrock, resulting in a stone lined defensive ditch.

2.4.3 As part of the field school, the headland was surveyed using earth resistance to complement and add to the understanding of the magnetometer data collected in 2019. This survey revealed the settlement activity of the promontory fort extended into the use of the headland, establishing a wider context of the fort and the defensive ramparts.

2.5 2023 Fieldwork proposals

2.5.1 DigVentures plans to hold a third and final season of community archaeological excavation to further understand, record and preserve the scheduled Caerfai Camp

before it is lost to coastal erosion. The excavation is proposed to run from the 27th of July and the 12th of August 2023 and will host 20 - 25 participants a day.

2.5.2 Recommendations made as part of the archaeological assessment stage (Duensing et al. 2023) suggested that future archaeological fieldwork focus on further characterisation of the promontory fort to add more detailed information and context to the prehistoric archaeological phase identified. Fieldwork in 2023 will comprise the re-opening and expansion of Trenches 3 and 4, as illustrated in the accompanying figure (Figure 2. Proposed trench locations). These trenches will investigate anomalies seen in geophysical survey and aim to record evidence for occupation or structures and to clarify data collected in 2022, before the land is cut off from the main headland through erosion.

2.5.3 Re-opening the north section of Trench 3 will measure 10m x 8m. This trench will comprise an open area excavation to find the occupational zone and associated features within the stone structure discovered after two seasons of excavations through the stone rubble masking the walls. The aim is to understand the relationship of the structure to the second post hole structure immediately to the south, found in 2021 and excavated in 2022. The occupational evidence from Trench 3, including fired clay, work stone, slag, charcoal, and bone was distributed across the lower layers of this structure, and it is hoped that further investigation will recover additional evidence for site-based activities and industries within the fort.

2.5.4 The north-eastern corner of Trench 4 will be extended to further reveal an alignment of stone recorded on the headland in the area where evidence of a hearth bottom was suggested through analysis of the slag from 2021. The trench will measure 4m x 9m and could contribute significantly to our understanding of the use of the headland in relation to the fort.

3 RESEARCH AIMS AND OBJECTIVES

3.1 Project model

3.1.1 The overarching aim of the archaeological excavation is to define and characterise the physical extent of the site through a programme of non-intrusive investigations and intrusive excavation, obtaining baseline data that will facilitate its future management. The project model is framed as overarching aims and key questions/objectives that provide a framework for the methods, stages, products, and tasks set out in Part 2 of the Updated Project Design below.

3.2 Research aims

Aim 1 – Identify the physical extent and character of the promontory fort, refining the chronology and phasing of the site with a programme of trenching

3.2.1 In the light of the evidence base collated through geophysical survey (SUMO 2019;) and from the evaluative investigations undertaken in 2021 and 2022 (Duensing and Teale 2022; *Duensing and Teale 2023 forthcoming*), this aim will be addressed with targeted trenches to address the following questions:

- Q1: Can we establish the layout and extents of the promontory fort by trial trenching and non-invasive survey?

- Q2: Can a chronological sequence and stratigraphic phasing for the sites archaeological evidence be established?

Aim 2 – Understand the development and use of the site and clarify its position in the prehistoric coastal landscape

3.2.2 The 2023 excavations will build on the results from 2021 and 2022 to define the exact use, date and nature of the fort and its relationship and similarities to those further along the St Davids coastline. The purpose of this year's trenches will be to further investigate the known archaeological features within the fort and identify new ones, obtaining appropriate samples for archaeological and paleoenvironmental analysis which will provide important additional information. In combination, these activities will address the following questions:

- Q3 – To what extent do the archaeological remains of the fort survive and how do these inform a greater understanding of promontory forts in the region?
- Q4 – Can we refine the chronological narrative for the site, including the presence of earlier and later features and structures, as defined in Aim 1?
- Q5: Can we identify the location of industrial and settlement activity on the isthmus to establish activities and use of the fort?
- Q6: What is the landscape setting, use and character surrounding the fort, and how did this shape its location, design, and development?

Aim 3 - Understand the site's archaeological and palaeoenvironmental conditions

3.2.3 This aim will be achieved with the assessment and analysis of archaeological samples as defined and recovered in Aims 1 and 2, using appropriate paleoenvironmental, geoarchaeological and archaeological techniques (if possible) to establish preservation and significance. Very little environmental evidence was recovered from the previous phases of excavation as stratigraphy across the ramparts was heavily bioturbated and a full sequence could not be taken. In Trench 1, the base of the occupational layer was not reached and a sequence could not be established. It is hoped that the targeted interventions proposed will recover more information to contribute to the narrative of the site.

- Q7: What is the current state of the archaeological and palaeoenvironmental material across the site?
- Q8: How well do deposits and artefacts survive, and how deeply are they buried?
- Q9: Can the palaeoenvironmental data recovered from sampling in the trenches inform us about cultural activities that may have taken place at the site?
- Q10: What is the range and spatial patterning of artefacts recovered from the archaeological trenches and test pits, and can this inform our understanding of the use of the landscape and utilisation of wider resources??
- Q11: Can we establish a scientifically dated sequence for the site, including both cultural activities and landscape development?

Aim 4 - Making recommendations, undertaking analysis and publication

3.2.4 This aim will require all data from Aims 1 – 3 to be collated, with an integrated analysis of the archaeological and palaeoenvironmental resource at the site, making recommendations to conserve, enhance and interpret the heritage significance of the site.

- Q12: What can an integrated synthesis of the results of this work with previous studies of contemporary regional sites tell us about the site and its setting?
- Q13: What recommendations can be made to protect, conserve, and enhance the site?

Aim 5 – Creating opportunities for people and communities

This aim is integral to the success of the project and sits with equal importance alongside our research aims. The field school programme will offer a range of opportunities for local community members, students, school children and visitors to the area to get involved and learn about the archaeology of Penplediau / Caerfai promontory fort. Participation opportunities will include excavation, finds processing, photogrammetry, and guided visits of the trenches.

3.2.5 Over the course of the project, our targets for engagement are to:

- train community participants and students in excavation and post excavation tasks
- engage children and young people with our education sessions including school visits, DigCamps, and DigClubs
- broadcast online content across multiple social media channels collated on our dig timeline
- deliver a programme of public events, including daily site tours and an online virtual site tour with Q&A sessions with the project team, reaching an expected 120 individuals and a global online community
- provide access to our online course, *How To Do Archaeology*, for dig participants
- produce and provide a digital archive and exhibition resource for the project website, with an expected audience of 7,000 individuals.

3.2.6 Participants will be invited to join the 2023 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 via the microsite Timeline. Reports produced following the excavations will be hosted on the website, providing a research resource for anyone interested in the region's prehistoric archaeology.

3.3 Research frameworks

3.3.1 Investigation at the site will contribute significantly to research and knowledge of the period, with a series of research questions and objectives framed by the *Research Framework for the Archaeology of Wales*. The draft paper on recent research (2016) highlights key areas of work which will contribute significantly to the broader understanding of the Later Prehistoric period in Wales. These include building

chronologies, settlement evidence, palaeobotanical evidence, social change and social processes, climate change and the impact on resource utilisation.

3.3.2 The planned investigations will support these key research areas, providing new data and evidence supported by the provision of a scientifically dated stratigraphic sequence of the site alongside an embedded programme of environmental sampling and finds recovery, underpinning analysis, and interpretation of the results with new data. The excavations and geophysical survey will seek to further define and establish the physical extent and condition of the site, which will provide a broader view of the hillfort and its environs – potentially adding to our understanding of the extent of settlement within the area.

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
Project Advisory Team	The community archaeology excavation will continue the research established by the CHERISH project and will benefit from the continued support in kind from the project team at the Royal Commission. The excavation at Caerfai will also benefit from input from Claudine Gerrard from the National Trust, Tomos Jones from the Pembrokeshire Coast National Park Authority, and Louise Mees Inspector of Ancient Monuments and Archaeology (South West Wales).
CHERISH project	The ongoing CHERISH project provides a wider context for the excavation of the site, with a wider focus on the impacts of climate change and active coastal erosion on archaeological sites across the project region. The research activities delivered also provide new information which will inform the regional and national context for this project.
Ancient Connections	Our ongoing work with the Ancient Connections project looking at links between Pembrokeshire and County Wexford, Ireland, could provide support and insight into regional and international contexts for this project.
Core project team	The core project team and specialist staff have been consulted widely during the previous phase of works and will continue to build on these connections as the project develops, forging strong links with local, national, and international professionals.

Table 1: Project interfaces

5 COMMUNICATIONS

5.1 Project Team

5.1.1 The following section details specific staff responsibilities, drawing on terminology devised by Historic England for the MoRPHE project management framework. The overarching project is crowdfunded and overseen by DigVentures. Project Assurance will be undertaken by the Lisa Westcott Wilkins (Project Executive), who will monitor compliance against the deliverables detailed in this document. Kimberley Teale (Programme Manager - Digital) will act as the primary contact point for the project and ensure that stakeholders and clients are regularly updated as to progress. Stephanie Duensing (Programme Manager - Field) will oversee the archaeological strategy and delivery. Maiya Pina-Dacier (Director of Engagement) will liaise with and coordinate participants and visitors to the site.

5.1.2 The project team have all worked closely together over a number of research projects, including Leiston Abbey (2013-2016), Lindisfarne (a joint project with the University of Durham, 2016 - 2021) and Barrowed Time (community investigation of a Bronze Age hoard site, 2016) as well as last year's excavations at Caerfai (2021-2022). There will be six core DigVentures archaeological and community archaeology fieldwork staff on site throughout the fieldwork, and these staff will remain consistent and retained throughout the post-excavation phase of the project. All core staff are employed in line with CIfA guidelines, and are practicing field archaeologists at PCIfA level or above. Senior project staff are both Members of CIfA in good standing.

5.2 Project management

5.2.1 The Project Manager will keep the wider project team and advisory team up to date with progress, tasks completed or part completed, including any on-going work and issues affecting progress. The Project Manager will also be responsible for ensuring that the project runs to schedule, and ensure that all major tasks are briefed/debriefed as necessary. Provision will be made for the project in 'Basecamp', which is a web-based project communication package used by DigVentures, enabling project participants to generate and record notes, tasks, milestones and other project-related communication. All work will be monitored and checked whilst in progress on a regular basis, with oversight of the Projects Director/Managing Director. A series of guideline documents or manuals form the basis for all work.

5.2.2 The Project Manager, Kimberley Teale, is an accredited member of the Institute for Archaeologists (ACIfA). DigVentures is a CIfA 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 As a social business every aspect of the DigVentures approach is cognisant of a wider outreach agenda. Running alongside the Caerfai Camp community archaeology project, DigVentures will include a dedicated engagement programme for participants offering opportunities for individuals to get involved. The programme will increase

local awareness of the area's archaeology and heritage, and amplify this with a coordinated digital and social media strategy. All major social media channels will be used to promote daily blog content. A digital video specialist will be on site throughout the excavation, and broadcast quality footage will be uploaded to YouTube regularly.

5.3.2 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 2023, and will include, but not be limited to:

- dedicated microsite with daily news updates and all major social media channels (Facebook, Twitter and Instagram) amplified through third-party coverage by the networked blogging community: https://digventures.com/projects/caerfai/timeline/
- dedicated digital archive of the excavation data, submitted to HER on completion of project
- wide circulation of the project assessment and the final report, including submission to the regional HER and relevant bodies
- site publication in an appropriate local/national journal commensurate with the final results
- wide circulation of the Assessments, Updated Project Design, and final report
- deposition of all relevant reports with the appropriate historic environment record.

5.4.2 In addition to the evaluation of the project, several products will underpin the longer-term impact of the excavation. Our technical report will provide detailed analysis of the archaeological site and finds, with specialist reporting, scientific analysis and interpretation linking directly to the evidence presented online (such as 3D models, context descriptions and finds profiles). The online archive, including both the microsite and Digital Dig Team will be maintained for five years beyond the close of the excavation, and a stable and comprehensive archive will be prepared and deposited with the appropriate body.

- **Technical report** – the archaeological excavations will be fully written up in line with the standards of CIfA, the professional institute for archaeology. our archaeological reports are prepared in line with CIfA Standards and guidance and presented an illustrated and detailed analysis of the archaeology recorded. Reports are made available on the project website, deposited with the regional HER, Cadw, PCNPA, NT and attached to the OASIS record of the site.

- **Research archive** – the project will result in the co-production of an accessible and usable research archive, maintained for 5 years post project. Digital Dig Team will house all site archive information, readily accessible to both the interested public and researchers. In addition to the online archive, a stable and comprehensive archive will also be prepared and deposited with the appropriate bodies, including NMRW.

- **Evaluation data** – included within the technical reporting, our ongoing evaluation of participants and visitors will provide the data for feedback around of what was delivered, who took part and how they benefitted. The report will present qualitative and quantitative data collected from dig participants and public visitors to the site, linked to our Theory of Change.

5.5 Project archive

5.5.1 The project archive will be prepared in accordance DigVentures guidelines for Archive Preparation, following ARCHES: the Standard and Guide to Best Practice in Archaeological Archiving in Europe (2020). All reports produced by the project will be openly and freely disseminated through the HER and DigVentures 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 DigVentures.

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	RV1 – Assemble Project Team and liaise with stakeholders	Completed
Stage 1	Project Start-up, finalizing Project Design and definition of scope	RV2 – Sign-off on MoRPHE Project Design, and liaison with stakeholders and landowners	Completed
Stage 2	2021 Archaeological Excavation / Field School – First Season	RV3 – assemble site archive and distribute pertinent data to specialists	Completed September 2021
Stage 3	2021 Other public engagement & talks	RV4 – Post-Ex blog, Virtual talk, Pembrokeshire Archaeology Day	Completed September – November 2021
Stage 4	2021 Assessment, analysis, reporting & Updated Project Design	RV5 – critically review findings, making recommendations for further work or closure	Completed
Stage 5	2022 Archaeological Fieldwork – Second Season	RV6 – assemble site archive and distribute pertinent data to specialists	Completed September 2022

Stage	Description	Review Point	Completion Date
Stage 6	2022 Assessment Report & Updated Project Design	RV7 – critically review findings, making recommendations for further work or closure	Summer 2023
Stage 7	2023 Archaeological Fieldwork – Third Season	RV8 – assemble site archive and distribute pertinent data to specialists	Proposed July 2023
Stage 8	2023 Assessment Report	RV9 – critically review findings, making recommendations for further work or closure	Proposed Spring 2024
Stage 9	Final Analysis & Publication (*where no further execution stage is undertaken*)	RV10 – final publication sign-off, and prepare archive for accession	Proposed Spring – Summer 2024
Closure			Autumn 2024

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).

Part 2: Resources and Programming

8 PROJECT TEAM STRUCTURE

8.1 Team and responsibilities

8.1.1 DigVentures' Project Team is presented in Table 3. CVs for the team are available in Appendix 2 and those for the wider specialist team are available on request.

Name	Initials	Project Role	Key Responsibility
Lisa Westcott-Wilkins	LWW	Project Executive, Co-CEO	Overall project responsibility, assistance with the below activities
Brendon Wilkins	BW	Projects Director, Co-CEO	Oversight of archaeological strategy and quality assurance
Manda Forster	MF	Chief Operating Officer	Operations and budget responsibility, project assurance
Kimberley Teale	KT	Project Manager	Archaeological co-direction (on and off-site), liaison with project team, partners, and Stakeholders.

Name	Initials	Project Role	Key Responsibility
			Geophysical and aerial survey specialist.
Stephanie Duensing	SD	Site Director	Excavation strategy and site direction, day to day management of field team and quality assurance of site archive.
Maiya Pina-Dacier	MPD	Community Manager	Community engagement and programme management
Jodie Hannis	JD	Programme Officer	On-site fieldwork, and post-excavation assessment, responsible for supporting participant field training
Maggie Eno	ME	Expert –Videographer	Filming and on-site fieldwork, responsible for supporting participant field training
Joanne McKenzie	JM	Expert – research	Soil micromorphology
Tom Hill	TH	Expert – research	Geoarchaeology / palaeoenvironment
Rob Hedge	DD	Expert – research	Ceramics
Gerry McDonnell	GM	Expert – research	Archaeometallurgy
Elizabeth Foulds	EF	Expert – research	Worked stone and other finds
Hannah Russ	HR	Expert – research	Animal and fish bone

Table 3: Team and responsibilities

9 METHODOLOGY

9.1 Introduction

9.1.1 The methods reflect the project Stages set out in Section 6 and a task list, with allocation of staff time and team members, along with a GANTT chart setting out a provisional programme. Detailed method statements relating the specific techniques or approaches included below can be found in Appendix 1 at the end of this document.

9.2 Stage 7 – Archaeological fieldwork – Third season

9.2.1 A third and final season of archaeological fieldwork (scheduled from the 27th of July to the 12th of August 2023) will comprise archaeological trenching on the scheduled promontory fort isthmus, defensive ramparts, and headland in order to meet the aspects of Aims 1 and 2 (see Section 3.2). It will aim to inform the following research questions culminating in Review Point 8:

- Q1: Can we establish the layout and extents of the promontory fort by trial trenching and non-invasive survey?
- Q2: Can a chronological sequence and stratigraphic phasing for the sites archaeological evidence be established?
- Q3 – To what extent do the archaeological remains of the fort survive and how do these inform a greater understanding of promontory forts in the region?

- Q4 – Can we refine the chronological narrative for the site, including the presence of earlier and later features and structures, as defined in Aim 1?
- Q5: Can we identify the location of industrial and settlement activity on the isthmus to establish activities and use of the fort?
- Q6: What is the landscape setting, use and character surrounding the fort, and how did this shape its location, design, and development?

9.2.2 Specific archaeological interventions will include four trenches expanding former trench locations and targeting geophysical anomalies (Figure 2). Trench locations have been designed to target the archaeological remains partially identified through last year's evaluation trenches, as well as further features identified in geophysical data collected previously in 2019 (SUMO 2019). The nature and targets for evaluation trenches are further detailed in the methodological statements included in Appendix 1 (see Table 7).

9.3 Stage 8 – Assessment Report

9.3.1 This Stage will address Aim 3, culminating in Review Point 9, and focusing on answering the following research questions:

- Q7: What is the current state of the archaeological and palaeoenvironmental material across the site?
- Q8: How well do deposits and artefacts survive, and how deeply are they buried?
- Q9: Can the palaeoenvironmental data recovered from sampling in the trenches inform us about cultural activities that may have taken place at the site?
- Q10: What is the range and spatial patterning of artefacts recovered from the archaeological trenches and test pits, and can this inform our understanding of the use of the landscape and utilisation of wider resources??
- Q11: Can we establish a scientifically dated sequence for the site, including both cultural activities and landscape development?

9.4 Stage 9 – Final analysis and publication

9.4.1 Addressing Aim 4, this is the main reporting and recommendation stage of the project, culminating in Review Point 10 and focusing on the following research questions:

- Q12: What can an integrated synthesis of the results of this work with previous studies of contemporary regional sites tell us about the site and its setting?
- Q13: What recommendations can be made to protect, conserve, and enhance the site?

9.4.2 This final stage will culminate in the final sign-off of the publication, the project, and will prepare the archive for a final accession.

10 STAGES, PRODUCTS AND TASKS

10.1 Methodological Linkages

10.1.1 It is anticipated that the 2023 work will be undertaken in three stages (see Table 4). 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 7	Archaeological fieldwork – Third season	Aim 1 Q1-2 Aim 2 Q 3-6	Field Archive Survey Archive 3D Survey Archive	7.1 Site Preparation 7.2 Fieldwork (remote sensing, survey & excavation) 7.3 RV3-6 – assemble site archive & distribute to specialists
Stage 8	Assessment Report	Aim 3 Q 7-11 Aim 4 Q12-13	Stratigraphic & Assessment Report	8.1 Specialist finds and palaeoenvironmental assessments 8.2 Integrated assessment report 8.3 RV7 – recommendations for further work
Stage 9	Analysis and Publication (*where no further execution stage is undertaken*)	Aims 1-4 Q1-13	Final report Publication Completed and accessioned archive	9.1 Specialist analysis 9.2 Finalise report and publication 9.3 Prepare data and archive for deposition 9.4 RV8 – final sign-off 9.5 Closure

Table 4: Stages, Products and Tasks

10.2 Task list by person days and team member

10.2.1 DigVentures projects are managed according to Historic England's MoRPHE project model (Management of Archaeological Research Projects in the Historic Environment) based on a PRINCE2 framework.

Task ID Number	Aims	Task Description	Performed by:	Start (no later than)
Stage 7: Fieldwork				
7.1	1 & 2	Site Preparation	KT, SD, MPD, JH, ME	July 2023

Task ID Number	Aims	Task Description	Performed by:	Start (no later than)
7.2	1 & 2	Fieldwork (trenches)	KT, SD, MPD, JH, ME	July - August 2023
7.3	1 & 2	Assemble site archive & distribute to specialists	Project Team	November 2023
Stage 8: Assessment and recommendations				
8.1	3	Specialist finds and palaeoenvironmental assessments	Expert Team	November 2023 - January 2024
Stage 9: Analysis and publication *(where no further execution stage is undertaken)*				
9.1	4	Specialist analysis	Project Team	March 2024
9.2	4	Finalise report and publication	Project Team	June 2024
9.3	4	Prepare data and archive for deposition.	Project Team	September 2024
9.4	4	Final sign-off	Project Team	September 2024
9.5	4	Closure	Project Team	September 2024

Table 5: Project Task List

11 OWNERSHIP

11.1.1 The Copyright on all reports submitted will reside with DigVentures and the National Trust. The original copyright holder will retain copyright in pre-existing data.

12 RISK LOG

Risk	Description	Probability	Impact	Counter measures	Estimated time/cost	Owner
1	Inclement weather - prolonged periods of rain	Medium	Delay work programme	Provision of site hut, and planned indoor archiving tasks with flexible programme	3 Days	KT / SD
2	Exceptional weather (drying exposed archaeology)	Medium-Low	Slow progress	Provision of water bowser + spray	None	KT / SD
3	Absence of core team member	Low	Delay work programme	Reallocate responsibilities or appointment of alternative	Minimal if done by adjustment	KT / SD
4	Absence of specialist team member	Low	Delay work programme	Reallocate responsibilities or appointment of alternative	Minimal if done by adjustment	KT / SD
5	Equipment theft/breakages	Medium	Delay work programme	Removal of finds material and digital equipment from site	3 days	KT / SD

6	Serious site injury	Medium	Delay work programme	Detailed H&S Risk Assessment + daily safety briefing	3 days	KT / SD
7	COVID-19	Medium	Delay work programme	Reallocate responsibilities or appointment of alternative	Minimal if done by adjustment	KT / SD

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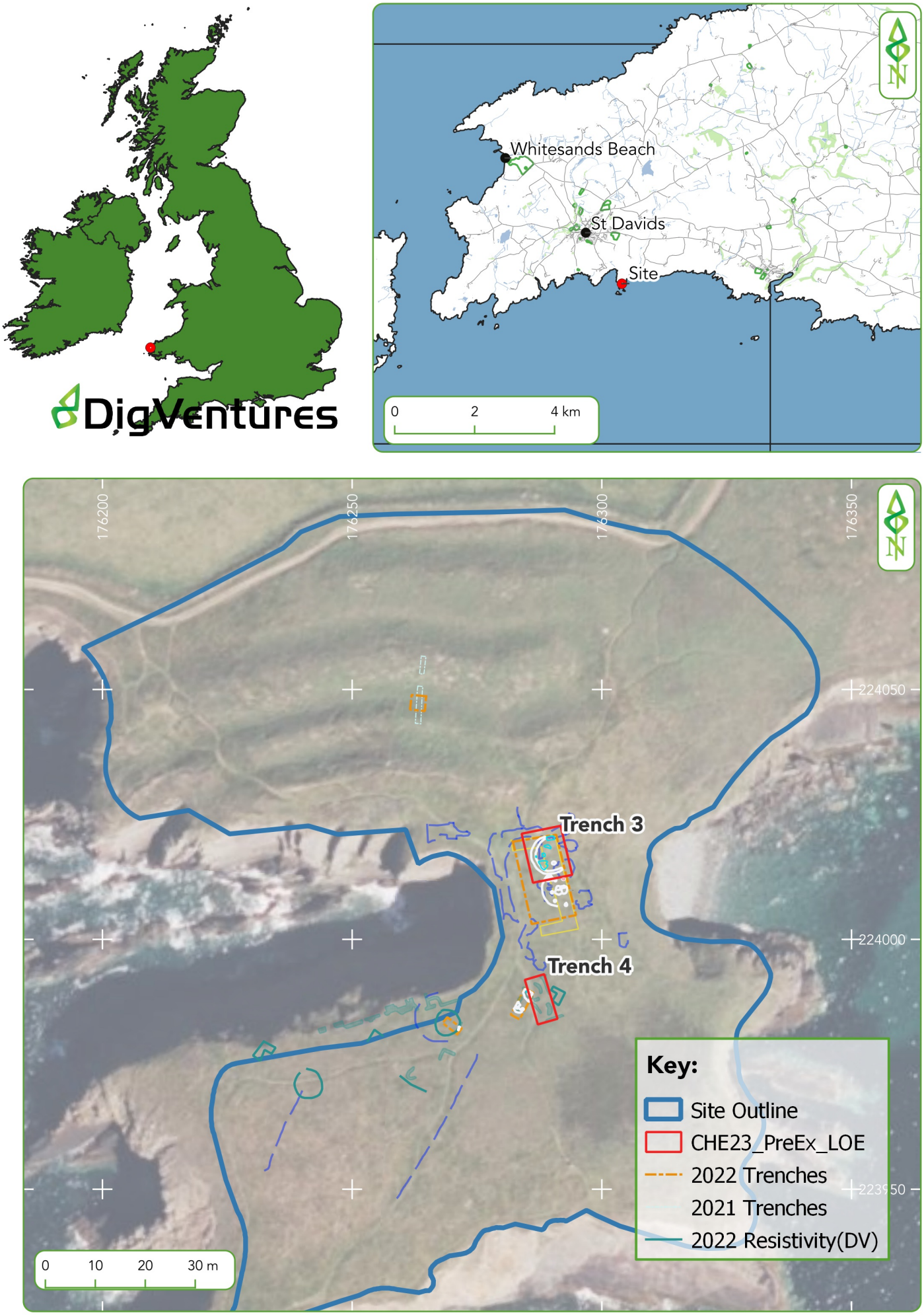

Figure 1. Site location

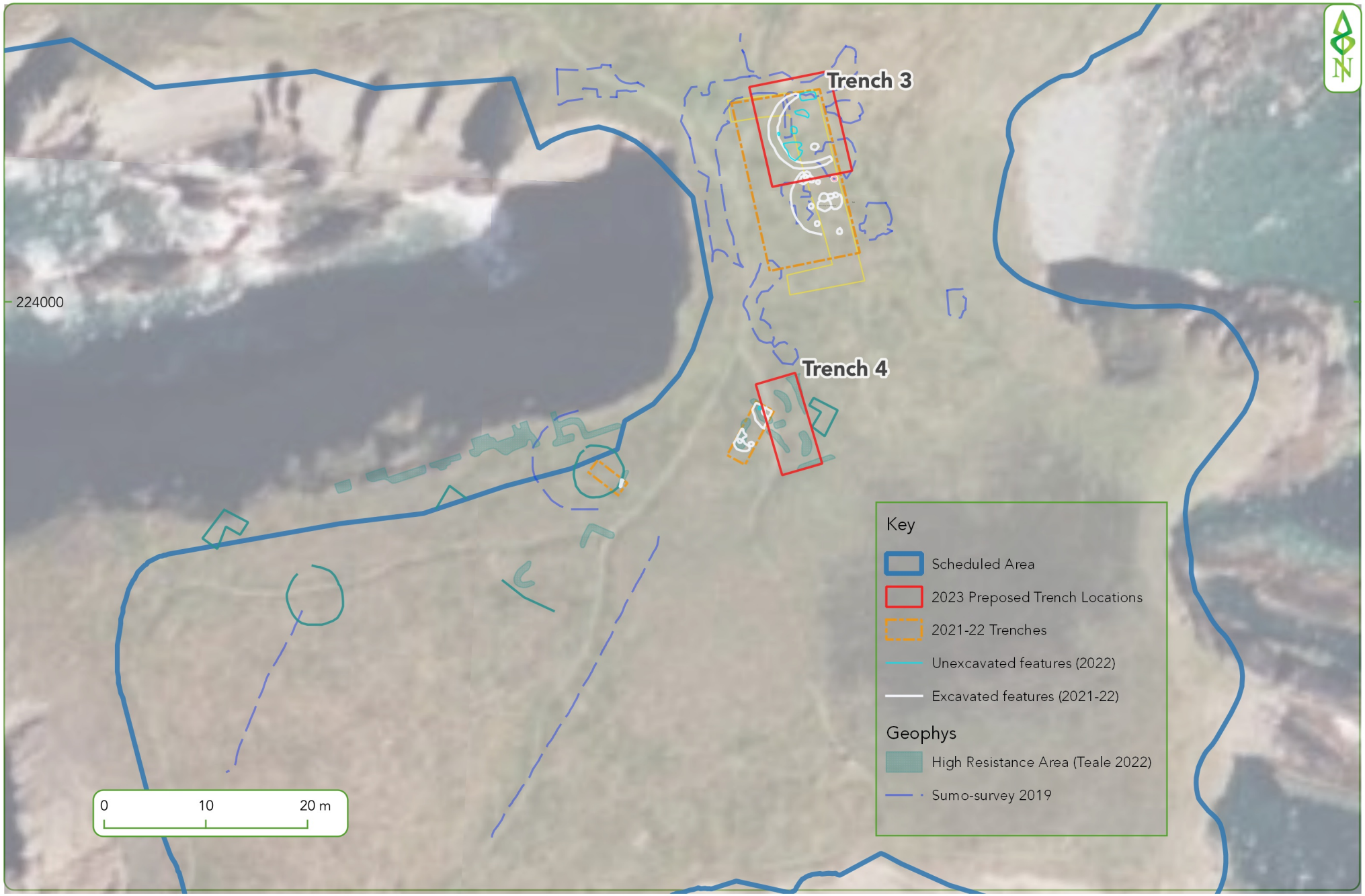

Figure 2. Detail of Trenches

Figure 3. 2021's evaluation excavations

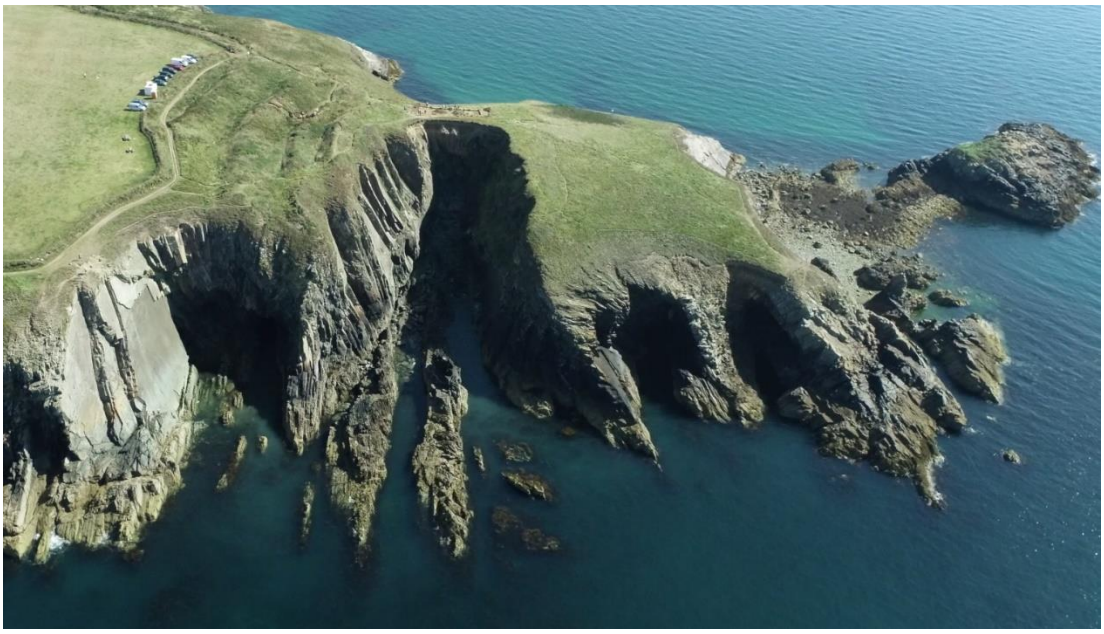

Image 1 - Caerfai Camp from the west showing last year's excavations atop of the eroding 'neck' or isthmus: CHERISH UAV survey, September 2021

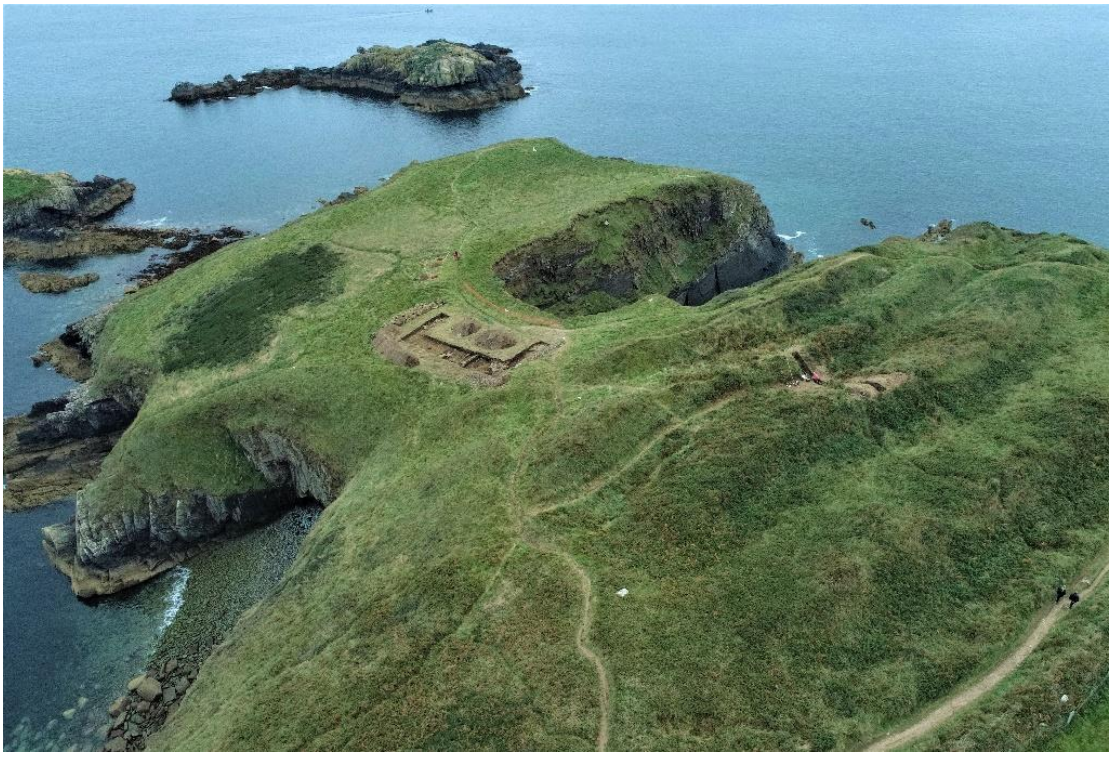

Image 2 - The location of 2021's trenches over the ramparts and the isthmus, looking south-west towards the headland

APPENDIX 1 – METHOD STATEMENT

The methods for the proposed project cover all stages of work and may involve a combination of GIS modelling, archaeological excavation, geophysical survey, palaeoenvironmental sampling and assessment. The methods are linked directly to the project aims and objectives (see Table 1) and detailed below.

Key Questions and Objectives	Archaeological Excavation	Geophysical Survey	Photogrammetry	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

Archaeological excavation (trenches)

As outlined in the Project Specification, the archaeological excavation will be conducted within four trenches. The proposed trench locations have been decided following desk-based research based on last year's evaluation results, re-examination of the 2019 SUMO geophysical data and in discussion with Cadw and other project partners and are provided in Figure 2 and described below.

In summary, proposed targets include:

- **Trench 3 –** There is an immediate threat of erosional loss of archaeological remains located on the isthmus of the Scheduled Monument. The L-shaped evaluation trench (Trench 1) became an open area excavation (Trench 3) in 2022 which succeeded in finding not one, but two areas of occupation including a hearth. This trench furthered the understanding of the post holes discovered in the evaluation stage in 2021, establishing them to belong to a structure as previously suggested (Duensing & Teal 2022). It also clarified the nature of the stone terracing discovered in the north of the trench in 2021. This was demonstrated to be a stone roundhouse structure with intact features seen to be surviving across the structure's interior surface. Returning to this half of Trench 3 would allow for these features to be characterised more fully. The section of the trench to be re-opened will measure 10m x 8m.

- **Trench 4 –** this will expand on last year's trench which was targeting where test pits and geophysical results indicated positive results. Further alignments of stone were discovered (as well as postholes) which aligned with anomalies on the resistivity survey informing the trench location. This extension of the trench will measure 4m x 9m.

Trench	Dimensions	Target
3 (extension)	10m x 8m	Occupational and industrial zone of promontory fort Dateable evidence Extents of fort and rampart terracing
4 (extension)	4m x 9m	Alignment of stone and possible hearth bottom on entrance to headland Dateable evidence Extents of fort and headland activity

Table 7: Trench target, location and description

Interventions

Turf and topsoil will be removed by a mini digger, utilising a safe route through the ramparts approved with the National Trust, Pembrokeshire Coast National Park Authority and Cadw, and all trenches will be cleaned, planned, and photographed prior to any further 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, 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 to establish relative chronologies, and 'clean' sections to maximise retrieval of stratigraphically secure dating evidence and environmental samples.

A paleoenvironmental sampling strategy will be refined in consultation with project experts (Dr Joanne McKenzie and Dr Tom Hill) and will be designed to recover samples of sediments. Recording of stratigraphy and recovery of cultural material will aid development of a robust chronological framework for the site. Suggested methodology is likely to include continuous

monolith sequences sampled from each test pit for pollen assessment and scientific dating, and associated 40l samples for General Biological Assessment (microfauna; waterlogged plant remains; Mollusca; Coleoptera) collected in 0.1m spits from open faces adjacent to the monoliths. General Biological Assessment samples will be transported off site, with individual specialists advising on the quantity of samples requiring processing to meet the aims of the evaluation.

All spoil will be sieved onto the spoil heaps to check for missed small finds and archaeological remains.

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 during 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.

Each trench or test pit, will be recorded using a digital first format created for Digital Dig Team, 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.

Backfilling and reinstatement

Where turf is removed it will be stacked away from the trench edge in a designated zone, maintaining their integrity by ensuring that the turves are placed in a correct position (turf side up) and are watered frequently and monitored daily. Topsoil and subsoil will be removed and retained in a separate zone to allow for sieving, detecting and easy reinstatement. Reinstatement will be undertaken using a small mini digger utilising the same agreed access route as used for turf and topsoil removal.

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* (English Heritage 2011) and with reference to the *Association for Environmental Archaeology's Working Paper No. 2, Environmental Archaeology and Archaeological Evaluations* (1995).

Metal working debris sampling

If significant quantities of metalworking debris are encountered, an on-site reference collection will be assemblage under the supervision of an experienced archeometallurgist. This will provide on-site monitoring of the metalworking debris recovered to flag up if evidence for processes other than iron smithing was emerging and the excavation strategy adapted to

optimise the recovery of the evidence. It would facilitate post-excavation processing and provide a training and information resource for participants and visitors. Magnets will be available on-site to assess the presence of hammerscale and other micro-residues in contexts containing slag or other evidence for ironworking.

Bulk sampling strategy

Bulk samples will usually be 40-60 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.

Photogrammetry survey

Photogrammetry survey of the trenches and features within the trenches will be undertaken on site using DigVentures' telescopic mounted camera or our UAV DJI Mini-2 toy drone (Operator ID: GBR-OP-JL2B8RNZ8C4N). The drone will be used only for aerial imagery shots of the trenches to gain context for the features, capturing vertical images from up to 50m in altitude.

For the ground-based photogrammetry images will be captured perpendicular to the structure using telescopic mounted cameras, to deliver optimum results requiring little or no rectification. All images will be taken with a 16-megapixel Nikon D7000 digital camera with a variety of standard and other lenses, downloaded directly on to the hard disk of the laptop. We will utilise 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 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.

We will process the aerial imagery to produce point cloud, mesh, and textured 3D models and DEMs as GeoTIFS files. The DEMs will then be geo-referenced to the National Grid via GPS positioned ground control points or by aircraft derived GPS coordinates.

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, considering 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.

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 Cadw 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.

APPENDIX 2 – CORE STAFF CVS