RE-CLASSIFYING IRON AGE MARSH-FORTS

- by -

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Abstract

Marsh-forts, as they currently stand, are a relatively poorly understood class of archaeological site. They have been consigned to a sub-category of hillfort using a descriptive criterion based on proximity to a generalising view of 'wetland'. In doing so, we have lost sight of much of their nuance. Sites currently within this category often share little in common. This thesis re-examines these sites by integrating site morphology, landscape, and environmental analysis, causing us to rethink current classificatory models.

This research compiles a gazetteer of thirty-four sites previously classified as 'marsh-forts'. Beginning with a re-examination of each site, this thesis reflects on our current understanding of each site, incorporating earlier investigations and building upon them by applying current archaeological theory, GIS analysis, and new field observations. The resulting summaries focus on the architecture of the enclosures and their relationship with the surrounding wetland and dryland environments, as well as commenting on the evidence for internal activity where it is available. In doing so, this research highlights the disparate levels of archaeological investigations across these sites, ranging from extensive excavations published in monographs to sites whose known existence is dependent on vague antiquarian commentary. These assessments identify thirteen sites where geoarchaeological investigations were required to develop our understanding of the sites. The subsequent borehole surveys determined the nature, extent, date and condition of any wetland deposits. The results of this work broaden our understanding of specific sites and, in some cases, call into question pre-existing and long-held beliefs about their environments.

This thesis concludes by addressing the two primary research aims: to refine and provide a detailed understanding of 'marsh-forts' and to reconsider the classificatory framework for archaeological sites. The study refines the initial thirty-four candidate sites, identifying sites which have been incorrectly attributed to this classification, recognising alternative landscape focuses besides wetland (e.g. river-associated enclosures) and producing a new framework for marsh-forts which reflects a range of site-landscape interaction and relationships. This culminates in the distinction of 'marsh-forts' and 'forts in marshes'; the former referring to a more symbolic wetland-oriented category of site, the latter to a more functional interaction. In doing so, the culminating analysis identifies a range of social and environmental nuances, which allow us to better understand past people. Through this analysis, the thesis serves as an example of a new model of archaeological site classification based on interpretive rather than descriptive terminology. It proposes a new rationale based on features such as 'directionality', visibility, accessibility, connectivity and segregation. This new model integrates the natural environment within the cultural/historic as a fundamental part of our understanding. In realising this, we can improve our interpretation of heritage assets and develop new heritage management practices that recognise the importance of preserving natural and human environments as a single entity.

DECLARATION

I, Theodore James Reeves, confirm that the work presented in this thesis is my own. Where information has been derived from other sources, I confirm that this has been indicated in the text.

Submitted: 20/12/2024

‘I spent these years in the marshes because I enjoyed being there’

Thesiger, *The Marsh Arabs*

For Mum,

who always knew I’d complete this, even before I did.

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As an addendum, I would like to thank my examiners Dr Roger White (University of Birmingham) and Professor Martin Bell (University of Reading) for their time and feedback.

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Abbreviations

AOD	=	Above Ordnance Datum
BGS	=	British Geological Survey
BGL	=	Below ground level
DTM	=	Digital Terrain Model
HER	=	Historic Environment Record
HERA	=	Historic England Research Agenda
GIS	=	Geographic Information System
GPS	=	Global Positioning System
NPRN	=	National Primary Record Number
OS	=	Ordnance Survey
OSL	=	Optically Stimulated Luminescence
SAM	=	Scheduled Ancient Monument (English) SAMScot *and* SAMW *denoting Scottish and Welsh SAMs, respectively.*
SMR	=	Sites and Monuments Record
SSSI	=	Site of Special Scientific Interest
VCP	=	Very Coarse Pottery

Referencing conventions

Where HER, SAM or NPRN numbers are referenced within the text, these refer to records which can be found at:

For England:

HER	https://www.heritagegateway.org.uk/
SAM	https://historicengland.org.uk/listing/the-list/

For Scotland:

HER	https://canmore.org.uk/
SAMScot	http://portal.historicenvironment.scot/

For Wales:

HER	https://archwilio.org.uk/arch/
SAMW	https://cadw.gov.wales/advice-support/cof-cymru/search-cadw-records
Coflein[1]	https://coflein.gov.uk/en/

Dating conventions

Early Iron Age (EIA)	=	800 – 400/300 BCE
Middle Iron Age (MIA)	=	400/300 – 100 BCE
Late Iron Age (LIA)	=	100 BCE – 100 CE[2]

Data Copyright & Ownership

Illustrations produced using GIS software sourced background maps from EDINA Digimap Service. Copyright details and full data sources are listed at the end of this thesis.

Ownership and permissions of other illustrations are cited in text.

[1] Coflein is the online database for the National Monuments Record of Wales (NMRW).

[2] Commonly cited as 43 CE, the date of the Claudian invasion, this is only relevant to areas of southern Britain. The Iron Age ends later in other parts of Britain which were romanised later or not at all. 100 CE is used as an approximate end to the Iron Age across a wider area based on the end of Roman expansion in the north c. 87 CE and the establishment of a fixed boundary in Hadrian's Wall c. 122 CE. See also Cunliffe (2005: Figure 2.2)

1. Introduction

1.1 Introduction to thesis

'Marsh-forts'. The term appears simple and self-descriptive. An echo of 'hillforts', the wider category to which these archaeological sites belong. The term has often been loosely applied with quotation marks in several publications over the last century. The earliest identified use is Westropp's *The Ancient Forts of Ireland* (1902: 123) to describe enclosures in the marshes (though not necessarily dated to the Iron Age), but it has since appeared casually referenced to describe sites in other publications since (e.g. Riley, 1980). It was not until its application in the publication of the site of Sutton Common (Van de Noort et al., 2007) that the term became increasingly adopted by those working on the study of Iron Age landscapes (e.g. Brown, 2009: 6). The term 'marsh-forts' has been loosely applied to multiple sites matching simple criteria of enclosure and wetland across multiple discussions. These range from large academic 'big data' projects such as the Atlas of Hillforts (Lock and Ralston, 2017) to recent site-specific excavations (e.g. Casswell et al., 2018) and national guidance (Historic England, 2018a). Despite its enthusiastic take-up, little work has been done to explore the meaning of the term and the full criteria for this new site category in more depth.

In its current descriptive form, the term is designated as a hillfort sub-category comparable to contour and promontory forts. 'Marsh-forts' are, however, distinguishable as a category with geological criteria amongst a classificatory framework based on topographical positions. This results from an extensive-view approach to these sites built on map-based analysis and large-scale digital landscape views. Such an approach results in the use of overly simplistic landscape features and descriptions as the defining characteristics of sites. These broad and often overly simplistic categories disregard much of the nuance of these sites. As a result, the group represents a culmination of a large variety of sites with minimal commonality. 'Big data' research projects such as the Atlas of Hillforts have unintentionally enforced this simple descriptive framework through the desire for quantifiable data – tick box exercises in data collection, *per se*. In doing so, previous studies have whittled down a class of site with complex human and environmental interactions down to questions of: are there earthworks? is there wetland?

1.2 Aims

The aims of this research are twofold. Firstly, it aims to define and expand our understanding of British Iron Age marsh-forts. Secondly, and in completion of the first aim, it will address some of the fundamental issues with the existing classificatory framework, informing a revised approach based on a critical analysis of their landscape/environmental contexts. This thesis will address the following overarching aims, broken down into subsequent research questions:

1.2.1 Aim 1: What are 'marsh-forts'?

This seemingly simplistic question encompasses a wide range of investigative avenues to review the current classification of 'marsh-fort', refine our definition of the term and develop our understanding of these sites. In order to do so, this research will ask the following preliminary questions:

Q1a What is the i) morphology/ architecture, ii) palaeo-environment and iii) function of marsh-forts?

Q1b How does the site architecture of these enclosures relate to their wetland surroundings?

Q2 How are marsh-forts spatially distributed?

Q3 What date are the sites? Are they a response to a widespread threat: societal, climate or other?

Q4 Is existing information for the sites investigated current and accurate?

These, in turn, lead to the following more comprehensive questions:

Q5 What patterns can we identify among the features of these sites, and how can this inform the creation of categories that better reflect the nuance of the sites?

Q6 What implications are there for our understanding of 'marsh-forts', and are there any new alternative site types that emerge through refining the marsh-fort category?

1.2.2 Aim 2: Reconsider the classificatory framework for archaeological sites

Using the data collected in response to Aim 1, this aim addresses the implications of the revision process for the category of marsh-forts. It will investigate the potential for broader application to other archaeological sites, which in turn will impact not only future research and interpretation but also the heritage management of these sites.

Q7 Is the current working definition of 'marsh-forts' and how it fits within the broader classificatory framework valuable to our understanding of these sites?

Q8a Should we adapt descriptive-based classificatory frameworks to be more interpretive-based?

Q8b Can interpretive classifications better reflect the nuance of various archaeological sites?

Q8c Would an interpretive focus make classifications more meaningful both to i) academic researchers and archaeologists and ii) the wider public audience for purposes of dissemination and engagement?

Q9 What impact does a revision of the classificatory framework for marsh-forts and hillforts have on the conservation, management and interpretation of the heritage significance of these sites? This question will draw upon the data collected in response to Aim 1 to determine whether the potential identification of new site types alters their current management and whether identifying new categories heightens the significance of the respective sites within the archaeological record.

1.3 Objectives

The research aims and questions established the following four objectives. The objectives adopt an iterative approach, compiling existing data to expand through further work and inform new understandings and theories.

1.3.1 Objective 1: Compilation of a detailed gazetteer of marsh-forts

One of the key objectives of this research project is to establish a revised gazetteer of 'marsh-forts' in Britain, building on the existing body of work which has established this category (e.g. Van de Noort et al., 2007; Lock and Ralston, 2017; 2022). This work will aim to compile a review of existing literature on each site, GIS (Geographic Information Systems) modelling of available datasets (cultural and landscape) and current field observations. Furthermore, it will address the aim of developing our understanding of marsh-forts and establish a knowledge base from which to expand our interrogation of these sites through targeted fieldwork and other future analyses. The work can be divided into the following sub-objectives:

Review	This research compiles a review of all previous research conducted on each site designated as a potential marsh-fort. It covers academic works and any developer-led (commercial) projects related to the site (both published and grey literature). This review results in an up-to-date compilation of data and a critical re-assessment of previous evidence, factoring in current archaeological theory.
GIS Analysis	A GIS-based analysis of each site aims to i) digitise and integrate existing datasets, ii) produce a database of shapefiles representing site architecture (banks and ditches) and other archaeological features, and iii) enable comparison of multiple datasets for landscape analysis. The analysis results in up-to-date site plans to inform this and future research.
Site Visits	This project involves visits to each site and creates a database of current field observations on the archaeological features, their nature, and their condition. Photographic archives are produced for each site for reference in this research and ongoing management of the archaeological remains, subject to the deposition of the archive in the respective Historic Environment Record (HER).

1.3.2 Objective 2: Landscape analysis of sites

This project also involves completing a series of extended local landscape analyses for each site, building on the work of Objective 1. These analyses comprise borehole surveys of the local environment, providing an accurate response to research questions 1aii and 1b. The investigations facilitate the identification and, where found, subsequent examination of the nature, extent, date and condition of any wetland deposits in the locality of these sites. Examining the four factors as part of this work, they form independent sub-objectives with individual and interconnected reasoning and implications.

Nature	An understanding of the nature of the deposits has a crucial influence on the impression of the landscape beyond simply confirming the presence of wetland. For instance, it can influence: the appearance of the environment, with any symbolism that may entail; the functional component of the wetland as a resource (e.g. in Van de Noort, 2004); and analyses of movement through the landscape, for example, whether the wetland may have restricted access.
Extent	The resolution of existing datasets, such as the British Geological Survey (BGS) maps, also raises issues when exploring the relationship between architecture and landscape. Therefore, this project will aim to understand better the extent of the neighbouring wetlands to help determine their role in the site's function. For example, it will explore if and how the wetland was used to create natural obstacles, control access to the enclosure, or play a role in ceremonial or ritual activities.
Date	The objective of this research, where possible, is to establish a chronology of wetland development around these enclosures. The existing categorisation of sites as marsh-forts is dependent on proximity to wetlands. Quite often, this appears to have been gauged by BGS data or field observations. Whilst still valid, these reflect the current condition of the land and do not necessarily reflect the environment as it was when they constructed the enclosures. Achieving dating evidence from deposits is therefore vital to confirming their presence and extent in the Iron Age and, subsequently, the role they may have played in the positioning of these sites.
Condition	As a secondary objective, the results of this borehole survey will be deposited in the relevant HERs upon project completion. Making this data accessible will enable them to be integrated into broader assessments of the current condition of the wetland deposits. The data will also contribute to a better understanding of any transformative processes in the landscape since the Iron Age. This data is relevant to Historic England's research objective to gauge the threat to wetland deposits and will inform future research into the palaeo-environmental potential of the wetland.

The results of this analysis build upon the assessment of existing data carried out in Objective 1, ranging from national databases (e.g. Natural England, 2013; BGS), regional studies (e.g. Waller, 1994) and any previous work carried out in the vicinity of or in relation to these sites. It will enable a more detailed and accurate interrogation with a particular focus towards addressing the aims of this research project.

1.3.3 Objective 3: Analysis of patterns of commonality

The third objective of this project is to identify themes of commonality between these sites and so inform their categorisation. Archaeology has sometimes been suggested to be searching for a single truth (Fowler, 2013: 235). Instead, it is better aimed at the compilation of narratives (see Cipolla et al., 2024: 11). Varying narratives can impact their modern-day interpretations and significance but should also be considered in the historical context of the lives of monuments and landscapes and their relationships with the agents that inhabit them, human (or not – see Cipolla et al., 2024: 10-11; Malone and Bozalek, 2022). Hillforts, and thereby marsh-forts also, provide an excellent example of this. The existing categorisation of these sites primarily focuses on criteria relevant to the archaeologists interpreting them. These are mainly descriptive and often focused on extensive (can be represented on a map or plan - see Jervis, 2024: 2) perspectives of the landscape: its topographical position, size, and vallation of the earthworks (e.g. Forde-Johnston, 1976; Harding, 2012; Lock and Ralston, 2017). While this work does not claim to be able to solve this problem, it intends to move the discussion towards a new interpretive approach to classification founded in observed patterns of relationships using 'marsh-forts' as a case study. This approach is not intended to present as a 'truth' but rather to evolve an appreciation of wider narratives and better represent patterns of commonality that would have been identifiable to the people who constructed and used these monuments as well as the archaeologists and wider public working to understand and engage with them today.

1.3.4 Objective 4: Determine the wider impact and significance of this research for site classification and heritage management

The data compilation and subsequent production of revised interpretations intend to feed directly into the heritage management of these sites, informing Historic Environment Records (HERs), Scheduling (where appropriate) and future management of the sites and their landscapes. It will significantly impact their future incorporation in research and heritage management plans. Categorisation allows us to further our understanding of past relationships between social groups and individuals, their relations with their landscape, and many varied societal functions. It can include contextualisation of shared features, identification of patterns of function, construction and architectural styles, and chronological evolution. Establishing site categories will focus research at a base research level, improving discoverability and integration within multi-site comparisons. Different site types (e.g. domestic, funerary, ceremonial) can be used to target specific research questions and objectives. Where these types are not exclusive, they pose new questions about the interaction of different elements within past societies. This paper will also explore these broader implications as part of the analysis of the data collected within this project and the new classificatory system intended to evolve from it.

Beyond this, categorisation also informs the archaeological management plans and legal protections put in force to protect them. It is how we recognise themes of significance and ultimately attribute value to the heritage. The objective of this paper is also to form an essential resource to facilitate this. In particular, the refinement of the classificatory framework and identification of new site types will likely impact the perceived significance of individual sites. An understanding of the condition of the archaeological and palaeoenvironmental remains addressed in Objective 2 will also help to determine its potential and feed into ongoing conservation plans.

Following the establishment of a new classificatory framework, this work will also aim to explore its broader implications within hillfort studies and site categorisation as a subset of archaeological theory. For this purpose, marsh-forts form a succinct case study to demonstrate this approach. Irreflective of the broader nuance of these sites, which this project aims to explore, wetland remains a fundamental criterion inherent to their identity. This landscape specification provides a more manageable sample to explore these concepts. Nonetheless, the principles of interpretive categorisation reflect broader narratives and individual nuances that apply to a wider range of sites. It is essential as forward-thinking researchers to consider the broader implications of this.

1.4 Structure of this thesis

This thesis addresses these aims through an iterative approach. The literature review in Chapter 2 highlights the existing approach to hillfort studies and marsh-forts, currently viewed as a sub-category of the former. The chapter explains how the development of this area of research has led to the current classificatory framework built around descriptive classifications. It introduces the treatment of marsh-forts as a vague and undeveloped category of sites grouped not for their similarity but instead through a shared alienation from other hillfort categories. The chapter critically examines how previous attempts to define 'marsh-forts' have depended on comparisons with Sutton Common and sets the scene for this study to adopt a more inductive approach.

Chapter 3 sets out how this will be achieved. It established this study's parameters, relevant definitions, and a starting point through a combined gazetteer of potential 'marsh-forts'. It produces a gazetteer of thirty-four sites that will be interrogated and subjected to a revision of their existing classifications. The chapter provides a technical summary of the adopted methodologies, covering a broad desk-based research phase, GIS landscape analysis and field observations to a second phase of refinement using geoarchaeological borehole surveys and a targeted radiocarbon dating programme. It will end by describing how this data will be integrated in the following chapters to establish new classificatory systems and address the research aims and objectives.

Chapter 4 forms the bulk of the data collection and represents the formation of a preliminary gazetteer. It uses data collected through the desk-based assessment of previous literature, GIS landscape analysis, and field observations to provide individual detailed summaries for the thirty-four case studies. These include:

- their current classificatory status
- their location
- a multi-factor examination of their landscape: geological, topographical and, where data was available, palaeoenvironmental
- a description of their earthwork architecture, where possible, supported by excavation records

- identification of any other functional indicators, for example, remains of domestic or industrial activity
- any dating evidence

These factors are subjected to a critical re-examination, updating previous interpretations per current archaeological theory, methods and standards. Through this, each section summarises our current understanding of these sites and a preliminary determination of their classification. The chapter also highlights the need to conduct further analysis of the landscape at several sites.

Chapter 5 addresses the lack of data identified in the first phase of the investigation. It identifies thirteen sites that require fieldwork to determine the nature, extent, dating, and condition of the potential wetland associated with each enclosure. The chapter details the specific methodology for each site and their results, including a discussion of radiocarbon dating for the four sites which supplied suitable samples. The data is divided into sub-sections devoted to each of the thirteen sites to ensure fair treatment and contribution to our understanding of each, respective of the nuance of their landscapes and interpretive issues. The results from each case study are discussed individually, identifying how they add to or change our interpretation before responding to their relevance to the overarching research aims and objectives.

The analysis of this data culminates in Chapter 6. It continues the iterative approach by establishing the existing issues with classificatory systems. It builds on the problems identified in the earlier literature review (Chapter 2) and combines them with a discussion of 'etic' and 'emic' typologies to explain the differences between 'descriptive' and 'interpretive' classifications. The chapter uses traditional descriptive categories as an example to highlight the limitations of this approach (Section 6.3). It demonstrates the need to evolve a new interpretive model. Focusing on 'marsh-forts', the chapter forms a theoretical framework examining possible motivations for enclosure and the choice of wetland locations to identify critical factors to inform the new classificatory model (Section 6.4). This framework is then applied in Sections 6.5 and 6.6 to determine new marsh-fort classifications and recognise new distinct types of sites.

The study follows a data-led approach to form classifications unhindered by over-dependence on archetypes. It establishes each site's individuality before applying a pattern analysis system to recognise common themes, which can inform more meaningful classifications. It recognises the importance of integrating the interpretation of the natural environment into our interpretation of archaeological sites, not as an add-on to determine the setting but as an intrinsic part of the function and conceptualisation of place. In doing so, the conclusion (Chapter 7) addresses the impact and significance of this research on natural and cultural heritage management.

2. Background

2.1 Hillforts

Hillforts are some of, if not the most distinctive, monuments of the Iron Age across Europe. Defined by their typically elevated position and monumental earthworks, they dominate their respective landscapes. Currently, 4147 sites are recognised as confirmed or potential hillforts, 520 of which have dating evidence placing them in the British Iron Age, 800 BCE – 50 CE (Lock and Ralston, 2017; date range from reference; see Figure 1). Hillforts are most recognised in England in areas such as Wessex, the Welsh marches and the south-east; they are often very large, covering up to 85ha. There are some examples in Northumberland and the south-west; however, these tend to be smaller and more sparsely distributed (Historic England, 2018a). In Scotland, they tend to be concentrated in the Southern Uplands, and ignoring modern borders, these form part of the same area as those in Northumberland; like these, the Scottish examples tend to be smaller than those in southern England (ScARF, 2012: 80).

The topographical location of hillforts not only lends itself to their prominence but also their survival. Iron Age settlements in the lowlands are more susceptible to damage by later landscape use, whether through urban development or agriculture. Often situated on hills, as the name indicates, hillforts often survive the impacts of landscape transformations better than their low-lying counterparts. This survival has enabled them to form a significant part of our study of the Iron Age.

2.1.1 History of research

Hillforts have fascinated people in Britain as far back as the sixteenth century. Their study at this point was solely the pursuit of the upper levels of society. Antiquarians such as William Camden (1586) were among the first to undertake surveys of the English landscape, interpreting the monuments they encountered, including hillforts. Antiquarians and some early archaeologists attributed these sites to the Romans (e.g. Stukeley, 1724: 142, on Cadbury Castle). A reflection of the early imperialist outlook, it was believed that only the Romans would have been capable of such monumental construction.

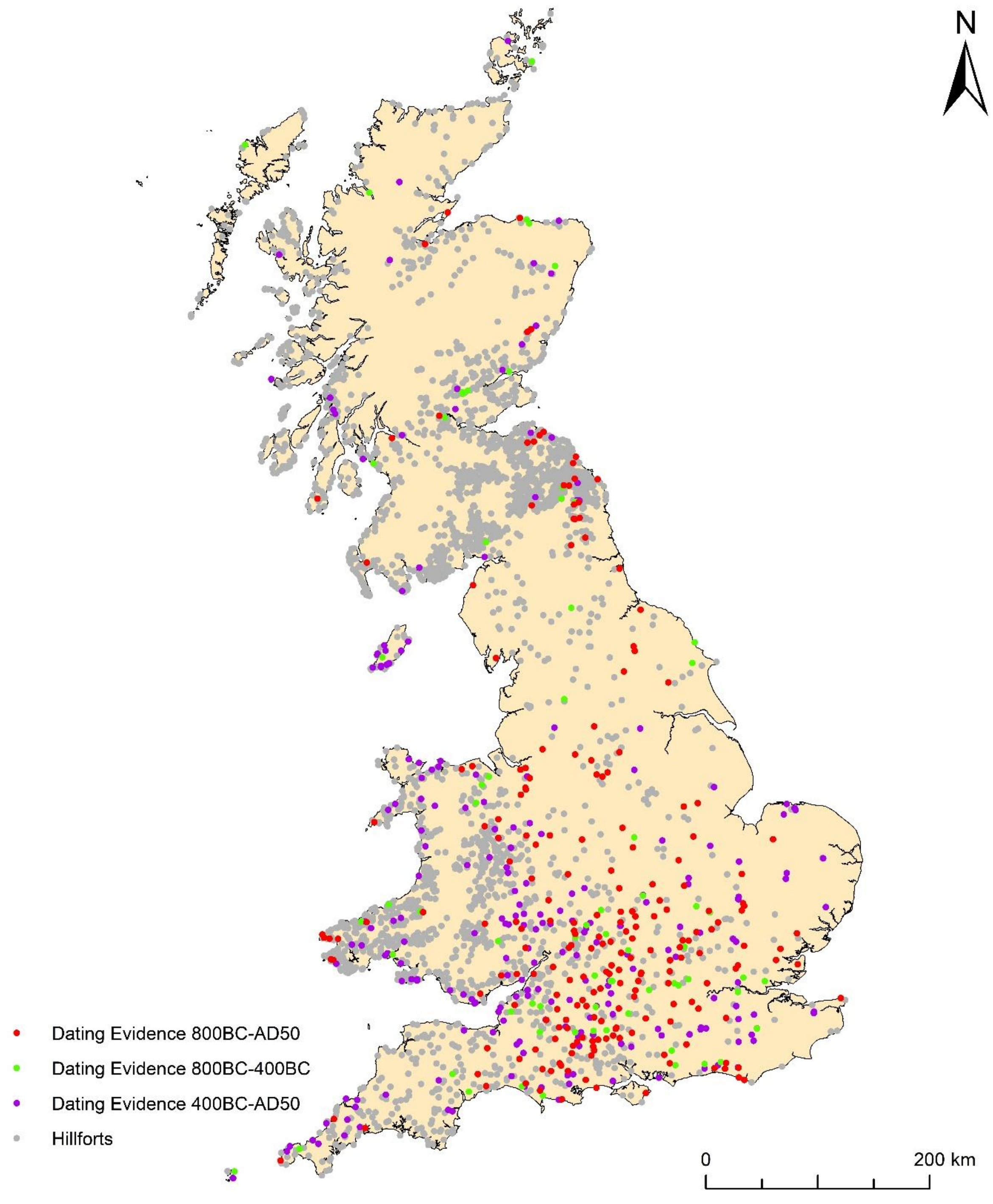


FIGURE 1. IRON AGE HILLFORTS IN BRITAIN (AFTER LOCK AND RALSTON, 2017).

With no stone ruins in the centre of these enclosures, comparable to Roman sites, attention turned to their defences. Impressions of the Iron Age were substantially influenced by Roman literature. This literature was essentially propaganda supporting the perceived 'civilisation' brought by Roman imperialism and painted a picture of a harsh society with constantly warring tribes (e.g. Stewart, 1995). This assumption continued into the twentieth century. Hawkes' (1931) influential paper brought together studies of hillforts from across Britain and established the standard interpretation of hillforts as places of refuge. They believed these sites were constructed to protect people and cattle, a primary resource of the time, against attacks from other tribes and, later, against the Roman invasion. Indeed, accounts of Roman battles against tribes in continental Europe, such as the Battle of Alesia, support this (Caesar, *The Gallic War* 7.68-71). However, this interpretation is arguably the product of Roman analogy. In an attempt to understand a distinctly different style of society from that of the Mediterranean, hillforts were compared to towns. For example, Caesar (*The Gallic War* 7.68) describes Alesia as a town of the Mandubii. The analogy was more readily applicable closer to the Mediterranean, where trade networks prior to the Roman conquest had led to the assimilation of aspects of Graeco-Roman culture; hillforts transformed into central places to better manage trade, resulting in an altogether more centralised society (Collis, 2014; Hornung, 2014). As such, these were primary targets during the Roman invasion of Gaul (Gilliver, 2003: 9) and formed significant events within the Roman literature, influencing early archaeologist's interpretations.

The magnitude of the earthworks enclosing many hillforts also doubtless captured the minds of early archaeologists. It is easy to see how figures such as Hawkes (1931) and Lane-Fox (1869) came to the assumption that these sites had a military function, and it is from this assumption that the term 'hillfort' was inevitably derived (Avery, 1976: 2-3). This term has been the subject of extensive academic discourse ever since (Forde-Johnston, 1976: 1-3; Harding, 2012: 1, for example). Its use, however, has become so commonplace that it is difficult to find a more suitable term with sufficient widespread support to replace it. As such, it is used as a term of convenience and is used as such within this thesis.

The study of hillforts developed further in the 1930s with Mortimer Wheeler's excavations at Maiden Castle (Wheeler, 1943). His work there is famed for its influence on archaeological methodology with his grid style of excavation, but it also profoundly impacted hillfort studies. Whereas many of the excavations of the 1920s and 1930s had focused on the earthworks, Wheeler's work included the additional objective of excavating part of the interior (Harding, 2012: 40). It revealed nine phases of activity from the origin of the site as a Neolithic causewayed enclosure and its use as a hillfort from the Early Iron Age to its extension and development of multivallate earthworks in the Middle Iron Age accompanied by a period of dense internal occupation, through to its decline in the Late Iron Age, and its later Roman and Saxon re-use (Sharples, 1991b: 43). Relating primarily to the Middle Iron Age phase, there was evidence for roundhouses, trade and grain storage (Sharples, 1991a). All of this helped to develop the understanding of hillforts beyond simply their defensive value.

Hillfort studies moved away from a focus on the defences and military interpretations corresponding with the development of processual archaeology in the 1970s and began to examine the interior of these sites and explore alternative functions such as agricultural storage, production and exchange (Cunliffe, 2005; Gent, 1983). While the old 'invasion hypothesis' had been previously used to explain the emergence of hillforts, this gave way to alternative models of indigenous development (Harding, 2012: 44).

Post-processualism in the late 1980s also introduced new notions about the purpose of hillforts. Reflecting both their function as central places, as well as instigating a reappreciation of their defences, they formed a compromising interpretation: hillforts were interpreted as symbols of wealth and power (Collis, 1996: 90-91; Gosden and Lock, 2007: 284). This notion encapsulates the earlier interpretations of military function, but with the earthworks acting as a deterrent to dissuade attackers (Harding, 2012: 198), it also indicates some of the alternative roles as socio-economic foci. (op. cit.: 201-226).

Recent reflections on hillforts have begun to recognise the complexity of their functions (Driver, 2013; Davis, 2018; Hajnalová et al., 2023). While there has been a move away from the earlier focus on military function, the research field has been slow and often limited in its recognition of the variety of hillforts in terms of their morphology, locations and functions. As a result, the current framework risks neglecting the nuances of individual sites.

2.1.2 The functions of hillforts

As shown in Section 2.1.1, there have been many previous attempts to examine the various possible functions of hillforts. The investigation of hillfort interiors as well as earthwork architecture is pivotal in determining these functions; however, the volume of data for this has traditionally been limited. Most of the discussion around hillforts is based on two sites: Maiden Castle, in Dorset and Danebury, in Hampshire. To date, these are the most extensively researched and excavated. This is the cause of the predilection towards them. That said, it is important to acknowledge that while these sites form archetypes for hillfort studies, they are not necessarily typical of most sites.

Maiden Castle and Danebury are atypical, as seen by comparison with the statistics from the Atlas of Hillforts (Table 1). Maiden Castle was a 7.5ha univallate enclosure, later transformed into an 18.5ha multivallate enclosure. The site is categorised as a contour fort, occupying a knoll (Lock and Ralston, 2017). What this does not portray, however, is its variation from the contour forts positioned at the peaks of hills, for example, British Camp, Worcestershire. Maiden Castle’s earthworks, while still following the contour of the knoll, occupy the full height of the slope on its northern side (Figure 2). It is not just positioned on a hill; the hill has become engulfed by and inseparable from the site.

Table 1. Proportions of Hillfort "types", Vallation and Area for all British Hillforts (After Lock and Ralston, 2022: Figures 3.8, 4.15 & 4.2)

“Type”	Number	%
Contour	1946	58.0%
Promontory	963	28.7%
Hillslope	307	9.2%
Level-terrain	175	5.2%
Marsh-fort	17	<1.0%
Multi.-encl.	167	5.0%

Vallation	Number	%
Uni-	1800	51.1%
Bi-	1079	30.6%
Multi-	643	18.3%

Size	Number	%
> 3ha	2446	73.6%
3-15ha	689	20.7%
> 15ha	187	5.6%

Danebury is a multivallate, 5.0ha contour fort occupying a hilltop. Unlike Maiden Castle, the enclosure does not take up the entirety of its hilltop location. Nonetheless, it is impressive in size and dominates its surrounding landscape. A comparison with the statistics provided by Lock and Ralston (2022) suggests that it is somewhat more conventional than Maiden Castle (Table 1). Nonetheless, this does not negate the point that these two bastions of hillfort studies, sites which have defined decades of our understanding of these enigmatic sites, are outliers. This is principally a product of chronology. Larger, multivallate sites develop later in the Iron Age, replacing a considerably larger number of smaller, univallate sites (see Section 2.1.4 for further discussion). The data presented in Table 1 does not account for this variation in the later Iron Age, where the representative value of these two sites as archetypes will be higher. It does, however, reveal that taken as a whole, they are not representative of sites across the full breadth of the Iron Age.

FIGURE 2. (TOP) EAST END OF NORTH-FACING EARTHWORKS AT MAIDEN CASTLE, DORSET; (BOTTOM LEFT) MAIDEN CASTLE FACING NORTH-WEST; (BOTTOM RIGHT) WESTERN ENTRANCE AND EARTHWORKS, FACING EAST. (AUTHOR'S).

Despite this, the wealth of information recovered during the extensive use of these sites has resulted in a situation where they inform a great deal of our understanding of the overall site type. However, this is not to say that these are the only two sites excavated or investigated. Rather, and perhaps indicative of the bias of archaeologists (and research funding) to superlative sites, the biggest, best and rarest, they have taken a prominent position in our mindset as we approach the study of hillforts.

Cunliffe (2006: 154), notable for his work at Danebury, has produced a list of ten possible functions of hillforts. These are as follows:

[1] the act of building as a demonstration of group cohesion

[2] enclosure used for communal pastoral activities

[3] defined space for social/ religious interactions

[4] storage for communal surplus

[5] settlement for a community on a cyclic basis

[6] settlement for a community on a permanent basis

[7] settlement for elite and entourage

[8] focus for redistribution and production

[9] defence in time of unrest

[10] territorial marker

Whilst this list is not exhaustive, and the functions are not exclusive, it does demonstrate the variety of potential interpretations of hillforts. They focus on four main ideas: settlement, defence, and central places for social and economic activity.

The first theme, settlement, stems from the evidence of roundhouses in many of these sites. At Danebury, where Cunliffe (2000b: 166-167) conducted much of his primary research, circular structures were identified and interpreted as roundhouses, representing continuous occupation through the fifth and fourth centuries BCE. However, the presence of roundhouses or other evidence of occupation is not found at all sites (e.g. Woolbury and Bury Hill I, see ibid.). While it is difficult to explain the absence of evidence as proof that a specific activity did not happen, given the issues with preservation, truncation of archaeological horizons by ploughing, etc., there appears to be enough breadth of information to suggest that occupation does not form an essential criterion of hillforts, as the classification currently stands (Payne et al., 2006). The issue of whether the site was permanently settled also speaks to the lack of archaeological evidence in some cases. Research in the Danebury Environs demonstrates the need for temporary settlement with pastoral farming practices dependent on 'a good deal of movement of animals around the landscape' (Cunliffe, 2000a: 70). If only used seasonally, it is possible that the residential structures were also ephemeral and might leave little to no trace in the archaeological record (e.g. Willis, 2022: Part 1.4.2).

Seasonal occupation has also been linked to the early ideas of constant raiding between tribes and the use of hillforts as defensive locales. This perception arguably stems from Caesar's accounts (*The Gallic War* 5.21), which stress how cattle, in particular, was regarded as an important resource worthy of protection: when Cassivellaunus, the leader of the Catavellauni, a tribe situated in what is now Essex, faced attack from

Caesar, he assembled both men and cattle within his stronghold. A similar line of thought has been adopted to suggest they were used to protect cattle from rustling (Harding, 2012: 281; Lucas, 1989). In the summer, people would occupy lowlands and focus on agriculture; in the winter, they would retreat with their cattle to these defended sites to take shelter and guard their cattle and other resources from raiding by neighbouring tribes.

Others, however, have suggested alternative explanations. Oswald et al. (2006: 88) have suggested that the Northumbrian hillforts only hosted a relatively small permanent population but were seasonally supplemented when cattle were driven to upland pasture. This interpretation is also consistent with some southern English hillforts. The environmental evidence from Danebury, for example, indicates that seasonal agricultural activities such as threshing of cereals, calving, lambing, and alternatively, the winter stalling of animals may have taken place at the site (Cambell, 2000; Grant, 1985; Hamilton, 2000). Bell and Neumann (1997: 108) have also suggested that in the Severn Estuary, hillforts may have served as seasonal settlements when the lowlands were inaccessible due to flooding. As such, it is crucial to note the local context of these sites when interpreting them; a matter too often overlooked in the haste to fit them neatly into categories for general comparison.

Defence forms the "go-to" interpretation of hillforts. With their impressive earthworks, it is not difficult to see why. However, the evidence that they were used in active warfare is limited. Sling stones found at Maiden Castle and Danebury provide the most apparent evidence that they were attacked (Cunliffe, 2000b: 92-93; Sharples, 1991a: 111). The sling stones have been identified as such based on their size and uniformity, with the suggestion that they were purposefully selected as ideal projectiles. Aided by the natural topography and elaborate earthworks, defenders would have had a height advantage to launch projectiles against assailants, thus reducing the number of people able to charge the site and engage in close combat. Further evidence of warfare at hillforts may be found in the burial evidence (see Redfern, 2011 for evidence of trauma from conflict on Iron Age remains at Maiden Castle).

The earthworks, however, need not have been actively used in defence. Several papers have previously suggested that they may have been a sufficient deterrent to act as a passive means of defence (Harding, 2012: 198; O'Driscoll, 2017: 509; Sharples, 1991c: 88). Attacking a defended site such as a hillfort, whether a drawn-out siege or a quick attack, takes considerable effort and comes with a potentially high cost. Moreover, the practicalities may not have always been a sufficient deterrent. The control of labour, resources, and ability to devote them to the construction of these sites, in a time when people were still largely dependent on subsistence agriculture, demonstrates a substantial amount of power. Such aggrandizing monuments empowered the identity of the enclosed social space, reflecting status to the surrounding landscape (see Bowden and McOmish, 1987).

The latter two interpretations encompass all the other activities that may have occurred within these sites: industrial, commercial, administrative, religious, and social (see Cunliffe, 1994). Primarily, they focus on the concept of 'central places'. Coined by Walter Christaller (1933), 'Central Place Theory' suggests that settlements form 'central places' with a network of subsidiaries around them forming Theissen polygons, each subsidiary having its own network of satellites. While many elements of the theory are constantly debated (e.g. Collis, 1986; Ducke and Kroefges, 2008), the core principle of site hierarchies helps examine the function of sites and the centralisation of resources. The identification of such hierarchies, however, must be considerate of a wide range of factors. As Collis (1986: 37) has previously identified, sites may be ranked in terms of various criteria: administrative, legal, cultural or economic function, and population size, to name a few. Evidence suggests that hillforts would have ranked highly as central places for many of these functions.

Cunliffe (1990) has suggested that many of the hillforts in Wessex may have developed as focal points at significant points along earlier linear ditch systems. The construction of enclosures enhanced the demarcation of territory by the earlier monuments and emphasised these locales as central foci. As well as the commonality in their origins, Cunliffe (op. cit.: 330) acknowledges the variation among each site's later development and use-life. He suggests that the earlier ritual use of Danebury, pre-dating the Iron Age enclosure, may have been responsible for its continued use into the first century BCE (ibid.). These connections to earlier activity at the site suggest a longevity to social memory. Hillforts corresponding to this interpretation may symbolise perceptions of a shared identity between Iron Age communities and their predecessors or a desire to supplant and enforce their own identity and control of the landscape.

Excavations at hillforts have uncovered evidence for: four-post structures and pits used for grain storage; raw/scrap material, furnaces and slag associated with metalworking; ritual/ religious activity, such as temples or deliberate deposition; as well as long-distance trade, evident by the presence of non-local pottery and prestige goods. Excavations at Danebury have identified evidence for many of these. Cunliffe (1984b) suggested that Danebury was a focus for textile production and metalworking. Danebury provides valuable examples for many of these features and has enabled general discussions of the functions of hillforts. However, such analogies from the site must be used critically with recognition that the site does not represent many hillforts (Hill, 1996: 108). It is also unclear whether these characteristics are distinctly related to hillforts. Other contemporary settlement types also had sufficient grain storage capacity to feed their local population and allow surplus for trade (Fasham and Hawkes, 1985: 141). Whilst there is evidence at Danebury for the processing and storing of crops beyond the area that would reasonably have had direct dealings with the site (Jones, 1984), the lack of comparable evidence from other hillfort sites makes it unclear whether this represents a typical pattern. It is also uncertain what the exact implications are, whether they represent direct control of a greater area, trade or another as yet unexamined agency. Hill (1996) has also dissected Cunliffe's suggestion that Danebury functioned as a central place for textile production and metalworking, remarking that the evidence for such industry does not necessarily exceed that at non-hillfort sites. As such, the presence of such activities may not be considered part of the defining characteristics of hillforts, nonetheless they provide a useful illustration of their multi-faceted nature.

2.1.3 Focusing on the descriptive: terminology

In general, however, classifications of hillforts have been focused on descriptive criteria. This focus extends to the term 'hillfort' itself. As previously mentioned, this stems from early interpretations of these sites. It is misleading, however, to assume that all hillforts are situated on hills and have a defensive military function. There have been several attempts to introduce alternative, less weighted terminology. Forde-Johnston proposed 'defensive enclosures' or 'forts' in an attempt to encompass the diversity of sites with comparable features (Forde-Johnston, 1976: 3). These terms refer to sites enclosed by monumental earthworks but also recognise both those on hills and in low-lying positions. With both of Forde-Johnston's suggestions, there remains a focus on the defensive quality of the earthworks. Despite the tendency of archaeologists to shy away from focusing on this aspect due to processualist thought, earthworks remain one of the most prominent and defining features of these sites. Furthermore, whether the earthworks served as functional defences or were purely symbolic, they remain fundamentally defensive, providing an active boundary between the identity of the contents of the interior and site as a whole and the surrounding landscape (Harding, 2012: 6).

Alcock (2003: 179) proposed referring to these sites as 'enclosed places'. The term represents a much more neutral label than those suggested by Forde-Johnston but is too ambiguous to be an effective site category. The term reflects the importance of the earthworks as a feature of these sites but fails to give a practical representation of their scale. A sheep pen might be regarded as an enclosed space, but one would not compare it with the likes of Maiden Castle.

Terminology was also developed to categorise sites by the number of ditches and banks that form their earthworks, continuing the focus on defensive properties. Three terms have been applied: univallate, bivallate and multivallate (Harding, 2012: 11). The second is often incorporated into the latter. The terms derive from the Latin 'vallum' defined as 'a rampart; a wall, as in a fortification' (Webster's, 1913). Univallate forts describe earthworks consisting of a single bank or rampart and, in many instances, a corresponding, parallel ditch. Bivallate and multivallate denote those with two or more sets of banks and ditches, respectively, as the prefix indicates. In some cases, a univallate site also features a smaller counterscarp bank on the outer side of the ditch. However, absent the presence of a second ditch, this is typically too small to be regarded as bivallate (Forde-Johnston, 1976: 8).

2.1.4 Hillfort Chronology

The design of hillforts has also led to the development of chronological categorisations. Hillforts emerged at the end of the Bronze Age in response to societal change caused by changing agricultural practices and climate (Cunliffe, 1990; Campbell, 2022). Following their emergence, Cunliffe (2005) identified four main phases of their subsequent development: Earliest, Early, Middle and Late Iron Age sites. Descriptions of the nature of the sites within each phase and any societal links are shown in the table below (Table 1).

TABLE 2. CUNLIFFE'S FOUR PHASES OF HILLFORT DEVELOPMENT

earliest	large enclosures with light defences	lack of intensive occupation, sporadic use	
	or		
	small, strongly defended, typically multivallate enclosures	intensive occupation	
early	univallate, contour forts, typically around 5 ha, with two entrances on opposite sides		cultural uniformity
middle	abandonment of many sites and focus on fewer, multivallate enclosures	many developed from earlier univallate enclosures[3]	widespread cultural change
late	some abandonment, but also refurbishment of defences of many Middle Iron Age sites	increased internal occupation	possible response to Roman expansion
	emergence of oppida		

These phases, as with the other systems of categorisation applied to hillforts, are not exact. They reflect general trends specific to southern Britain, which continue to be acknowledged (Lock and Ralston, 2022: 395). However, this model remains regionally biased, dependent on pottery forms overall societal change and does not account for the nuances of the individual site. Sites can show differing chronologies for adopting material culture and settlement patterns (Fitzpatrick et al., 2008). For this reason, some writers have also adopted a two-fold division between an Earlier and Later Iron Age (Haselgrove and Pope, 2007 and Haselgrove and Moore, 2007a; Lock and Ralston, 2017 have also grouped sites between 800-400 BCE and 400 BCE- CE 50). This bipartite division better reflects the chronology for the majority of Britain and temperate Europe, including regions without a distinct Late Iron Age defined by oppida and wheel-made pottery (Haselgrove and Moore, 2007b: 2). As well as recognising regional differences, we must also acknowledge sites can be highly individualistic. Various factors can influence the development of these sites: their landscape, environment and climate; local social pressures, warfare, or population growth and decline; economic fluctuation and the availability of resources; and connection to exchange and transport

[3] Maiden Castle (Sharples, 1991b) and Danebury (Cunliffe, 1984a) are two examples of this. The development did not only involve the encircling of the current site with additional vallation; at Maiden Castle, the earthworks were extended substantially to the west to more than double the size of the original enclosure (Sharples, 1991b: 43-44).

networks. As such, it is difficult to determine the change in the function or need for hillforts. It is also prudent to distinguish the cultural differences across Britain in this period (Cunliffe, 2005). The development of hillforts and Iron Age societies across Britain is not uniform.

This critical review does not intend to refute the validity of these phases as a means to group hillforts. This chronological framework provides a valuable means by which we can observe social changes reflected in the development of sites (see discussion in Haselgrove and Pope, 2007 and Haselgrove and Moore, 2007a). Whether through the traditional quad/tripartite division of the Iron Age or the alternative bipartite model, we see a transition from less complex hillforts to fewer, more elaborate ones. It is also essential to recognise that while these chronological distinctions are valuable tools for identifying and communicating changes, they are a product of archaeological investigation. They do not necessarily mark an immediate change that would have been recognisable to those living through it. The transitions between periods represent a series of separate and less tangible micro-events that change society rather than a single catalytic event (Hill, 2007; Moore, 2007a; Moore, 2007b: 47).

2.1.5 Descriptive classification: topographical location

Despite these other divisions, the most common categorisation of hillforts is based on topographical criteria. These categories describe how the enclosure is situated to take advantage of the natural topography. A sample of the various attempts to classify these characteristics can be found in the table below (Table 2). Whilst there is some variation in the terminology, there is still an appreciable uniformity between them.

TABLE 3. HILLFORT 'TYPES' BASED UPON TOPOGRAPHICAL LOCATION

(Forde-Johnston, 1976)	**(Avery, 1976)**	**(Dyer, 1981)**	**(Lock and Ralston, 2017)**
Hill-top Fort	Contour Fort	Contour Fort	Contour Fort
Promontory Fort	Promontory Fort	Promontory Fort	Partial Contour Fort
Hill-slope Fort	Hill-slope Fort	Hill-slope Fort	Promontory Fort
Cliff-edge Fort	Plateau Fort	Plateau Fort	Hill-slope Fort
Ridge-top Fort	Cliff-edge Fort	Valley Fort	Level Terrain Fort
Low-lying Fort	Ridge Fort		Marsh Fort
	Valley Fort		

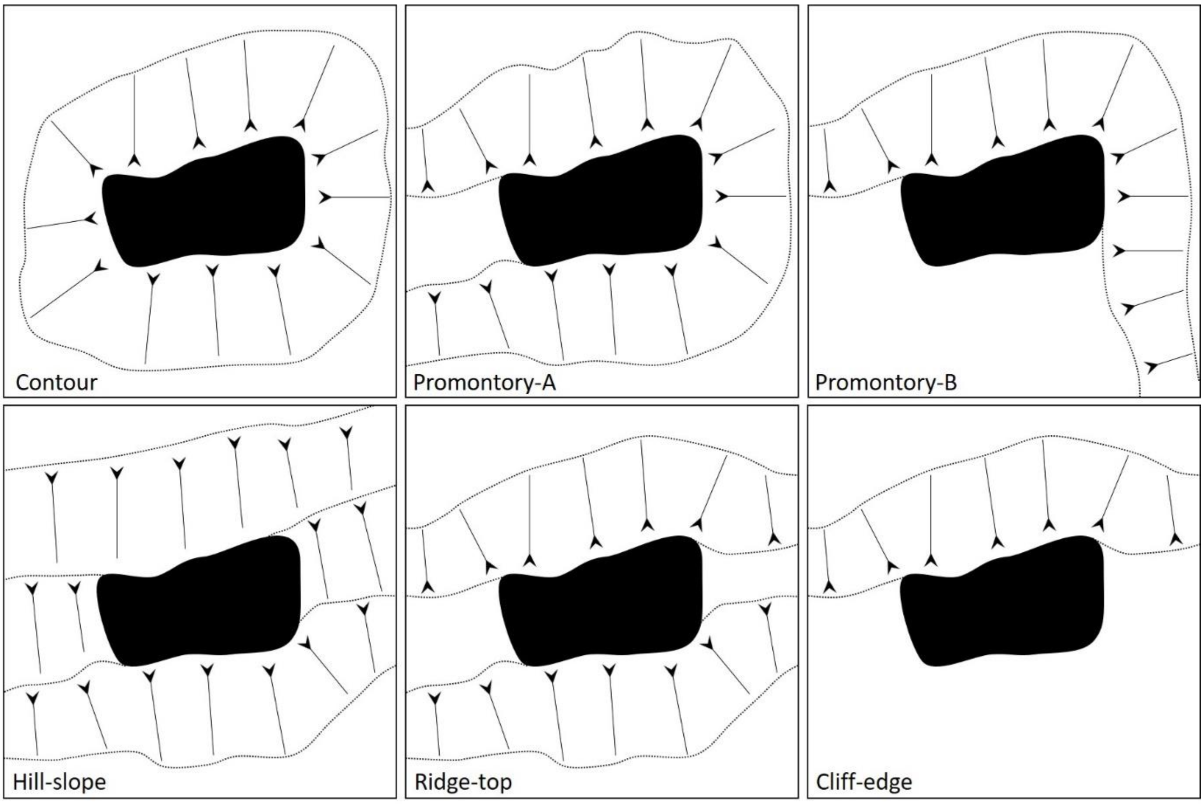


FIGURE 3. DIAGRAMS SHOWING DIFFERENT TYPES OF HILLFORTS BASED UPON TOPOGRAPHICAL LOCATIONS (ADAPTED FROM FORDE-JOHNSTON, 1976: FIGURE 19).

The latter forms the category of 'Hillfort Type' within the Atlas of Hillforts and demonstrates this descriptive criterion's continuing prevalence.

These slightly different terms can be summarised into six categories: (a) contour forts, (b) promontory forts, (c) hill-slope forts, (d) ridge-top forts and (e) cliff-edge forts, and (f) level terrain forts. (See Figure 3 for diagrams of categories a to e).

(a) Contour forts, sometimes described as hill-top forts, are situated to enclose the summit of a hill, with earthworks often following the natural contours around it. The ground slopes downwards in all directions.

(b) Promontory forts are similarly constructed on hilltops. In contrast with contour forts, however, the ground only slopes down on two or three sides, relying on constructed earthworks as a boundary to the approach on the level.

(c) Hill-slope forts, as the name suggests, are not on the hilltop but on its side, overlooked by the crest. Because of this, it would not have been able to function as well in a defensive capacity; however, it would have emphasised directional visibility.

(d) Ridge-top forts enclose an area with relatively easy access on two opposite sides. Entrances are not always on both approaches, however.

(e) Cliff-edge forts and plateau-edge forts, as a category, sit between promontory forts and plateau forts, with easy access on three sides and utilising natural topography only on one side.

(f) Level terrain forts are situated on level ground with no topographic advantage over the immediate surrounding landscape. This category includes those on plateaus and in low-lying locations.

The focus on topography is founded in traditional militaristic interpretations of these sites as well as concepts of visibility, power and control.

By constructing these sites on hills, the users[4] utilise the topography as an additional form of 'defence'. This does not imply defence in the sense of militaristic endeavour but rather as a manifestation of a boundary, whether active or passive/symbolic. The separation of the site from its surroundings enforces a separate identity upon it. Brestel (2015) comments, of the later Iron Age site at Manching[5], that creating boundaries enforces notions of social inclusion and exclusion. Whilst Brestel uses this to examine the cultural and ethnic differences of the population at a time of increased interconnectivity through trade, the concept may be readily applied to more local contexts. The separation of sites through boundaries is not only physical but symbolic. It indicates that the content of the inside is different and worth separating from the outside. The division of social space may have materialised in the form of structures or taken the form of activities, with little to no archaeological trace. While boundaries, in the form of earthworks or

[4] The use of the term 'users' instead of, for example, 'occupants' is done so deliberately to reflect that not all of these sites contained settlements. Where there is evidence for occupation, it also lends itself to include visitors to the site who do not necessarily occupy its interior on a permanent basis.

[5] Manching is classified as an 'oppida'. Oppida differ slightly from hillforts. There is some ambiguity in the use of the term, in France it is used interchangeably with 'hillfort', while in Britain and Germany it tends to refer to larger, often low-lying enclosures (Collis, 1984: 6; Historic England, 2018b). The earthworks of Manching are morphologically similar to those of hillforts and so Brestel's discussion can be equally applied.

other structures, may create enclosed spaces in level terrains, the location upon hilltops amplifies their separation. They are in areas separate from the majority of human activity. Most hilltops are unsuitable for ploughing and are not near water sources, whether for sustenance or transport; they do not suit most everyday activities. As such, they offer a greater sense of exclusion.

Not all hillforts occupy the tops of hills, however. Hillslope forts, located on the side of hills, are overlooked by the crest of the hill. As previously mentioned, it has been suggested that this may have been designed to create a sense of directional visibility (Murray, 2018). Viewed from afar, the interior of some sites would have been visible, almost in plan (op. cit.: 218). This perspective would have allowed for greater visibility towards the area of landscape it faced. Conversely, it would have restricted the arc of intervisibility from and to the site; people on the other side of the hill may not have been able to see it. Three possible interpretations may be drawn from this:

1. The directional visibility enforced the enclosure's control over a particular landscape, i.e. it faced what it controlled.
2. Unlike other sites, which would have had any view restricted by earthworks or other upstanding boundary structures, the interior would have been visible from the facing landscape. As such, the site may have served as a stage for ceremonial and religious activity. The increased visibility would have enabled a sense of cultural dominance, highlighting it to any onlookers. It would have acted as a social beacon in the landscape[6], in contradiction to the exclusive interior identity of other categories of hillfort.
3. The site is less likely to have been defensive. Its situation does not follow the same logic that led to the militaristic interpretations of hillforts. Overlooked by the summit of the hill, it would have enabled attackers to launch projectiles at the interior, thereby eliminating the advantage of defenders afforded by the earthworks. Similarly, the downslope from the crest would have played to the advantage of any foot component of an attacking force, meaning they would be less tired than if they had had to charge up an incline.

[6] A term coined by (Brown, 2009).

Directional visibility is not solely a characteristic of hillslope forts, however. Some contour forts, such as Moel Fenlli in Denbighshire and Penycloddiau in Flintshire, dip considerably in altitude from one side of the enclosure to the other, appearing to tilt in a particular direction (Brown, 2009: 8). This may relate to a defined territory, fertile land and a neighbouring hillfort and access route in the case of each, respectively (ibid.). These examples highlight that the topographic categories are not exclusive, raising questions about the usefulness of this classificatory system.

The first two of these points focus on visibility. Visibility of and from hillforts likely played a crucial role in their relationship with their surrounding landscape. However, low-lying forts appear to be an exception to this conclusion. It suggests that an alternative interpretation is required for low-lying sites. Many low-lying sites have close ties with watercourses or wetlands and may have been situated to occupy these positions of strategic or alternate importance (Brown, 2009). Rivers formed important parts of the prehistoric landscape, acting as highways and boundaries (Haughey, 2013). The location of enclosures near rivers allowed for control of movement along and across them. Harding (2012: 16) has also suggested that rivers could be used as a labour-saving technique, as at Dyke Hills in Dorchester-on-Thames, where earthworks cut off a bend in the river.

Among the low-lying examples of hillforts, Historic England (2018a) mentions one of the more extreme as 'marsh-forts'.

2.2 Marsh-forts

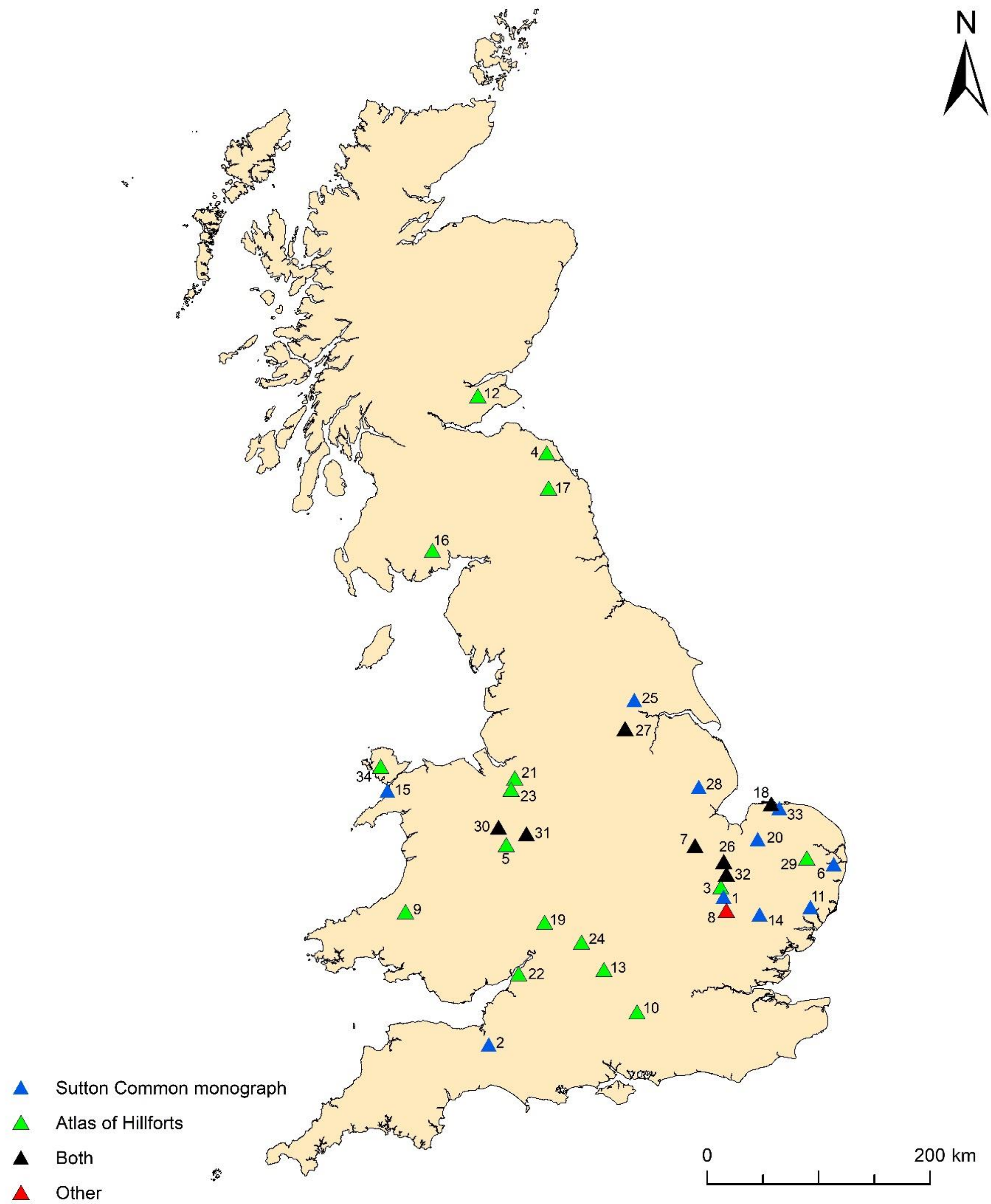
Marsh-forts were first introduced as a site category following the publication of the excavations at Sutton Common in Yorkshire by the Universities of Exeter and Hull (Van de Noort et al., 2007). The term 'marsh-fort' is defined in the Sutton Common monograph as 'a large, enclosed Iron Age site… situated within a wetland context' (Van de Noort et al., 2007: 1). This simple, descriptive terminology is consistent with the pre-existing system used to categorise hillforts.

Still in its infancy, only three main sources of published literature on the subject exist. The monograph above on Sutton Common introduces the subject through analysis of the titular, now archetypal, example

(Van de Noort et al., 2007). A brief sub-chapter by Fletcher (2007) explores the national context and presents the first list of comparable sites in England and Wales that may fit this category. In total, it lists seventeen sites, including Sutton Common. With most of the monograph focusing on the site itself, the brief gazetteer provides more of a list of sites as a suggestion for future work than a substantiated synthesis of the marsh-fort category. As such, it largely conforms to the traditional descriptive style of hillfort categories, focused on topographic location. This approach is adapted from topography to geology and applied following loose criteria for wetland near the prospective sites.

The second is the recent Atlas of Hillforts (Lock and Ralston, 2017). This online GIS-based database of hillforts in Britain and Ireland includes 'marsh-forts' among its list of hillfort typologies. The database lists twenty-three sites within this category. Eleven of these sites were also assigned an additional typology (5, also Level Terrain Fort; 3, also Promontory Fort; 1, of each Contour, Partial Contour and Hillslope Forts - Lock and Ralston, 2017; see Section 6.3.4 and Appendix 6). As a database rather than written literature, this gazetteer focuses on description rather than interpretation. It is understandable, therefore, that it has remained consistent with the established terminology, similar to Fletcher (2007).

The two gazetteers produced by Fletcher and the Atlas of Hillforts project have some overlap. Seven sites appear in both. Across the two lists, however, thirty-three sites are categorised as 'marsh-forts'. The shared sites represent just 21% of the potential marsh-forts across these two lists. The overwhelming differences highlight the issues with the current terminology and its application. A complete list of the sites can be seen in Appendix 1 and Figure 4. One additional site has since been added, Borough Hill, following personal communication with Fletcher (2020).



1. Arbury Camp
2. Athelney
3. Belsars Hill
4. Billie Mains
5. Bomere Wood
6. Boney's Island
7. Borough Fen
8. Borough Hill
9. Bryn Maen Caerau
10. Bullsdown Camp
11. Burgh
12. Cash Mill
13. Cherbury Camp
14. Clare Camp
15. Dinas Dinlle
16. Green Island
17. Hetha Burn West
18. Holkham
19. Island Covert
20. Narborough Camp
21. Oakmere
22. Oldbury Camp
23. Peckforton Mere
24. Salmonsbury Camp
25. Skipwith
26. Stonea Camp
27. Sutton Common
28. Tattershall Thorpe
29. Tharston
30. The Berth
31. Wall Camp
32. Wardy Hill
33. Warham
34. Y Werthyr

FIGURE 4. MAP OF SITES CURRENTLY CATEGORISED AS 'MARSH-FORTS'.

The latter and most recent publication is Norton's (2019a;b, 2021) PhD thesis, ' Assessing Iron Age Marsh-forts'. Norton (2021: 156) makes two conclusions about the nature of marsh-forts; that they are:

"

1. *Middle-Late Iron Age monumental structures defined by their wetland locations, which exercised control – ceremonial, ritual, territorial and possibly economic - over the surrounding waterscape, often as the largest fortification for many miles.*

2. *fulfilling a community function as places where a range of socially cohesive activities were enacted, from the gathering of stock to the curation of human remains to the deposition of treasured goods, possibly acting as a bridge between depositionary sites and ritual enclosures*

"

Norton's analysis of the marsh-fort category encompasses a detailed examination of the Berth in Shropshire and, more broadly, a regional study of the marsh-fort sites in the Welsh Marches. It provides some beneficial analysis, which, as previously mentioned, is much needed in this currently under-researched field. Norton's research, however, follows the same type of inductive reasoning common in hillfort studies. While excavations of multiple hillforts over the last few decades have expanded our knowledge of these sites, this knowledge continues to be built on inherent 'truths' stemming from work at a small sample of sites such as Maiden Castle and Danebury. The work at these sites, primarily in southern Britain, is disproportionately represented in hillfort literature and forms the basis for the characteristics used to define the rest of the classification. Whilst the information gained from the excavation of these sites is irrefutably significant to our understanding, it is crucial to recognise that they are not representative of the full diversity of hillforts. Norton's examination of 'marsh-forts' adopts Sutton Common, the first acknowledged site of the marsh-fort category, as *de facto* and continues a pattern of over-reliance on a small sample for comparative studies, in this case, just one site (cf. Fletcher, 2022). As such, the conclusions appear almost vague. Aside from the reference to waterscapes, a term which infers dubious assertions in itself, it becomes difficult to see how these defining characteristics differ from hillforts more generally. By using inductive reasoning, Norton risks 'stretching the data' and establishing a generalisation that does not reflect the full character of these sites (Gero, 2007: 321). This is not to say that the classification of Sutton Common as a marsh-fort is false, but that a dependence on it risks establishing a pattern of scholarship which is so focused that it becomes blinkered to outlying data and interpretations (Boozer, 2015: 97; Gero, 2007: 321-322).

In the discussion of Oldbury Camp, Casswell et al. (2018: 28) suggest that comparable with the use of the term 'hillfort', the labelling of sites as 'marsh-forts' too 'takes something away from our greater understanding of how it would have interacted in the wider landscape'. This critical review highlights the shortcomings of the current application of the term. The current definition of marsh-forts conforms to traditional hillfort typologies, defined by their topographic situation, e.g. contour or promontory forts. They are purely descriptive, falling into a 'tick-box' classification style: are there earthworks? is it in wetland? If these two simple criteria are met, sites may be considered a marsh-fort with little further critical interrogation. Whilst these criteria are helpful in comparing morphological features between sites, they offer little more in expanding our understanding of sites.

In addition to the publications above, an empirical approach has recently been applied to a small selection of the sites regarded as 'marsh-forts' (Reeves, 2018). Geographic Information System (GIS) software created two-dimensional plans for these sites, modelling their earthworks, topography, and wetland environment to visualise their relationships. From this, it was possible to determine patterns among the various sites categorised as marsh-forts. Two distinct categories were hypothesised. These were 'marsh-forts' and 'forts in marshes'. The latter exhibits a relationship between the wetland and the enclosures, similar to promontory forts or other traditional categories of hillfort; the wetland provides a natural obstacle to access, similar to hillslope. However, the new category of 'marsh-forts' has a more nuanced set of characteristics. The sites proposed within this all appear to exhibit grand entrances facing the wetland, with a smaller entrance on the side of most accessible access from the 'dryland'. It is this hypothesis that forms the basis of this thesis.

2.3 Comparable Wetland Sites

2.3.1 European Comparisons

The application of the term 'marsh-fort' has so far been restricted to British sites. This is one of the many challenges in its current use. A more widespread understanding of the terminology and its application for heritage classification will enable it to be used more widely. Like hillforts, there is considerable potential for marsh-forts to be identified across temperate Europe. Possible candidates are Borremose and Lyngsmose in Denmark. Borremose has been termed a stronghold (Martens, 1994) and a fortified settlement (Martens, 2010). The site consists of an Iron Age earthwork enclosure of 1.1ha, located on a low-lying island within fen (now raised bog; Martens, 2007: 89-93). The enclosure was densely settled, with over thirty structures across multiple phases (Martens, 1994). The wetland would have formed a considerable obstacle to access with the later phase raised causeway proving a testament to the expansion and wetness of the fen. Martens (ibid.) concludes that the site is likely a fortified village, dating from the fourth to second centuries BCE, functioning as a ‘central place’ within a hierarchy of settlements in the region. The location of Borremose is also significant, however, as the location for three bog bodies, two dating to around 700 BCE and one to around 400 BCE (Coles and Coles, 1989: 185; though Martens, 1994: 268 has suggested there were up to five). Furthermore, the Gundestrup Cauldron was deposited in a position overlooking the enclosure and locations of the bog bodies, which among other evidence for wetland deposition, suggests a highly interconnected ritualised landscape (Coles and Coles, 1989: 195-197; Martens, 1994: 264-269).

Lyngsmose provides another possible but somewhat different example. The site covered an area of 0.37ha and consisted of a settlement of up to fifteen farmhouses and two outbuildings, which were later enclosed by a bank and ditch (Martens, 2007: 93-94). The site is on flat land, built on sands within an old lake basin. While these sands ensured the enclosed area was well-drained, a high groundwater level meant it was surrounded by a wet environment (Eriksen and Rindel, 2003: 123). In contrast to Borremose, Martens (2007: 94) has noted an absence of ritualised activity and suggests the importance of Lyngmose within its landscape lies in its strategic position in relation to the Hover River. Though the term ‘marsh-fort’ has not been applied to these two sites, taking the traditional descriptive requirements of enclosure and wetland location, they would appear suitable candidates. However, the differences between the two also highlights a common theme observed in categorisation of British marsh-forts: differences in function and in the nature of the wetland landscape.

2.3.2 Lake villages and other settlements

Beyond earthwork enclosures, later prehistoric wetlands were also host to other settlement types. Archaeological sites with evidence of wetland activity and habitation have been found from the later Bronze Age, notably Flag Fen, a wooden causeway (Pryor, 2001) and Must Farm, a pile-dwelling (Knight et al., 2019). These two remarkably preserved sites demonstrate Late Bronze Age perceptions of wetlands as both ritual and domestic landscapes. It also suggests possible Bronze Age origins for the belief systems and reasoning which led to the development of the marsh-forts (comparable with the development of hillforts – Campbell, 2022).

There have also been alternative types of wetland settlement contemporary to the development of marsh-forts. These have been termed Lake Villages, Crannogs or Island Duns. In the south-west of England, one of the most notable of these is the Glastonbury Lake Village. The site was likely occupied from 210-150 cal BC to 80-20 cal BC (95% probability – Marshall et al., 2020), and spanned four phases (Coles and Minnitt, 1995). The Lake Village consisted of a settlement of about 15 roundhouses and 200 inhabitants at its maximum extent (there are 40 roundhouses across all phases; Coles and Minnitt, 1995: 198-206; Brunning, 2013: 175-176), built on an artificial island constructed of an earth and stone filled timber structure within a freshwater wetland environment (see Coles and Minnitt, 1995; Hill et al., 2018).

The Meare Lake Villages (East and West) which are also located in the south-west of England are one other example. These differ somewhat from Glastonbury in that they are built on two humps of raised bog, surrounded by wet reed swamp, but in close proximity to dryland (Brunning, 2013: 160; Coles, 1987: 44). Brunning (2013: 161) notes that unlike Glastonbury, the Meare Lake Villages are conspicuous for the absence of houses and suggests that evidence for flooding indicates the sites may have been settled seasonally.

Such structures are not limited to the wetlands of south-west England. Crannogs are defined as artificial islands typically occupied by domestic structures (Henderson, 1998; Crone, 1994). Such sites are particularly prevalent across Scotland and Ireland (Cavers, 2010; Henderson and Sands, 2013). Attempts to define crannogs faces much the same challenges as marsh-forts: a catch-all term encompassing a variety of architecture, landscape settings and functions (Henderson, 1998: 235-240).

As the climate turned generally wetter in the Iron Age, human interaction in Britain continued, though some regional variations occurred. Menotti (2012: 53) reflects a general hiatus in construction in the Somerset Levels during the Early Iron Age was contrasted by continued widespread development of settlements in the Fenland (cf. Coles and Hall, 1998). The wooden trackways, pile-dwellings, lake villages and crannogs which are found across Britain and continental Europe demonstrate the breadth of activity within Iron Age wetlands. The sites mentioned here reflect only a small sample of sites which have had the most impact within archaeological literature, however, they serve to show how marsh-forts fit within a complex system of sites. Despite this, marsh-forts remain distinctive. While many of the sites mentioned feature raised timber structures, marsh-forts are conspicuous in their use of earthworks.

2.3.3 Debating established narratives for hillforts with wetland surroundings

As mentioned in Section 2.2, the classification of 'marsh-fort' is still in its infancy and a lack of clarity in its definition has resulted in inconsistencies in its application. However, there are other challenges which have influenced its application. The term has often been applied to sites which do not seem to fit so easily into other categories but has also been applied to sites which do fit the traditional criteria of hillforts (Section 2.2 lists where some have dual classifications in the Atlas of Hillforts). The application of the term to pre-defined hillforts, however, is inconsistent. In its traditional descriptive form, 'marsh-forts' has been applied to any site in proximity to a wetland environment. This has included sites such as Bullsdown Camp which suit a more traditional view of hillforts but has been categorised as a marsh-fort due to its proximity to a river (Lock and Ralston, 2017; see Section 4.2.11). This creates an obvious issue. Many hillforts were intentionally located in proximity to rivers, either for transport, defence or purely to access water needed to sustain a population. Maiden Castle, Dorset, is located next to the South Winterborne river with alluvial deposits across the valley. The decision to define some sites as marsh-forts on these grounds, while not applying it to all, highlights a lack of understanding of the term and the inconsistency with which it has been applied. It also possibly demonstrates the difficulties in establishing new terminology where traditional categories are entrenched.

2.4 Concluding remarks

Two outstanding debates emerge from the previous literature on hillforts, which also reflect the current state of marsh-fort studies. Firstly, despite work by archaeologists such as Cunliffe to interpret hillforts and their functions, the primary classificatory system remains descriptive. The focus is still on the topographic location of these sites, which has limited usefulness to our understanding. They represent a modern perspective that has no definitive correlation to the way in which the users of these sites viewed or interacted with them. This is also true of the current use of the term 'marsh-fort', which is used to refer simply to the wetland situation with little scope beyond assessing their distinct characteristics.

Secondly, there is a tendency to use inductive reasoning to interpret hillforts. This has been demonstrated by the extrapolation of theories based on a small sample of sites: Danebury and Maiden Castle in the case of hillforts and Sutton Common in the case of marsh-forts, more specifically. Within archaeology, a delicate balancing act exists between the limited availability of data and the demand of the field to draw general interpretations. Yet, it is important to recognise the risk posed to our long-term understanding of these sites by hasty generalisations.

This project aims to address these two debates. It aims to create a more nuanced understanding of these sites by using deductive reasoning based on the recognition and analysis of patterns across all recognised marsh-forts in Britain. The subsequent results will help examine whether the current classificatory system is still appropriate, which may result in considerable implications for hillfort studies, more broadly. A new framework for the study of marsh-forts will be developed, which may act as a proof of application for future work.

3. Methodology

3.1 Site Selection and Scope

3.1.1 Preliminary Gazetteer

As a starting point for the study of marsh-forts, this project identified the need to compile a gazetteer of potential sites. This objective could be achieved by compiling sites currently referred to as 'marsh-forts' or reviewing the UK's entire historic environment record to identify potential sites. Given the scope of this research within a limited duration PhD, the first methodology was selected. This method also provided the additional advantage of enabling this work to directly address the theoretical objective of this thesis, which is to explore patterns of commonality as the basis of classificatory frameworks. While not exhaustive, this aims to test the feasibility of this approach and form a platform for integrating other sites into a model less dependent on a 'type-site bias'. The gazetteer compiled during this project draws upon those formed in the Sutton Common monograph (Fletcher, 2007), the Atlas of Hillforts (Lock and Ralston, 2017) and personal communication with the author of the former (Borough Hill - Fletcher, 2020).

These sites are primarily situated within the following wetland landscapes:

Table 4. Regional Wetlands in Britain.

Broadlands	The Broadland Estuary is located in the central-eastern edge of East Anglia, stretching from near Norwich to the sea at Great Yarmouth. It features both freshwater and marine wetland environments and would have comprised a largely flooded environment hosting a series of islands (Hutcheson, 2004: 3; Williamson, 1993: 13). This area formed when rising sea levels created a great estuary in the Broads during the late Neolithic, which was later cut off by a sand and shingle spit across the mouth of the estuary creating more stable wetland conditions behind it (Coles and Funnell, 1981). In the Iron Age, this estuary was fed by what are now the Broadland rivers, including the Rivers Bure, Waveney and Yare, among other tributaries.

Fens	The Fens are an area of wetland across Cambridgeshire, Norfolk and Lincolnshire. This area was a much different environment in the Iron Age than today. Prior to the widespread drainage of the seventeenth and eighteenth centuries to enable arable farming, much of the landscape was flooded or heavily saturated, with islands providing space for human activity (Hutcheson, 2004: 3; Wiltshire and Murphy, 1999: 135, 139-140; Sylvester, 1988: 4-5). Hutcheson (2004: 3) divides Norfolk into eight landscape regions. Using Sylvester (1988: 2), she distinguishes between the Salt Fen, or Marshland to the north, formed by a low-energy marine environment, and the Black or Peat Fen to the south, formed by freshwater deposits.
Humber	The Humber Wetlands is an area encompassing large swathes of Yorkshire and the Humber and parts of the East Midlands, predominantly stretching into the rest of Lincolnshire. This area is focused on the Humber and the rivers which feed it: the Aire, Ouse, Don and Trent, to name a few of its larger tributaries. The grouping of this area under one name, however, is relatively recent, with the term only becoming widespread with the advent of the Humber Wetlands Project (Van de Noort, 2004: 1-3). It is used as a broader term for several areas of wetland ranging from the Humber estuary to lakes, meres and mires, and the coastal wetlands (Van de Noort, 2004: 3). The term has been used here for convenience to describe this region of wider wetland, though more specific regions have been used in relation to each of the relevant case studies. As with other areas of wetland, much of this landscape has been dramatically transformed in more recent centuries by large-scale drainage and reclamation projects.
North Welsh Marches	This term has been adopted to refer to wetlands in the areas in and around Shropshire and Cheshire at the northern end of the English-Welsh border. As with the Humber Wetlands, the term describes a regional area encompassing a wide range of wetlands.

	This area ranges from the Mid-Shropshire Wetlands, Weald Moors and various other meres of Shropshire (see Leah et al., 1998) to the meres and Mid-Cheshire Ridge Wetlands of Cheshire (see Leah et al., 1997).
Somerset Levels	The Somerset Levels comprise an area of wetland located between the Mendips and the Blackdown Hills. As with the Fens, it comprises two main types of wetland: the levels along the coast, formed by marine deposited clays; and the moors, further inland, comprising peat-deposits which have developed since the melting of ice sheets in the Quaternary period (Natural England, 2022; Kidson and Heyworth, 1976; Allen, 2000). This area has considerably transformed since the Medieval period, with the straightening of rivers and the construction of drainage channels to transform the landscape into agricultural land.

3.1.2 Scope

Marsh-forts appear to be a distinctly British phenomenon. The term has hitherto only been applied to sites in England, Wales and Scotland (Van de Noort et al., 2007; Lock and Ralston, 2017; Norton, 2021). Geographical requirements may partly influence this – Britain has substantially more wetlands than continental Europe – however, one should not overlook the importance of shared culture.

The Scottish Iron Age has been described as following its own societal framework (Harding, 2006, 2017; Haselgrove et al., 2001), and as such, it has been excluded from previous studies (Norton, 2021). The three sites identified as marsh-forts in Scotland, all exclusively by the Atlas of Hillforts, are located in southern Scotland (Lock and Ralston, 2017; see also Figure 3). This area has more topographical similarity with northern England and reflects cultural ideas corresponding to types of landscape in a time pre-dating the formation of current country boundaries.

While it may seem contradictory to my earlier comments regarding generalisations formed on the basis of a small sample, the scope of this study will only allow for the consideration of sites previously defined as 'marsh-forts'. It is my hope, however, that this offers a more comprehensive study and analysis than earlier attempts, which have focused on criteria derived from a single site (e.g. Norton, 2021). Under ideal conditions, one would examine all 3000+ hillforts, lest any be previously miscategorised, as well as any other discovered enclosure of Iron Age or unknown date within the UK. Even in that scenario, however, it would only cover those which have survived and been discovered, which creates its own bias within the sample. This may be compared with an issue first raised in the survival of dolmens.

Survivorship Bias

Survivorship bias, a form of sampling/selection bias, refers to how the limited survival of particular sites impacts our interpretations. The survival of these sites is affected by multiple other factors. As a result, this can skew interpretations, particularly within discussions of site types.

Before discussing how this impacts marsh-forts, Fleming's (1999) response to Tilley's (1994) phenomenological discussion of dolmens is worth mentioning. Although it forms a relatively small part of his paper, Fleming succinctly demonstrates how survivorship bias, or in his terms, 'the problem of differential site destruction', impacts Tilley's analysis. Fleming (1999: 120) identifies three causes for this in relation to the dolmens: monuments are more likely to be removed or destroyed to facilitate alternative use of the land where land is perceived to be more valuable; the proximity of small quarries and rocky outcrops nearby, reducing the chance of megalithic monuments being dismantled for their stone; and their location on common or private land relating to senses of ownership over the monuments and creating a desire to preserve them or neglect/dismantle them, respectively. Citing previous gazetteers of dolmens in Tilley's study region (e.g. Daniel, 1950), he highlights that many have been lost. As a result, Tilley's interpretations of the landscape are limited to the surviving few and do not represent the additional complexity of the original historic landscape.

Marsh-forts are typically located in low-lying, relatively flat areas by nature of their geological criteria and irrespective of the nuance of the sites discussed in this thesis. In addition, the wetland deposition in their locale often forms rich organic soils popular with arable farmers, historically and in modern times. As a result, they are more prone to destruction than their upland counterparts (hillforts). Moreover, the transformative nature of alluvial environments has also been credited with impacting the preservation of sites. This has been linked to both erosion by channel movement and deposition burying sites (Brown, 1997: 280). It is possible, if not probable, that such a bias will impact this study, which hopes to address the nature of marsh-forts. A complete examination of the specific factors likely to affect the preservation of such sites has not been carried out within the scope of this research. Nonetheless, it is prudent to acknowledge how this may impact overall interpretations. As a result, contingent avenues of research, such as distribution analysis, will not be explored.

Palaeoenvironmental Factors

TABLE 5. DIFFERING BIODIVERSITY IN WETLANDS (AFTER VAN DE NOORT AND O'SULLIVAN, 2006: 37)

	Biogenic wetland	**Minerogenic wetland**
	 FIGURE 5. WHIXALL MOSS (AUTHOR'S).	 FIGURE 6. HOLKHAM NNR (AUTHOR'S).
Examples	blanket bogs and raised mires	floodplains, fens, salt marshes
Formation Process	peat accumulation	silts and clay accumulation
Biodiversity	low biomass and biodiversity	greater productivity and biodiversity

As will be discussed further in Section 3.1.3, wetlands are incredibly varied. Previous archaeological discussions have highlighted how different types of wetlands are likely to have been impacted by the activities that took place in them. Van de Noort and O'Sullivan (2006: 37) have noted the distinction between biogenic and minerogenic wetlands (Table 5). While biogenic wetlands may not have been as rich however, they still had value for material resources, hunting, grazing, etc. (op. cit.: 61). Despite this, traditional discussions have tended to focus on the minerogenic wetlands with their rich resources (e.g. Hutcheson, 2004: 3, 4; Lane, 1988).

Due to this thesis's limited timeframe and scope, a detailed examination of the palaeoenvironment of the sites discussed was not carried out. Instead, it is hoped that this thesis will serve as a foundation for future, more intensive analyses of the landscapes, which will further extrapolate the nuances of the sites and their landscapes.

3.1.3 Investigating and Defining Wetlands

Identifying wetlands forms a significant part of this research. It directly ties into the second objective set out in Section 1.3. Wetland deposits and their relationship with the architecture of potential marsh-fort enclosures play a key role in determining the function of these sites and ultimately establishing their categorisation. To achieve this, it is first essential to confirm whether wetland was present. This first requires us to define wetland.

The Ramsar Convention on Wetlands, established to conserve and manage the sustainable use of such environments, defines wetlands as:

"

> *areas of marsh, fen, peatland or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, including areas of marine water the depth of which at low tide does not exceed six metres*

"

(Ramsar, 1971: Article 1.1)

The Convention recognises five main types of wetlands (Ramsar, 2016: 9).

TABLE 6. TYPES OF WETLAND, AFTER RAMSAR CONVENTION.

Type	Description
Marine	Coastal wetlands, including coastal lagoons, rocky shores, seagrass beds and coral reefs
Estuarine	Including deltas, tidal marshes and mudflats, and mangrove swamps
Lacustrine	Wetlands associated with lakes
Riverine	Wetlands along rivers and streams
Palustrine	"Marshy" environments, e.g. marshes, swamps and bogs

Gearey and Chapman (2023: Table 1.1) define wetland more simply as 'land with water-table at or close to the surface, for most of the time'. They include peatlands in this definition, as is the subject of their book, but also identify other 'ecosystems on mineral substrates, shallow and flowing waters' as wetlands (ibid.). Other studies have similarly attempted to define wetlands (e.g. Van de Noort and O'Sullivan, 2006: 33-39; Menotti and O'Sullivan, 2013: 1-2; Treadway, 2023: 7-11). These definitions share a common focus on flooded or saturated landscapes, either permanent or seasonal, which host very particular ecosystems. It is easy to view them as marginal, neither water nor dryland, but this overlooks the value of these landscapes, both culturally and ecologically (see Van de Noort and O'Sullivan, 2006: 33 for the former). Instead of defining them by what they are not, it is vital for this study to assign them their own identity. Only through this can we develop our understanding of the landscapes and the sites, people and ecosystems that inhabit them.

For the purpose of this study, six main types of wetland environments have been identified to act as criteria for the landscape aspect of marsh-forts (Table 7). These build upon the types previously referenced in the Ramsar handbook (2016: 9), excluding coastal wetlands, which were not relevant to this study. These form a broad summary of the 'types' of wetland pertinent to this study and aid in applying the 'wetland' criterion to each of the thirty-four sites investigated. It is notable that similar work to break down types of wetlands to facilitate archaeological research within these contexts has been carried out in other recent publications (Treadway, 2023).

TABLE 7. WETLAND ENVIRONMENTS INCLUDED IN THIS STUDY.

Type	Description	
Watercourses	Rivers and streams. Channels of flowing water fed by or into another body of water ('watercourse' - OED, 2023; 'stream' - OED, 2024b).	
Floodplains	Flat landscapes prone to flooding from an adjacent watercourse overflow, formed by both erosional and depositional processes (Brown, 1997: 17).	includes other seasonally or infrequently flooded landscapes, e.g. wet woodlands or grasslands (Treadway, 2023: Table 2.3)
Lakes	Large bodies of standing water enclosed by land (OED, 2024a).	also referred to as: *mere; pool*

Estuaries	'A semi-enclosed coastal body of water which has a free connection with the open sea and within which sea water is measurably diluted with fresh water derived from land drainage' (Pritchard, 1967: 3), subjected to two daily tides (Elliott and McLusky, 2002: 817).	
Saltmarsh	Coastal wetlands covered by halophytic vegetation which is regularly flooded by seawater (see Rippon, 2000: 14-16).	
Peatlands	Areas of peat (see Table 6). More recently, Gearey and Chapman (2023: Table 1.1) have provided a more precise definition: 'an ecosystem with in excess of 30-40cm of peat. Also includes areas of organic soils where peat accumulation processes no longer operate (i.e. due to drainage).'	also referred to as (Gearey and Chapman, 2023: Table 1.1): *bog – 'a general term for peatland';* *mire* – 'an area of waterlogged ground, with active peat accumulation'; *fen* – 'a mire which receives water supply from groundwater as well as precipitation'; *marsh* – 'waterlogged ground, generally with tall fen vegetation and formed on a mineral substrate'

Identifying wetlands

Landscape transformations, accelerated over the last four centuries by land drainage for agriculture, have resulted in significant changes between the environment in the Iron Age and today. As part of this, former wetlands are often lost and can only be identified through the wetland sediments that are left behind.

Depending on the extent of drainage, these can range from buried waterlogged to fully dried out. Inaccurate historical records can make identifying these deposits challenging (Treadway, 2023: 9-10).

While these soils can vary based on localised depositional processes such as displacement and the mixing of local sediments, they primarily consist of three main soil or organic compound types (Table 8). These sediments form the cornerstone for identifying wetland deposits in both the desk-based and fieldwork components of this research.

TABLE 8. TYPES OF SEDIMENT USED TO IDENTIFY FORMER WETLAND.

Type	Description and Formation	Types of wetland environment
Alluvium	Well-sorted, homogenous sediment, typically composed of silt or clay and deposited by freshwater activity (French, 2015: 115).	Watercourses, Floodplains, Lakes
Peat	Brown, organic-rich material. Formed by the accumulation of undecayed or partially decayed (*in situ*) plant remains, where the decay is slowed by a waterlogged, low-temperature environment (Gearey and Chapman, 2023: 7). This can vary depending on the type of decaying /decayed vegetation.	Watercourses, Floodplains, Lakes, Estuaries, Peatlands
Hydric Clays	i.e. Marine, Fluvial, Estuarine, Lacustrine. Typically blue-/grey clay formed due to heavy saturation by groundwater, causing a reduction in iron and manganese staining (Craft, 2001: 112).	Floodplains, Estuaries, Peatlands

These different sediments are not exclusive to each other, however. Nor are they exclusive in their qualities. Peat and waterborne clays, for example, both share anaerobic conditions and are frequently found in similar areas (e.g. Athelney – see Figure 7).

FIGURE 7. PEAT AND HYDRIC (ESTUARINE) CLAY DEPOSITS, ATHELNEY.

3.2 Desk-based Assessments and Field Observations

3.2.1 Desk-based Assessments

Within previous approaches to hillfort and even marsh-fort classification, there is a tendency to apply criteria based on a small sample of sites. This method leads to hasty generalisations. By forcing the remaining sites into these pre-established categories, it neglects the nuance of these other sites. Relative to hillforts as a whole, only a small proportion of sites have been identified as potential 'marsh-forts'. As a result, it offers the opportunity for a much more holistic approach to classification. By carrying out a detailed analysis of each site, its morphology and its relation to its landscape, it is possible to determine patterns which can influence the creation of more meaningful groups and classifications with which to understand them. The use of categories will always overlook some of the individuality of individual archaeological sites. A site is created to suit the needs of the people who create and intend to use it and can also be adapted to suit changing needs (Morphy, 1995: 204-205). It is improbable that sites will, therefore, ever be exactly the same, influenced by slight variations in the local culture and environment. Nevertheless, categories are a fundamental part of our toolkit for interpretation. By grouping sites based on similarities in characteristics such as chronology, function or morphology, we can draw comparisons, identify patterns, and make inferences about past events and human activities. In order to represent the fullest diversity of sites possible within the scope of this research project, the study will incorporate a larger sample size to feed into the establishment of the classificatory framework.

3.2.2 Literature

The initial part of the assessment consisted of compiling a comprehensive summary of the collective understanding of each site. In order to accomplish this, previous literature, both published and grey, was collated. This included the following sources, where available:

TABLE 9. LITERATURE SOURCES.

Publications	Published articles, books and monographs about or including significant mention of the site were interrogated. This included a range of discussions, from site-specific analysis based on desk-based investigation and previous fieldwork to inclusions within more general comparisons.
Grey Literature	Excavation or other fieldwork reports, both academic and developer-led/ commercial, supplemented the information gathered through published records. This allowed the examination of some data not included in published material, where work had led to publication. Grey literature forms the main, or often the sole source of information, where sites were not published, for example, due to financial constraints on developer-led projects not covering publication or work having been conducted so recently that publication is forthcoming.
Atlas of Hillforts	The AoH record for the site forms a useful additional resource. As with any source, this requires careful interrogation. The nature of such a big data citizen science project has resulted in some inaccuracies and discrepancies (e.g. inaccuracies in the record for Burgh, see Section 4.2.12, and the location of Wardy Hill, see Section 4.2.32; Lock and Ralston, 2022: 39 mentions mixed quality but does not discuss any validation processes; cf. Balázs et al., 2021). These were critically assessed and, where necessary,

	corrected using other data sources. Nonetheless, the database provides a useful summary of information.

3.2.3 GIS modelling

The study of landscapes forms an integral part of our understanding of place and, therefore, the intention and functioning of sites. It provides the context for archaeological sites. Landscapes, as defined by archaeologists, are the combination of cultural and natural environment factors (Wilkinson, 2006: 334). As such, it is important to incorporate a wide variety of datasets into their study to build a complete picture through which to analyse specific activities, events or sites.

Geographic Information Systems, or GIS, forms an integral part of the modern archaeologist's toolkit in achieving this aim. This software can be used to 'store, manage, manipulate, analyse and display spatially referenced information' (Chapman, 2006: 15). As such, the use of GIS has been incorporated into this study of the landscape of marsh-forts.

Models were produced for the thirty-four sites included in the study using ArcGIS software. In order to produce models that represented many aspects of the cultural and natural environments, many datasets were used. These included:

TABLE 10. MAPPING SOURCES USED FOR GIS MODELLING.

Maps	Ordnance Survey (OS) maps provide detailed surveys of the UK. This provides a backdrop against which other datasets, such as sites, can be spatially referenced. In addition, they provide information about the current land use (residential, field boundaries, infrastructure), some natural elements (watercourses, woodland, marshland) and on maps at 1:50,000 scale or higher, increasingly detailed hachure surveys of historical earthworks[7].

[7] Historic earthwork sites are labelled with basic hachures on 1:250,000 OS maps but does not reflect the morphology at this scale.

	In addition, Historical Maps, OS or otherwise, can also provide additional information. This includes where land use has changed, or earthworks have been destroyed or damaged and are missing or altered on later iterations of hachure surveys.
LiDAR	A popular resource for the study of groundworks, LiDAR data can be used in GIS to produce Digital Terrain Models (DTMs) of landscapes. These high-resolution topographic maps enable the study of the landscape in a 2.5D format, with usually colour depicting height values. This is particularly useful for visualising earthworks, particularly where they are hidden from other means, such as aerial photography beneath dense vegetation, which LiDAR is able to penetrate. The addition of a z (height) value also allows for additional spatial analyses (see Chapman, 2006: 82-85). The DTMs were derived from Environment Agency LiDAR data.
Aerial Imagery	This includes aerial photography from aircraft (plane, balloon, helicopter), satellite imagery and, more recently, drone photography. The usefulness of aerial imagery in the study of landscapes is well known, enabling archaeologists to identify buried features through shadows, soil marks or crop marks (Wilson, 1982). In the case of this study, this has been incorporated to identify buried remains where earthworks have been destroyed by centuries of ploughing. Aerial photography also provides information about the environment that may not be otherwise recorded in maps or identifiable in LiDAR data. Historical Google Earth imagery, for instance, is beneficial for identifying seasonal changes to the landscape, areas of flooding etc., as well as monitoring changes in land use, which can be linked to the preservation of archaeological remains or used to locate historic boundaries and landmarks.
Geology	Geological maps form an essential part of this study. Digital British Geological Survey (BGS) maps show superficial deposits and bedrock with additional information about the type of sediment, saturation levels etc., all of which can be used to establish the geological conditions. This is particularly useful for identifying wetland deposits, e.g. peat

	or alluvium. This study uses BGS maps at 1:10000, 1:25000 and 1:50000 scales, with a preference for the highest resolution, subject to availability. In addition to BGS maps, geological data is supplemented by regional and local studies or records. For the Fens, this includes Waller's (1994) study and digitised versions of his peatland maps. Elsewhere, borehole surveys carried out during previous archaeological, geotechnical, environmental, and construction projects and from the BGS Single Onshore Borehole Index (SOBI) have also been integrated into GIS. Used in conjunction with written or illustrated descriptions of the borehole stratigraphy, this helps to build a 3-dimensional understanding of the depositional sequence and formation of any wetlands.

These datasets were retrieved via EDINA Digimap. The mapping provides a comprehensive background of the natural and human environment on which to base the study of these landscapes. The data forms half of the picture onto which we can reference cultural data. Cultural data was incorporated from the following sources:

TABLE 11. OTHER DATA SOURCES.

Records	This includes records from the Scheduled Monuments list and the Historic Environment Records (HERs). These records comprised multiple different datasets, from written reports and photographic records to digital shapefiles. The latter was integrated into the GIS models. These shapefiles varied in the amount of spatial data, from point data denoting location to polygons representing extents of sites and occasionally representing features. Scheduled Monuments are managed by each of the constituent parts of the UK. For England, these are accessed via Historic England's National Heritage List for England (NHLE); for Scotland through Historic Environment Scotland's database; and for Wales, they are managed by the Welsh Government's historic environment service, Cadw. These

	are referred to as Scheduled Monuments, or Scheduled Ancient Monuments in older literature, under the acronyms SAMs (or SMs), SAMScot or SAMW by each constituent country, respectively. HERs are managed and were accessed by individual county. While the online database *Heritage Gateway* provided an initial point of access, HER offices were contacted individually to access more detailed results and associated datasets such as archived reports, maps, images, and digital data. HER searches were limited to a 2km radius around the site and filtered to records directly associated with or impacting the site's interpretation to manage the scope of wider historic environment analysis.
Research & Reports	Previous archaeological research, both academic and commercial/ developer-led, forms a key part of the existing cultural dataset. This was collated from published literature, grey literature reports and, in some instances, original fieldwork archives. The increasing adoption of online digital archiving has enabled access to some of the original digital data from previous projects. An example is the Sutton Common excavation's GIS files, which are stored and accessible on the Archaeology Data Service (ADS) website (https://archaeologydataservice.ac.uk/). For other sites, however, where only the final report was accessible, it was necessary to manually import, georeference and digitise published images from the report into GIS (for 'georeferencing', see Chapman, 2006: 53-54).

The collation of this existing landscape data allowed digital models to be produced in GIS, illustrating and informing the interpretation of the sites and their environment. This data forms layers within the GIS software. At a preliminary level, the ability to manipulate the visual elements of layers, altering contrast, colour and transparency enables visual comparison of multiple datasets (e.g. Chapman 2006: 85). Through these functions, it is possible to build an understanding of how different natural factors (topography, geology, watercourses, vegetation) interact with each other and correspond to areas of cultural activity.

Beyond visual interrogation, it was also necessary to establish complete models of these sites. The models aided in confirming interpretations about relationships between different landscape elements and illustrated them for dissemination within this thesis. These models were created with shapefiles representing the following:

TABLE 12. FEATURES DIGITALLY REPRESENTED THROUGH GIS BY THE CREATION OF SHAPEFILES.

Earthworks	Shapefiles were created to show the extent of banks and ditches (colour-coded to distinguish). This was done in place of traditional hachure or colour-spectrum DTM representations to facilitate easier comparison of earthwork morphology. This method allowed an analysis in plan-view of architectural forms across monuments as well as a clear portrayal of how the architecture corresponds with its wetland (or other) natural environment. The decision to represent the site architecture in this way was taken in line with the aim of comparing and identifying patterns in the architecture-landscape relationship of the site. As a result, some details that would be present in high-resolution hachure surveys are lost. The effect of this is double-sided. On the one hand, it may mean some smaller features are not portrayed, but on the other, these surveys represent the current earthwork topography and, therefore, may distract from the original form (e.g. where earthworks have been quarried, slumped or damaged by animal activity). The process of creating these shapefiles allowed for the selective representation of features from other sources. As a result, this minimised the amount of data within the active GIS layers and enabled a more straightforward comparison of different elements.
Wetland	Although wetland deposits (e.g. peat or alluvium) were represented in the shapefiles sourced from the BGS, new shapefiles were created for the final models. The reasons for this are multiple. Firstly, as discussed in Sections 3.1.2 and 3.1.3, no distinction was made between different types of wetlands within the scope of this project. This translated into a decision not to distinguish between geological deposits within the GIS models. As with

the portrayal of earthworks, this decision was taken in light of the research aim of comparison and intended to promote the ease of this. Where areas featured multiple superficial deposits interpreted as wetland-related, these were merged into a single shapefile polygon. In addition, the creation of new shapefiles enables rectification of wetland extents, factoring local investigations (e.g. Waller 1994 for the Fens) and field observations.

3.2.4 Field Observations

In order to gain a deeper perspective of each case study site, it was essential to visit each of them. In the digital modelling of sites, interpretation comes after data capture. Adding traditional field surveys enables interpretation to be integrated into the process (Limp, 2016: 350). Combining both of these methodologies enabled a more rounded approach to data collection and subsequent analysis of these sites.

Defined as the study of the personal experiences of the individual and how they encounter the world (Tilley, 1994), phenomenology is often criticised for several, well-founded reasons. Foremost, people often have different perceptions of space. This is not only true of people within the same group but even more so when considering archaeological sites and landscapes. Perception is shaped by the cultural environment in which we grow up. It changes how we structure our beliefs; therefore, it can be stated with a degree of certainty that the Iron Age people who created and used these sites would have viewed them in a way that we cannot replicate. Fundamentally, its basis in individual experience makes it too subjective (Fleming, 1999). In the case of archaeological landscape studies, environments have also often changed considerably (e.g. Cummings and Whittle, 2004: 69-72). While digital reconstructions based on environmental data and virtual reality can help recreate landscapes as they may have originally been (Eve, 2012), these can only ever offer a “best guess” scenario. Nevertheless, observations about a space and how a site relates to its surrounding landscape offer insight into people’s perceptions of a site that would be otherwise difficult to appreciate solely through desk-based research and digital landscape analysis.

Site visits also allow the opportunity to meet and record the experiences of landowners, farmers and other locals who live and work in these places. While the landscape has often changed dramatically, for example, the draining of the fens between the Iron Age and now, the local knowledge they offer of the changing conditions of the site over a longer period offers an additional insight that would be difficult to replicate based on other means of research. For example, information regarding the drainage of particular areas may indicate the underlying geology or historic wetland.

The results of field observations and comments by modern local people were recorded through a combination of written records and annotated site maps. This was complemented by an extensive photographic record. In some instances, where permissions and weather conditions allowed, a UAV (drone) was also used to capture aerial photographs of sites. A DJI Mini 2 quadcopter was used for this purpose. Whilst this does not represent a view that would have been possible for the people who built and used the sites, it is helpful to us from a landscape archaeology perspective. Aerial photographs can help reveal archaeological features and illustrate relationships between landscape elements which are discernible on the ground but difficult to capture through traditional ground-level photography (see Campana, 2017, for discussion on the use of UAVs in archaeology).

3.3 Wetland Survey

3.3.1 Borehole Survey

Thirteen sites were selected for further investigation through coring and modelling of wetlands. These were selected on the basis of where this work would provide the most significant impact on their interpretation. This was greatly influenced by the results of the desk-based assessments. The review of existing literature, in combination with a GIS-based interrogation of existing mapping (geological, topographical, land-use) and aerial photography, highlighted holes in our current understanding and identified the need for fieldwork to address these shortcomings. The rationales for each site are explained in Chapter 5. Fieldwork was not carried out at those sites where the initial assessment revealed sufficient data to definitively confirm or dismiss a wetland classification, where the wetland was deemed a secondary feature of the landscape (e.g. Oakmere, the wetland is confined to the margins of the mere with the body of water the primary feature for interpretation and classification), or where access restrictions prevented the fieldwork from being carried out. A full rationale for the selection of sites is available in Appendix 2 and expanded upon in Chapter 5 for those selected.

The fieldwork involved taking transects of boreholes across areas where the BGS had suggested the presence of wetlands. The exact locations of these were determined based on the individual questions raised by the initial assessment of each site and are discussed on a case-by-case basis in Chapter 5. The coring was typically undertaken using a gouge auger of 30mm diameter. Where the ground was harder, a 60mm soil auger was used instead. Sediments were then described in the field to standard criteria and transcribed into log sheets (Appendices 3.1-13).

Samples were collected where peat was identified. Where the deposit was greater than 0.30m thick, the deposit was divided into spits of 0.20-0.40m for sampling purposes. This was to allow for separation between the top and base deposits for radiocarbon dating and any further analyses. The use of bulk sediment samples for dating has its limitations but was deemed sufficient for addressing the research objective of confirming the presence of wetland contemporary with the archaeological remains. A full table of samples taken is available in Appendix 4, with the justification of samples selected for radiocarbon dating discussed in-text for each site (see Chapter 5).

Each borehole was surveyed using a Leica global positioning system (GPS) antenna and controller setup and later input into ArcMap GIS software to locate the points. Where it was not possible to get a GPS signal during the fieldwork, the locations of boreholes were recorded using the Google Maps application on a phone and plotted on a printed map of the site. Where this was necessary, this has been noted. While these locations are likely only accurate to several metres, instead of the <0.05m typically gained by the GPS receiver, given the large distance between points and the large-scale nature of this landscape survey, this was considered acceptable for this study. Height data, which could not be recorded by this method, was extrapolated from LiDAR data and added to the dataset to allow for the creation of profiles along transects.

For each site, an illustration showing the borehole stratigraphy was created (e.g. Athelney, Figure 82). These illustrations were created using Microsoft Excel with one cell per cm precision. Due to the large variety of geologies encountered across the thirteen sites investigated, it was necessary to simplify the descriptions for illustration. As such, deposits have been illustrated by their primary component material (e.g. sand, silt, clay) except with some notable distinctions significant to the interpretation of the environment (e.g. estuarine clay). Due to this, some of the illustrations group deposits with similar descriptions. For the full description of each deposit, see Appendices 3.1-13. Where specific deposits have been referred to by numbers, this should be compared to the list of deposits in Appendices 3.1-13 in conjunction with the list of site codes in Appendix 1. For example, AHBS_01006 would refer to 'Athelney, Borehole 1, Deposit 6' in numerical order from the ground level, where Deposit 1 is the topsoil. GPS data, or LiDAR, where the former was unavailable, was used to convert depths Below Ground Level (BGL) recorded in the field to true elevations represented as m AOD (Above Ordnance Datum). In order to fit within this document and allow easier comparison of deposits, however, the y-axis is not to scale. Where possible, spaces between columns have been exaggerated for illustrative purposes. Boreholes have also been arranged, sometimes not in numerical order, in the order they appear in transects. For reference and understanding, these should be compared with the maps provided showing the location of individual boreholes. This is to aid in the interpretation of the distribution of deposits across the landscapes around the sites.

3.3.2 Dating

Chronology forms a cornerstone of archaeology, and within that, the development of radiocarbon dating has played a key role in establishing more accurate dates. Given the nature of this area of the research, examining the natural rather than cultural landscape, there is less potential for artefactual dating to chart the landscape development. Moreover, the nature of the sample recovery (i.e. coring) does not suit the recovery of ecofacts suitable to alternative methods such as dendrochronology. As such, we are reliant on the dating of organic sediments. It is here that radiocarbon dating plays an essential role in this study.

Four of the thirteen sites targeted for borehole survey produced viable organic material for sampling. Eight sediment samples were selected from across the four sites for submission to the SUERC Radiocarbon Laboratory. These samples were selected on a site-by-site basis to target specific research objectives as outlined for each in their respective parts of Chapter 5. All of these relate to the overarching project aim of identifying the chronological development of the wetland sequence, notably when it first began developing, and its extent in the Iron Age, contemporary to the creation of the earthwork enclosures. Samples from the extremities of peat deposits in the stratigraphic sequence were selected to provide *terminus post* and *ante quem*s for the development of said deposits.

The results of the sediment dating by the SUERC Radiocarbon Laboratory are included in this thesis (Appendices 5.1-4). Where radiocarbon dates have been provided with their raw date, these have been recalibrated using the IntCal20 calibration curve (Reimer et al., 2020) on OxCal 4.4 software. These calibrated dates were then used to inform analysis and interpretations (see respective case studies in Chapter 5 for initial analysis).

3.4 Analysis and Categorisation

In order to address the current categorisation of marsh-forts, it is necessary first to review classification itself. It is important to understand the motivations for forming classifications in archaeology before forming new systems. By doing so, we can begin to unpick some deep-rooted concepts underpinning the existing system, identifying flaws and room for improvement. Classificatory systems are the product of generations of previous scholarship, forming what have become accepted 'truths' (see Chapter 6 for further discussion). Only by recognising and identifying these, can we offer a wholly fresh re-examination of the data these systems process.

The discussion will re-examine the existing classificatory framework in light of this theoretical discussion. Focus will be placed on the use of descriptive terminology. Current recognition of 'hillfort types' revolves largely around simple descriptions of topographical location. Size and earthwork vallation have also been commonly regarded as defining attributes. This thesis will examine the motivations behind using these criteria (grounded in culture history; see Chapter 6), looking at their quantitative nature and what we, as archaeologists, gain – and lose – from their use.

From this, I will propose a new classificatory system using an interpretive model. This new system will be grounded in the primary motivations for constructing these sites in wetland environments. It will break down the current group of marsh-forts, highlighting disparities and identifying new patterns of commonality. This new interpretive-based model will delve into not just the features of these sites but also the relationships between them. By exploring the relationship between architecture and landscape, the resulting classifications will help to develop a better understanding of the function of these sites and the intentionality of the Iron Age individuals and communities who built them.

This analysis and discussion will explore the benefits of using this approach. It will identify a potential impact on the study of marsh-forts but also emphasise its implications for wider fields of archaeological research. A transition in the way we approach and classify archaeological sites reflects the technological and theoretical progressions made in the field and an independence from a continued reliance on terminology and typologies grounded in the derelict needs of culture history. The advent of advanced dating techniques has progressed us away from the need to develop typologies for relative chronologies (Cipolla et al., 2024: 92). Instead, this thesis proposes that this offers us the opportunity to reflect on what we want classificatory schemes to do. It proposes that switching from descriptive to interpretive models gives us a refreshed way of understanding and communicating the past, bringing us closer to the people we, archaeologists, spend so much of our lives trying to connect with.

3.5 Statement on the impact of the COVID-19 pandemic on fieldwork

Site visits were carried out at all sites between 19th July and 17th September 2021. Further visits to conduct borehole surveys took place between 1st October 2022 and 27th February 2023. The initial phase of site visits was delayed due to the COVID-19 pandemic limiting travel. This fieldwork was carried out independently and occurred during a temporary lifting of restrictions. The second phase of fieldwork was delayed due to a period of renewed restrictions. This resulted in additional delays initially due to the availability of supervisors for guidance in developing a fieldwork methodology, followed by logistical issues and scheduling the availability of volunteer assistants to help carry out the fieldwork.

4. Results from DBAs and Field Observations

4.1 Introduction

Desk-based Assessments (DBAs) and site observations have been produced for each of the thirty-four sites in this study. The drawing together of existing literature provides not only a background for new work but allows for its compilation with a focus on this project's research aims and objectives (see Sections 1.2 and 1.3) and a critical re-assessment in light of new information and theoretical frameworks. This chapter provides summaries of thirty-four sites, drawn from the Sutton Common monograph (Fletcher, 2007), the Atlas of Hillforts (Lock and Ralston, 2017) and personal communication with the former (for the inclusion of Borough Hill - Fletcher, 2020). For each site, this summary will include its current classification, location, landscape setting (geological and topographical), discussion of its architecture, chronology and any relevant finds and a preliminary re-assessment of its current classification. This approach will begin to identify possible patterns of commonality and differences between sites, which will be used to inform their re-categorisation.

The volume of previous work and existing literature on these sites varies considerably between sites, from full excavations published in detailed monographs (e.g. Sutton Common, in Van de Noort et al., 2007; Wardy Hill, in Evans, 2003) to brief HER reports built around notes accompanying OS surveys (e.g. Billie Mains; Bomere Wood) or vague mentions and sketch plans by antiquarians (e.g. Skipwith). For some sites, this chapter summarises; for others, it has been required to establish new descriptions and interpretations. While there is still a broad gap between the level of our understanding across this gazetteer of sites, this chapter offers a 'best attempt' at compiling existing evidence to enable sufficient comparison. The following assessments draw from GIS analysis and field observations to complement and critically reassess the existing literature as well as to fill gaps in the records where they exist. These assessments and renewed interpretations, undertaken with a focus towards the overall aims of this research, are intended to facilitate the new classificatory framework.

4.2 Case Studies

4.2.1 Sutton Common

Sutton Common is the archetype of the current marsh-fort classification. The site is located 500m south of Askern, Doncaster, South Yorkshire (NGR 456399 412082), at 7m AOD. It is formed of two tapered enclosures shaped by the natural topography and geology on which they sit. The site is the subject of the monograph, which is referenced in this chapter for its gazetteer of comparable sites (Van de Noort et al., 2007). As the first site assigned to this classification, it is also featured in the Atlas of Hillforts as a marsh-fort and has featured prominently in other publications on the subject (e.g. Norton, 2021).

The site occupies two islands of clay, silt, sand and gravel alluvium, created by fluvial and aeolian reworking of Lake Humber deposits (Van de Noort et al., 2007: 53). Only the island on which the larger enclosure is situated is distinguishable on BGS mapping. These are separated by a palaeochannel, the Hampole Beck (op. cit.: 66). This is now infilled by peat deposits stretching north to south. The island is located within the channel, with the smaller enclosure to the west at the shortest point across the wetland. A rise in the topography was observed during a site visit on 3rd August 2021, congruent with the location of the large enclosure. The waterlogged remains have been impacted by desiccation, but palaeoenvironmental analysis suggests the site was situated in a wet environment, with a mix of alder carr and open grasslands (Gearey, 2007; Parker Pearson and Sydes, 1997). This wetland would have been difficult to cross on foot (Van de Noort, 2004: 68).

Access to the site would have been restricted to a doglegged route through the small enclosure and across a stake-lined causeway into the large enclosure (Van de Noort et al., 2007: 74-76). The small enclosure is univallate and encloses 0.8ha. The earthworks, however, differ from typical enclosure architecture, where the ditch is external to the bank, with the ditch of the eastern earthworks on the inside of the bank. As such, all of the earthworks face the approach from the west. It does not operate in the traditional sense of a standalone enclosure. Considered in the broader context of the site, however, it could be seen as a disarticulated extension of the larger enclosure, built at the point of crossing of the palaeochannel. Van de

Noort et al. (2007: 72) have suggested the small enclosure as a two-phase enclosure on the basis of the atypical arrangement of the eastern earthworks (illustrated Figure 9).

FIGURE 8. PLAN OF SUTTON COMMON.

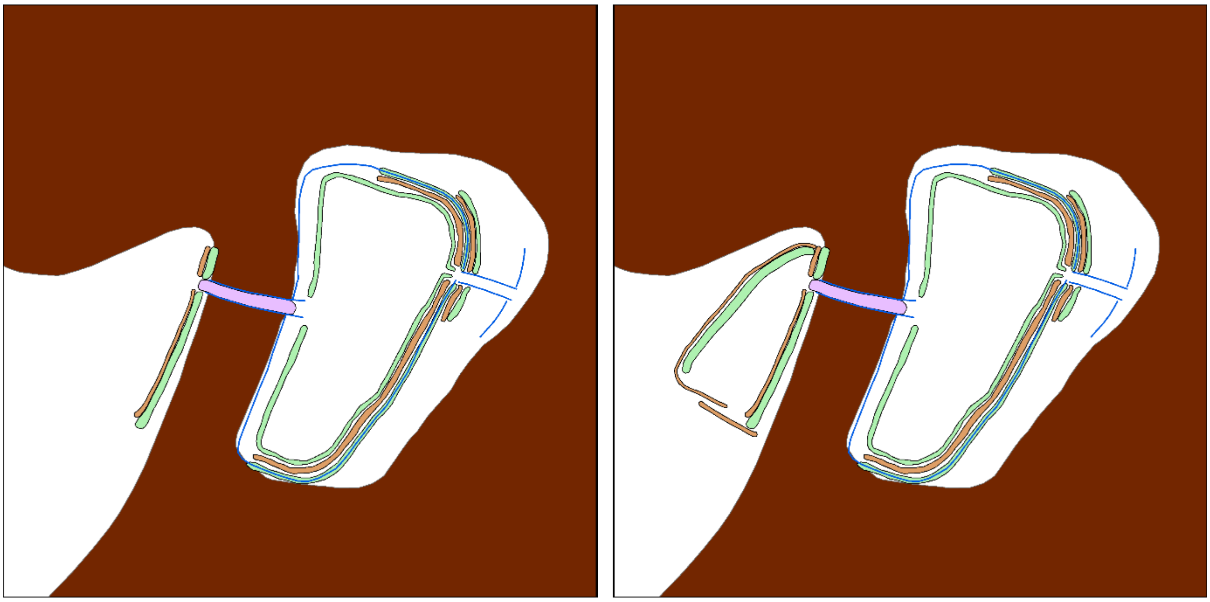


FIGURE 9. PHASES OF THE DEVELOPMENT OF THE EARTHWORKS AT SUTTON COMMON.

The large enclosure to the east encloses an area of 2.5ha. On the east side, extending around the north and south extent, the enclosure is defined by multivallate earthworks. Listed from exterior to interior, they consist of an outer bank, ditch, middle bank, second ditch and an inner bank, most likely a box rampart (Van de Noort et al., 2007: 78-85). The western side of the enclosure is defined by the continuation of the inner bank; there is no indication of a ditch. A palisade, running along the middle bank on the west side, also runs along the west side, parallel to the bank, and spaced evenly from it, as though following the line the middle bank would have theoretically taken.

The western entrance of the large enclosure incorporates a wooden-walled entrance structure with the potential to have held a gate, though no evidence has been found for one (Van de Noort et al., 2007: 76-77, 95-97). Whilst both entrances were elaborated with structures, the eastern entrance proved the most impressive. Two lines of timber stakes create an avenue similar to that defining the causeway up to the western entrance (op. cit.: 86). The alignments narrow closest to the entrance with the effect of funnelling towards a gateway structure, again reflecting the western entrance. Unlike its western counterpart, however, the gateway appears more elaborate. There is evidence of a niche on the better preserved north side, which has been interpreted as a 'guard chamber' in comparison with other sites (op. cit.: 99). The scale and complexity of the architectural features indicated by the quantity and size of post-holes suggests a grander structure than its western counterpart. The effort that has been expended on creating this entrance is of particular interest given the impracticality of access created by the deep wetlands of the Shirley Pool complex (op. cit.: 85). It is also notable that the architecture controls movement through this gateway. Applying an outside-in walkthrough of the entrance architecture, the monograph describes a funnelling through the stake alignments, through a narrow entranceway but which widens as one passes through the entranceway (op. cit.: 85-91). Considering the improbability of access from the east, it is worthwhile instead to consider movement from an inside-out perspective. Here the entrance funnels people through the structure, before entering out into the wetland. The stake alignments then act to focus the movement and eyeline, restricting side views of the enclosure, and enforcing a sense of directionality.

Activity at the site appears to have been focused within the large enclosure. Excavation of the interior revealed a single primary phase of use with no evidence of posts being replaced or postholes recut (Van de Noort et al., 2007: 91). Dendrochronological dating of timbers in the eastern entranceway of the large enclosure places its construction around 372, with the final digging of ditches and the construction of the palisade bank about 350 BCE (op. cit.: 91-95). All activity at the site has been attributed to within this period (op. cit.: 179). The internal features primarily consisted of four-post structures (op. cit.: 114-135). These have typically been interpreted as grain stores (Van de Noort et al., 2007: 117; cf. Challis and Harding, 1975: 149-152; Gent, 1983: 245-247; see reconstruction at Castell Henllys hillfort in Wales, figure 10). Multiple fragments of quern stones with signs of wear may also indicate processing on site (Van de Noort et al., 2007: 145-147). The excavation did not reveal any storage pits at Sutton Common; however, given the wetland conditions, it seems logical that a raised structure would have been favoured. Evidence from the deposits in the outer ditch suggests that the water table has been high in the area since at least the Iron Age (op. cit.: 88), so any pits in the interior would likely have quickly filled up with groundwater. Over 150 of these four-post structures were discovered in the large enclosure, taking up much of the interior. These were all dated to a single phase. Despite being better suited than pits, evidence of germination suggests that these structures were still ineffective for grain storage (op. cit.: 126-129). This may account for the short life of the site, with evidence suggesting it was abandoned approximately a quarter century after its construction.

FIGURE 10. RECONSTRUCTION OF A FOUR-POST STRUCTURE AT CASTELL HENLLYS (AUTHOR'S).

Other notable features of the site are human remains in the outer ditch terminal north of the eastern entrance to the large enclosure. These heavily fragmented remains represent a minimum of two male individuals and were found alongside 386 fragments of animal bones within sealed Iron Age contexts (Van de Noort et al., 2007: 137-139). The deposition of human remains in ditch terminals is not uncommon for Iron Age hillforts; however, their explanation remains uncertain. Legge (2022: 173-174) has recently suggested they relate to a form of 'benevolent magic' intended to supernaturally reinforce boundaries. Deposition in terminal ditches, therefore, forms part of a more extensive ritual process than burial, relating to the definition of social/cultural groups and activities and the transformative processes of passages between enclosed and unenclosed space (Hill, 1995: 105-106).

Soil micromorphological analysis has suggested the presence of large herbivores in the large enclosure, albeit in low density, indicative of short-lived or sporadic activity (Parker Pearson and Sydes, 1997). This is in contrast to very little evidence of anthropogenic or herbivore activity in the small enclosure.

Despite the extensive investigation of the site, little to no evidence of activity in the small enclosure has been discovered. Previous literature has focused on the large enclosure due to the availability of archaeological material, with the small enclosure interpreted as an entranceway. A visit to the site, however, demonstrated that the size of the small enclosure is not negligible. Radiocarbon dating of deposits from the small enclosure ditch corresponds with it being contemporary to the large enclosure (Van de Noort et al., 2007: 47, 94-95). The radiocarbon date range is less precise than the overall site chronology determined from dendrochronology, but the evidence for a single short-lived phase at the site has built a consensus supporting the enclosures' contemporaneity. As such, the enclosure appears to be part of the original design and not a later extension, similar to annexes at other sites, but separated due to geological factors.

Sutton Common has several distinct characteristics which raise questions about its function. The effort expended on the eastern-facing entrance in contrast to the west raises somewhat of an enigma. There are several instances of hillforts, such as promontory forts, being located so as to incorporate natural landscape features into their design. It is there, though, that any comparison ends. Such sites use features of their landscape as natural obstacles, allowing them to focus the construction of earthworks and other 'defences' to specific directions from which the site can be accessed. Sutton Common provides a stark contrast to this logic. Instead, its focus appears to be towards the east, where the Shirley Pool wetlands would have made access substantially impractical. Meanwhile, with the exception of the small enclosure, creating a doglegged passageway to the causeway, there appears to have been less investment in the earthworks and entranceways.

Furthermore, the activities identified in the archaeological record raise further questions about the use of the site. From the large density of four-post structures, one might instinctively assume it represents centralised grain storage for a local agricultural community. This interpretation could be supported by the sporadic evidence for herbivores, perhaps indicative of seasonal livestock. The evidence for germination, however, raises questions about the effectiveness of such a utilitarian purpose. In addition, it is difficult to balance the short life of the site with the investment that would have gone into its construction in terms of both human and material resources. The interpretation of a failed attempt at grain storage in an ill-suited environment would suggest incredulous short-sightedness by the people who built it. It is a cost that a largely subsistence community could not have afforded to waste and makes such an interpretation unlikely. An alternative interpretation, taken in the context of prehistoric reverence for wetlands, is that for a ritualistic function akin to sacrifice. A votive offering of resources, both material and social/temporal, may have sought to appease supernatural spirits and invoke greater benefit and resource abundance for a wider community.

4.2.2 Arbury Camp

Arbury Camp comprises a circular enclosure located on the northern edge of Cambridge (NGR 544519 261583) at 12.5m AOD. The site was listed in the Sutton Common monograph as a possible 'marsh-fort' (Fletcher, 2007). The Atlas of Hillforts, however, lists the site as a lowland, partial contour fort instead (Lock and Ralston, 2017).

Geologically, the site sits upon superficial deposits of sand and gravel River Terrace Deposits. BGS data shows no evidence of any wetland-associated deposits (e.g. peat) near the site. Excavations by Cambridge Archaeological Unit (CAU) recovered preserved organic material in a waterlogged ditch, indicative of the low permeability of the surrounding geology. This is in contrast to the BGS, which has recorded a markedly high permeability of the deposits. Environmental analysis has also identified the presence of the remains of wetland and aquatic plants (Knight, 1995; also, Roberts, in Evans and Knight, 2002a: 8). In all this paints a somewhat confusing picture of the conditions, however, in the absence of alluvial or peat deposits, this site cannot categorically be described as wetland. It is more likely that the wetland characteristics mentioned are due to a relatively high water table and poor drainage.

The site is defined by a circular univallate earthwork, with a wide flat-based ditch and a substantial bank. This has, however, since been destroyed by agricultural activity and recent building development (Evans, 1991). The depth-to-width ratio of the ditch has been questioned regarding its defensive capability, but may be explained by the site's low-lying position. It is likely that the ditch was unable to be dug to a depth and profile one might expect of an Iron Age hillfort, due to the relatively high water table.

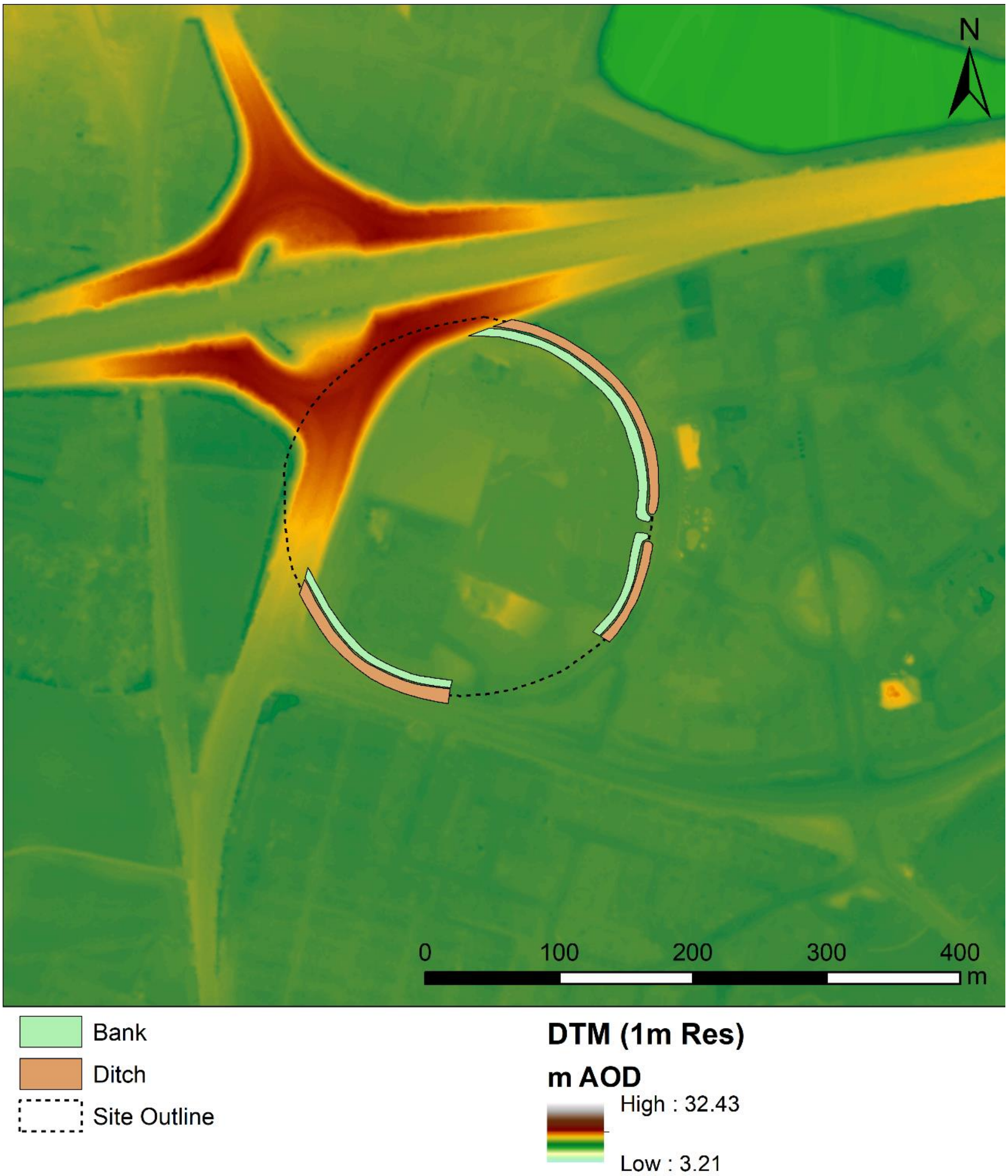


FIGURE 11. PLAN OF ARBURY CAMP.

A 20m wide gap on the eastern side is the only identified entrance into the enclosure. Excavations have revealed the remains of a wooden structure, most likely a gate, tower, or combination of the two. This structure is situated centrally within the gap but protrudes from the bank to align with the ditches. Multiple models have been proposed to suggest how this may have originally functioned, the most likely involving an out-turned bank that flanks the two sides of the structure (Evans and Knight, 2008).

The earthworks enclose an area of approximately 5ha. Several phases of fieldwork across the interior, including excavation and trial pits, have found no clear evidence of occupation. A $10m^2$ excavation in the interior by Alexander and Trump (1970) revealed no evidence of occupation except for a single, isolated gulley. A more systematic approach in 1990 included eighteen $5m^2$ trial pits across a 50m grid, providing a 1% sample – the results of which proved similarly negative (Evans, 1991). Further work since has also found the interior devoid of evidence of settlement (Evans and Knight, 2002a). While the results of these interventions admittedly only provide a sample, and features may have been missed, they provide enough evidence to suggest there was no dense settlement within the interior. Furthermore, subsequent centuries of ploughing have undoubtedly played a significant role in eradicating archaeological features. One would expect this only to impact more ephemeral structural remains, such as post-holes, however, and that had any substantial level of occupation taken place, then some deeper features would have remained to an archaeologically determinable extent. As such, the evidence remains fairly conclusive: there was no substantial settlement factor within the enclosure.

Environmental evidence has not offered much more information. A few fragments of waterlogged wood recovered in the enclosure ditch have been suggested to indicate wattle production in the vicinity (Taylor, in Evans and Knight, 2008: 19). The interpretation thereafter, however, is uncertain – was the wattle used for the construction of dwellings or fencing for livestock, for example? Was the wattle used at the site? Does it indicate an industrial hub at Arbury Camp, or do the remains represent a temporary set-up? This is partially limited by the usual logistical restraints that most fieldwork projects face. Without total excavation, it is not possible to determine the full extent of the remains. The recovered wood may have been a small portion of similar material buried at the site or represent the entirety of this material and associated activity.

Preserved fungi found in the waterlogged ditch terminus next to the entrance have equally added little useful information to expand our understanding of this site. Although there is a consensus that the material was deliberately deposited, it cannot be determined whether this represents an episode of everyday dumping or whether it held a more symbolic meaning. Fungi also has multiple uses, making narrowing down the reason for its presence even more difficult.

The remains of several broken but otherwise nearly complete vessels were also found near the entrance (Webley, in Evans and Knight, 2008: 14-16). The nature of the deposit may also indicate that the vessels were intact at the time of deposition, again raising questions about the potential implications of the act.

One issue, however, that does have some consensus amongst the archaeological evidence is the dating of the site. Radiocarbon dating of the fungi and a bone fragment from the basal fill of the ditch terminal provides a date of between the fourth and second centuries BCE, consistent with the analysis of the pottery (Evans and Knight, 2002b: 44; 2008: 14-16). This places it firmly in the Middle Iron Age.

Overall, the artefactual and environmental evidence raises many more questions than it answers. The absence of any identifiable activity in the interior is particularly intriguing. Whilst the only activity identified is focused on the entrance ditch terminals, this is to be expected, with entrances having both symbolic functions and acting as focal points for movement and activity.

Excavations in the surrounding landscape have produced a similar picture. There is no evidence of any contemporary activity in the immediate vicinity of the site. This again raises questions about the function of the site. It is also worth noting that the surrounding landscape was most likely grassland. Environmental samples reveal a marked absence of any cereals (Evans and Knight, 2008: 25). Quite often, sites such as these are interpreted as having agricultural ties. This is the case with hillforts in general, but in particular, given the low-lying setting and rich soils around the site, it seems ideally suited.

GIS modelling of the site has brought into question whether this site may be considered a marsh-fort in any sense of the term. The superficial geology recorded by the BGS does not include any wetland-associated deposits despite its broader setting in proximity to the Fens. As such, this site does not fit within the marsh-fort category but better suits the lowland categorisation provided by the Atlas of Hillforts. Nevertheless, this provides a valuable comparison to marsh-forts and hillforts more generally.

4.2.3 Athelney

Athelney is located near Bridgwater, Somerset (NGR 334418 129248). The site is on a low-lying hill with two summits joined by a saddle (up to 12m AOD), which forms an island surrounded by wetland. The site is listed as a possible candidate for a marsh-fort by Fletcher (2007: 174); however, there is no definitive evidence for an Iron Age enclosure on the site.

The site is most known for its Anglo-Saxon phase, as the location of King Alfred's fort while he was in exile, fighting against the Vikings. Following his victory at Edington, the site was converted to a monastery which continued until the dissolution under Henry VIII. The monastery was demolished, and no remains are visible above ground. The importance of the Anglo-Saxon archaeology has meant that it has received scheduled status (SAM 1019099).

The site is located on a geological island of clay, silt, sand and gravel Head, bridged by a thin band of sand and gravel River Terrace Deposits to a promontory of Head to the south-west, under the village of East Lyng. The island is connected to East Lyng by the Baltmoor Wall, built in the early thirteenth century (SAM 1018592). The site is surrounded on all other sides by Flandrian Age Alluvium. Earlier, Neolithic and Bronze Age, remains found at the site validate the site's position as well-suited to exploit the natural resources of the local wetland. Palaeoenvironmental analysis of samples, dated to the Bronze Age and Roman period, have suggested that the site was subject to fluctuating water levels, alternating between grass/sedge fen and woodland carr (Watts and Scaife, 2008). Whilst no sequence has been studied for the Iron Age, it seems likely that this would have continued through this period. The low ordnance datum of the landscape makes it easily susceptible to regular flooding, particularly before the creation of later drainage channels to transform the land for agricultural use (see Figure 12). The River Tone, which flows near the site, was redirected east of the hill in the thirteenth and fourteenth centuries but originally flowed west of the hill between the island and East Lyng (Charles, 2014; see Figure 13). Further work is needed to determine the river's state and whether it was crossable in the Iron Age. Charles (2014) suggests they would still have been navigable at the time of Alfred. It creates a picture of a very wet landscape that is reflected in the accounts of Asser, in 893, who describes the site of Athelney as 'surrounded by swampy, impassable and extensive marshland and groundwater on every side… [unreachable] in anyway except by punts or by a causeway' (*The Life of Alfred,* 92, translated passage in Keynes and Lapidge, 1983: 103). No evidence has been identified for an Iron Age causeway, although Bronze Age timbers, possibly the remains of a trackway found west of the island, may present one possible means of access to the island in prehistory (Watts and Scaife, 2008: 64). Any structure would likely have had to contest with crossing the River Tone.

FIGURE 12. ATHELNEY HILL AND DRAINED WETLAND LANDSCAPE, LOOKING NORTH-EAST (AUTHOR'S).

A ditch identified across the island's western end has been dated to the Anglo-Saxon period based on pottery found within the basal fills (Williams, 2011). This date is, however, a matter of contention. There is a difficulty in the distinction between Iron Age and Anglo-Saxon pottery in Somerset (e.g. Rahtz, 1979: 314), and it seems likely that the analysis was swayed towards an Anglo-Saxon date on the basis of expectation. Other pottery and animal bones, including a cattle rib which was radiocarbon dated, point to an alternative Iron Age date: 350-310 BCE or 210 BCE – 20 CE (Williams, 2011). Due to some difficulties in the post-excavation work, the matter remains ambiguous; however, Brunning (pers. comm. 2021) suggests that an Iron Age date seems more plausible. Petrological examination of similar pottery uncovered in nearby East Lyng dated to the Middle-Late Iron Age may support this (Allan and Taylor, 2012). Ultimately, however, the available data is insufficient to date the ditch conclusively. What can be concluded, though, is that there was activity at the site in the Iron Age.

Whilst there is limited evidence for an Iron Age enclosure, it is easy to imagine how one would have been designed: the hill forming an island, isolated in the wetland, with access from the west, where the route across the wetland is shortest. Access may have been gained by boat or across a causeway or trackway, depending on the wetness of the landscape at the time.

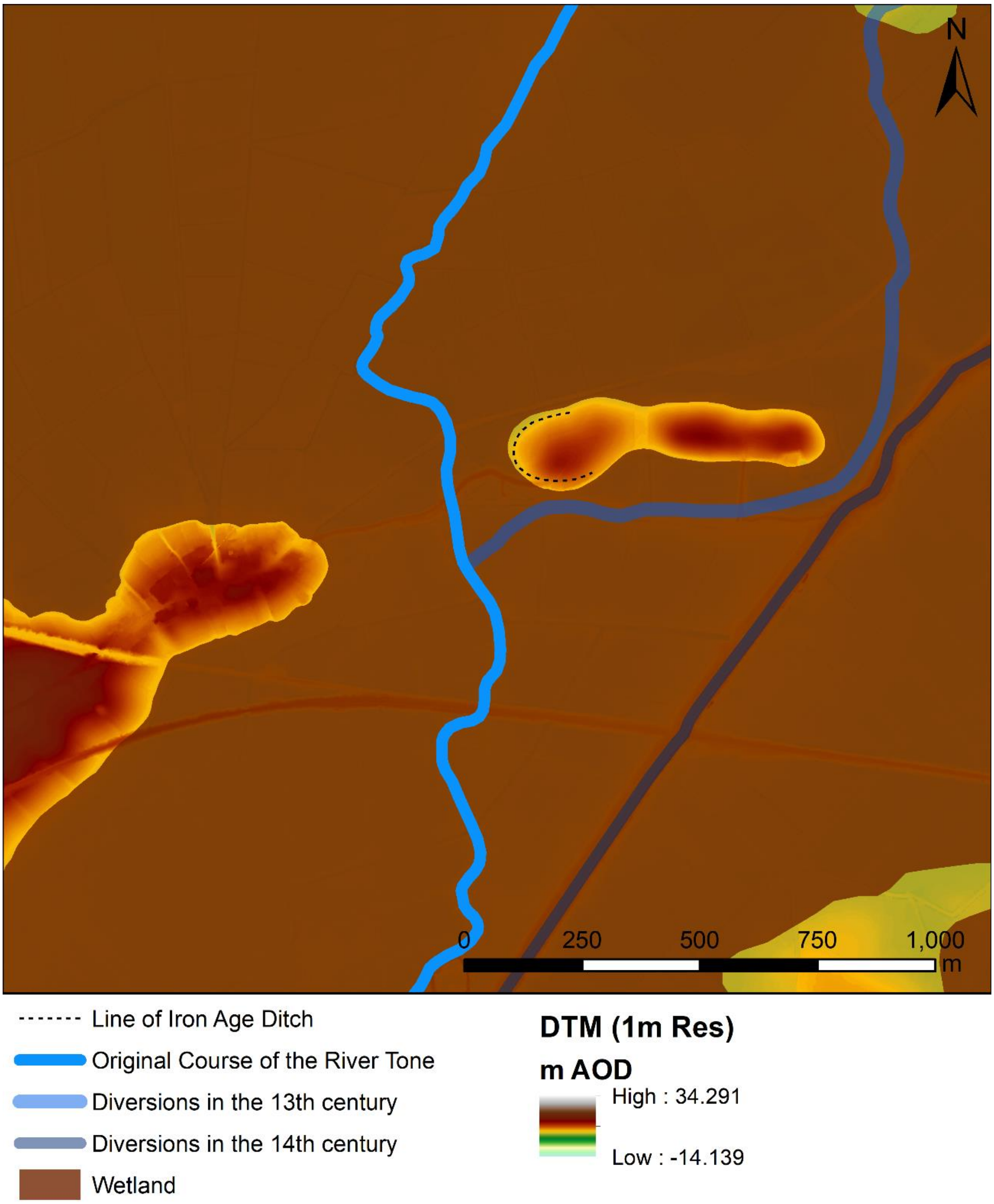


FIGURE 13. PLAN OF ATHELNEY.

4.2.4 Belsar's Hill

Located 1.5km east of Willingham, Cambridgeshire (NGR 542282 270309), Belsar's Hill consists of a univallate sub-circular enclosure at about 5m AOD. It encloses an internal area of 2.57ha. The site sits in an area of pasture surrounded by arable land. The Atlas of Hillforts lists it as a marsh-fort (Lock and Ralston, 2017), but it is not included in the Sutton Common monograph (Fletcher, 2007). The site has never been excavated, and interpretations are based mainly on a survey of the earthworks (e.g. Kenney and Oswald, 1995).

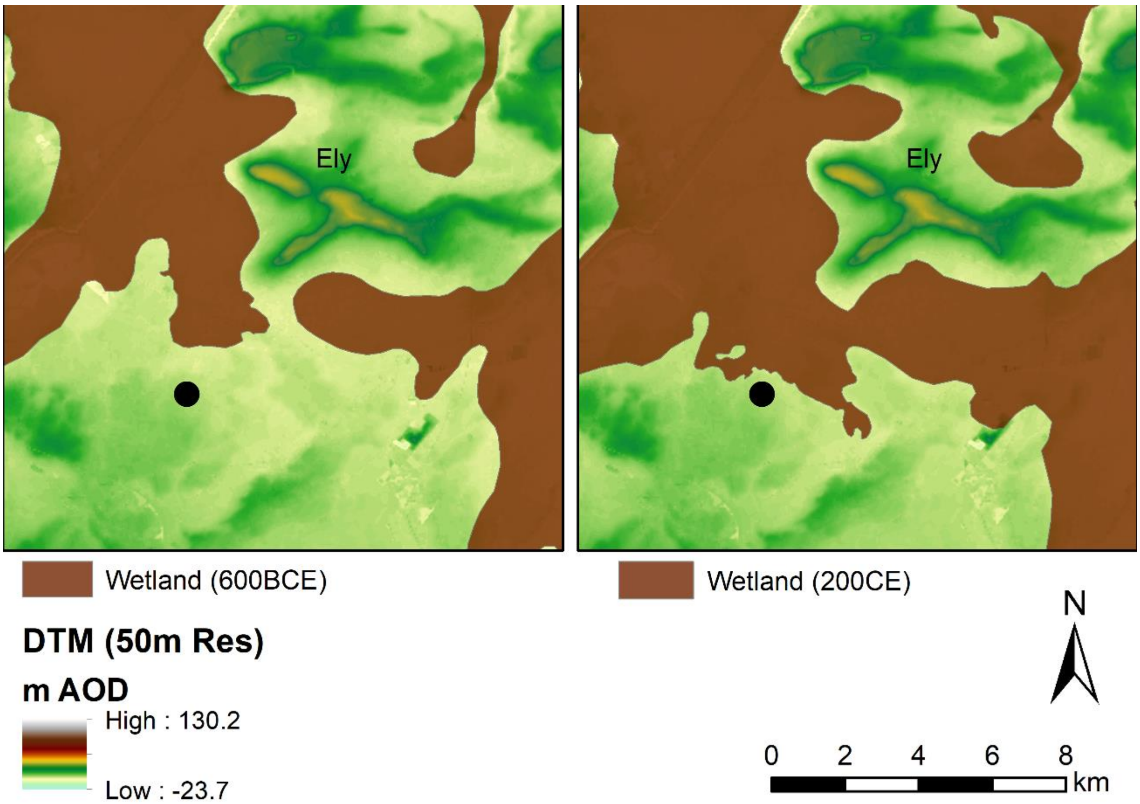


FIGURE 14. WETLAND DEVELOPMENT NEAR BELSAR'S HILL (AFTER WALLER, 1994: FIGURES 5.21 & 5.22)

The enclosure overlies Ampthill Clay Formation Mudstone, on the southern edge of the fens. Alluvium and peat deposits recorded by the BGS, approximately 600m north of the site, represent the remains of the prehistoric wetland landscape. This was corroborated by a regional survey by Waller (1994). This larger landscape view positions the site overlooking the closest access to the Isle of Ely (see Figure 14). A higher-resolution digital terrain model of the surrounding landscape reveals that the site is situated at the tip of a slight spur of higher ground extending into the aforementioned wetland to the north (Figure 16; see also

Kenney and Oswald, 1995: 5). The wetland may have originally extended closer to the enclosure, but it still appears unlikely to have been immediately abutted. The relative flatness of the landscape means it is unlikely that the wetland extent, as shown in Figure 14, would have been visible from the enclosure. Field observations carried out on 10th August 2021 support this assertion. Instead, there appears to be a relationship of broader connectivity with its wider landscape. The low height AOD may, however, support the potential of a wet landscape (though not necessarily 'wetland' in the conventional sense) closer to the enclosure. The Atlas of Hillforts record suggests that the ditch is, at times, heavily saturated (Lock and Ralston, 2017). Field observations on the aforementioned date include notes of saturated ground in the immediate surroundings of the enclosure. The site visit did, however, follow a period of wetter weather, and there is likely seasonal variation. Drainage ditches, approximately 2m deep, are a common feature of the surrounding landscape and used to maintain the agricultural feasibility of the land. The implication, therefore, is that prior to the draining of the fens, the landscape would have been considerably wetter.

The earthworks themselves consist of a single bank and ditch. Along the northern and western sides of the enclosure, where the earthworks are best preserved, the bank reaches approximately 2m in height. The southern and eastern sides have been disturbed by ploughing and later activity such as small-scale quarrying, respectively (Kenney and Oswald, 1995: 6). The ditch is shallow, up to 1m deep and between 6m and 12m wide. The earthworks have been distorted at the intersection of the trackway through it.

The enclosure is bisected by a NE-SW eighteenth-century droveway which follows the line of the Aldreth Causeway, which extends from the spur on which Belsar's Hill is located across the fenland to the village of Aldreth (Kenney and Oswald, 1995: 5). This causeway has been suggested to have later Bronze Age origins based on comparisons with the Little Thetford/ Stuntney causeway (Evans, 2003: 263). Aerial photography and LiDAR clearly show this droveway cutting the orientation of the ridge and furrow in the interior of the enclosure, confirming its post-medieval date (see Figure 15).

There are five perceivable breaks in the earthworks (see Figure 16). Two breaks labelled A and B, facing north-east and south-west, respectively, are associated with the trackway. The earthwork survey conducted by the RCHME indicates that the droveway cut the earthworks in a manner that suggests they are late. Without excavation, however, this does not completely dismiss the possibility of a recut of an original entrance. Indeed, it seems logical that the builders of the droveway would have used any original entrances to minimise the work needed to go through the earthworks. County Mapping 1:10560 1st edition from 1889 shows the site much as it appears today, bisected by the causeway. However, the 1841 Tithe Map of the area does not show the trackway. Unfortunately, this earlier map does not show any detail of the earthworks besides its extent.

FIGURE 15. AERIAL PHOTOGRAPH OF BELSAR'S HILL SHOWING THE ALDRETH CAUSEWAY AND RIDGE AND FURROW (AUTHOR'S).

To the east of A, the ditch is crossed by another NE-SW causeway, C. Although its western side has been disturbed by the later droveway, its construction and the form of the eastern ditch terminal have enforced the interpretation that it represents an original entrance (Kenney and Oswald, 1995; Lock and Ralston, 2017). The entrance appears to be a simple gap type. This entrance is, however, undated in the absence of any excavations. Kenney and Oswald (1995: 6) cite that the bank of the causeway appears 'too broad to be primarily constructed to carry the bank', using this to support the interpretation that it is an original feature. It is also important to consider the possibility that it represents a later entrance constructed to access Belsies Hill Furlong in the interior, possibly or alternatively linked to the original route of the trackway around the southern and eastern sides of the enclosure as shown in some historical mapping (CRO, 1793; CUL, 1795).

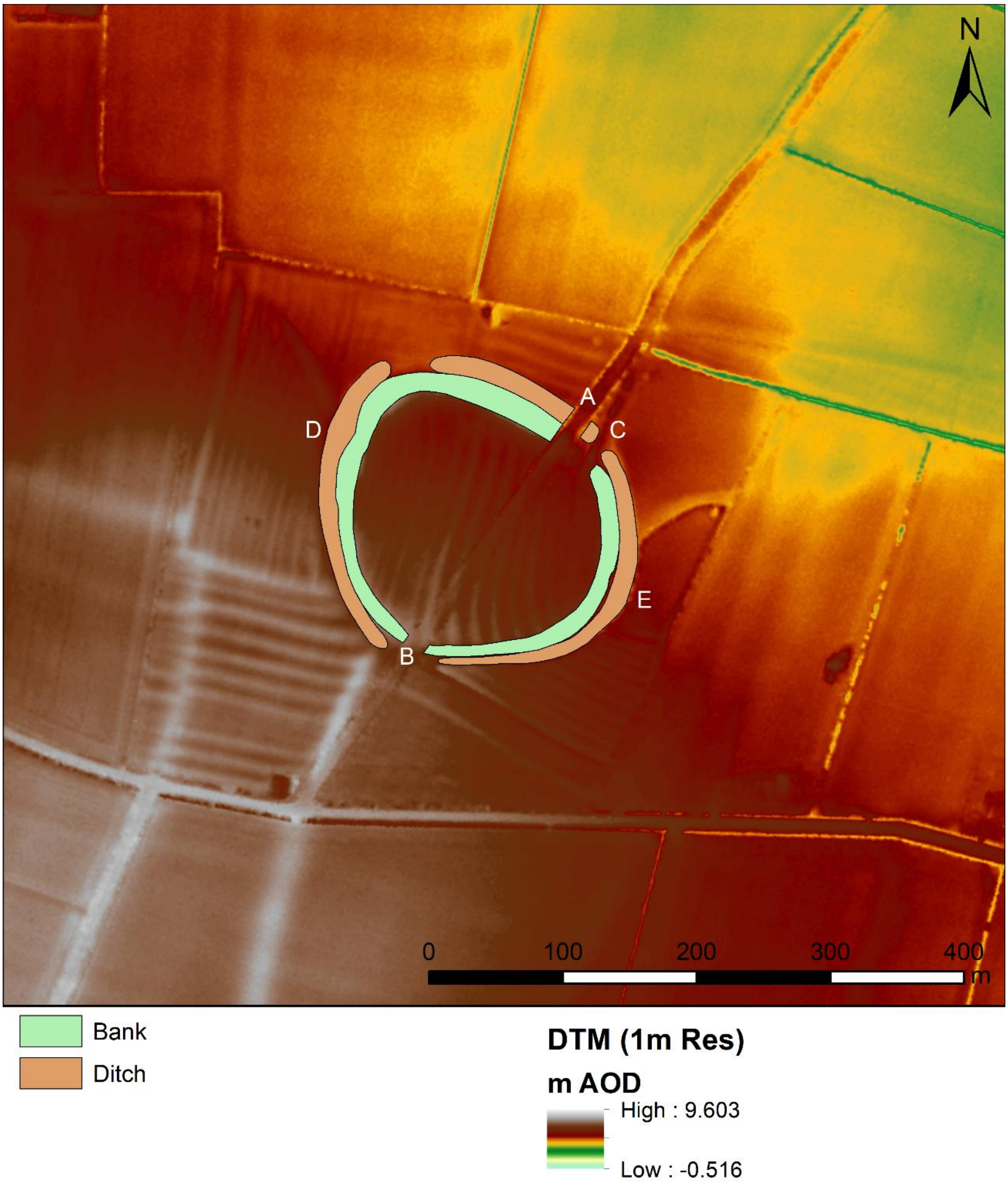


FIGURE 16. PLAN OF BELSAR'S HILL.

Fox (1923) describes the faint remains of two original entrances on the east and west sides of the enclosure. While there is little detail and no images to be certain, he was likely referring to the areas of disturbance near points D and E in Figure 16. Kenney and Oswald (1995: 6) describe the earthworks at point D as two mounds joined by a low saddle, concluding that the low saddle represented the remains of the bank and was therefore unlikely to be an original entrance. Conversely, however, the mounds are described as similar in both their size and morphology. This regularity raises some questions as to the aforementioned interpretation. If it is the result of natural erosion, it may be indicative of the underlying composition of the material which makes up the mounds, and if this is different to the surrounding bank deposits, it could be indicative of a buried archaeological feature. Given that these are the only two such features identified among the earthworks at Belsar's Hill, this lends support to the possibility that they mark an entranceway. If, as Kenney and Oswald have alternatively posited, this is the result of ploughing, it raises other questions. The ridge and furrow identified in the area run parallel with this section of the earthworks, and there is no indication they would have crossed the bank here, resulting in this damage. It is, of course, possible that it reflects a later entrance linked to agricultural use of the interior; however, the regularity suggests a more deliberate construction, dissimilar to the movement of bank material that would be expected from a later reworking. Of the eastern contender, labelled E, the bank here has been much more conclusively damaged by ploughing and later landscape use. The bank here is considerably disturbed, with the included feature of a small pond, as illustrated by the RCHME survey (Kenney and Oswald, 1995: Figure 2). This seems likely to have been the result of the quarrying of material from the bank. As such, it is difficult to determine the validity of point E as a potential original entrance. Ultimately, without excavation, it is difficult to confirm either of the possible entrances mentioned by Fox with any certainty.

Local tradition suggests the site was later used by William the Conqueror in his attack on Ely, which may have resulted in the reworking of the earthworks. Indeed, this may be one possible interpretation of the earthworks at point D.

Beyond surveys of the earthworks, there has been little investigation of Belsar's Hill. The lack of excavations or any recorded finds has resulted in a limited understanding of the use and function of the site. As such, the dating of the site relies primarily on morphological similarities to Iron Age sites. Given the site's distance from recorded alluvium and peat deposits and the ambiguity surrounding the morphology of the earthworks, it is difficult to determine the relationship between these two factors. Further work would be required to investigate the validity of classifying this site as a 'marsh-fort'.

4.2.5 Billie Mains (a.k.a. Auchencrow Mains)

Billie Mains, also known as Auchencrow Mains, is located 1.7km south-east of the village of Auchencrow in the Scottish Borders (NGR 386216 659131). At 68m AOD, it is one of the highest sites currently within this category. The site is only classified as a marsh-fort in the Atlas of Hillforts database, where it is also described as a low-lying promontory fort (Lock and Ralston, 2017). The enclosure survives only as cropmarks, identified in aerial photography.

It is located on a very subtle rise in the valley floor, projecting from a promontory of higher ground to the north-east. BGS data shows the site is covered by silt, sand and gravel alluvium deposits near the confluence of Billie and Auchencrow Burns. An examination of the wider landscape shows that the site is situated alongside a once-wider river (Figure 17). The watercourse now exists in a reduced state as the Billie Burn. Though it is uncertain to what extent this would have been contemporary with the enclosure's construction, it may indicate a possible factor in the choice of the location. No previous work has been conducted to determine whether the enclosure cuts the alluvium or is covered by it. Whether the alluvium pre- or post-dates the construction of the enclosure, we can assume any wetland or watercourse was at the time of the enclosure's construction limited to the narrow area of the lower ground south of the site, not much larger than the current extent of Billie Burn. A band of peat deposits stretch east from the site along Billie and Billiemire Burns, forming the remnants of Billie Mire, an area of wetland prior to early nineteenth-century draining for agriculture (Lock and Ralston, 2017). An examination of this area on 4th August 2021 identified wetland flora (e.g. reeds) along the banks of Billie Mire. The density of vegetation, however, meant it was not possible to ascertain the ground conditions.

Aerial photography shows that the enclosure is bivallate and oval (Canmore 59657). A univallate earthwork extends north-east from the north of the outer ditch of the ovoid enclosure, with bivallate earthworks turning back to Billie Burns, forming a north-east annexe (see Figure 18). It forms a broadly triangular enclosure with an area of 0.6ha, orientated with its median north-east – south-west towards the higher promontory. The southern earthworks of the annexe are not visible in aerial photography. This could be because they fall within the field boundary adjacent to the Billie Burns, which is uncultivated and also likely to be wetter, impacting the visibility of sub-surface remains in aerial photography. No traces of any banks can be seen due to continuous and ongoing ploughing. Upstanding structures likely complimented the ditches, but with no indication of the form of these (e.g. banks or palisades), they have been omitted from Figure 18.

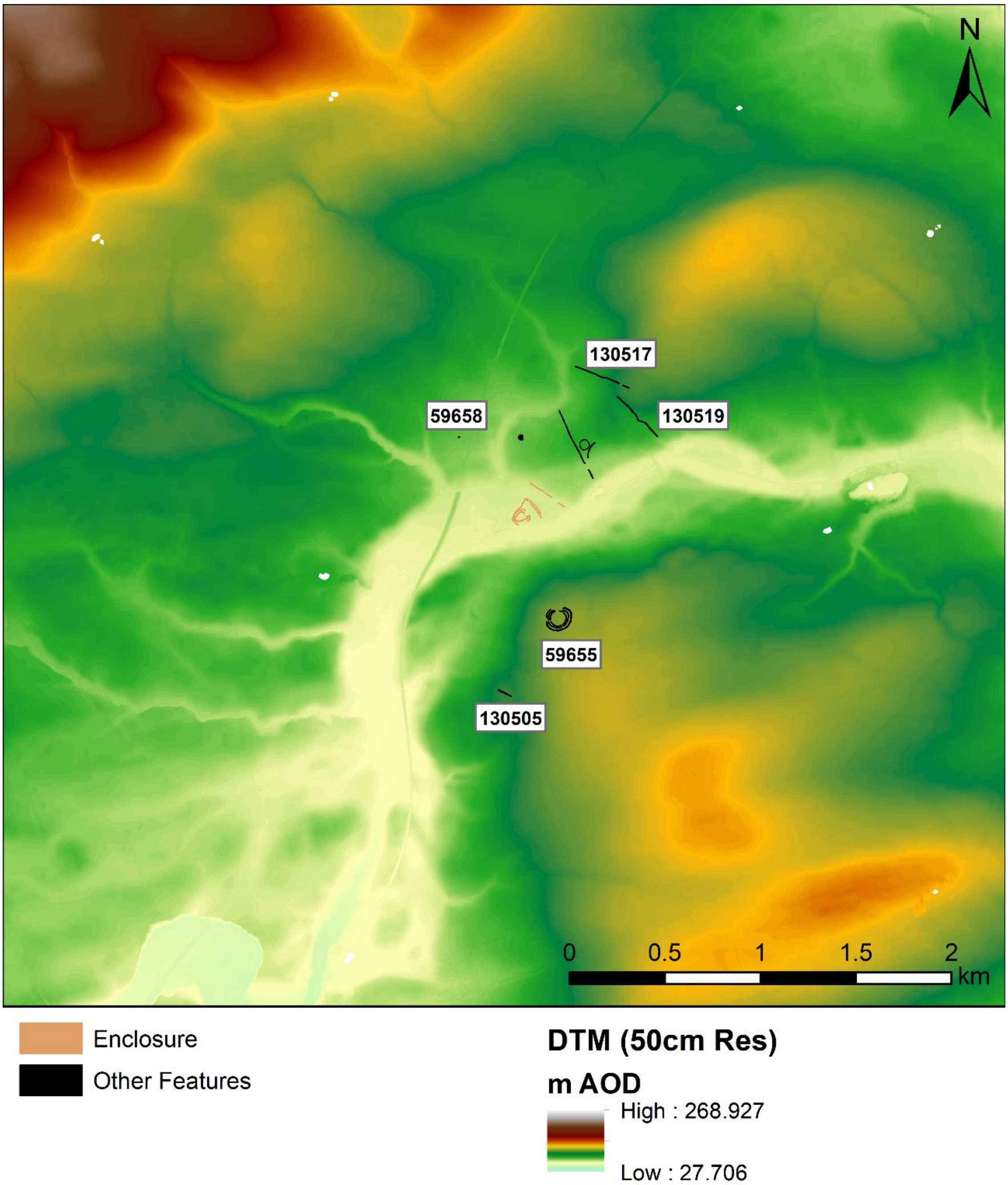


FIGURE 17. DIGITAL TERRAIN MAP OF THE WIDER LANDSCAPE AROUND BILLIE MAINS.

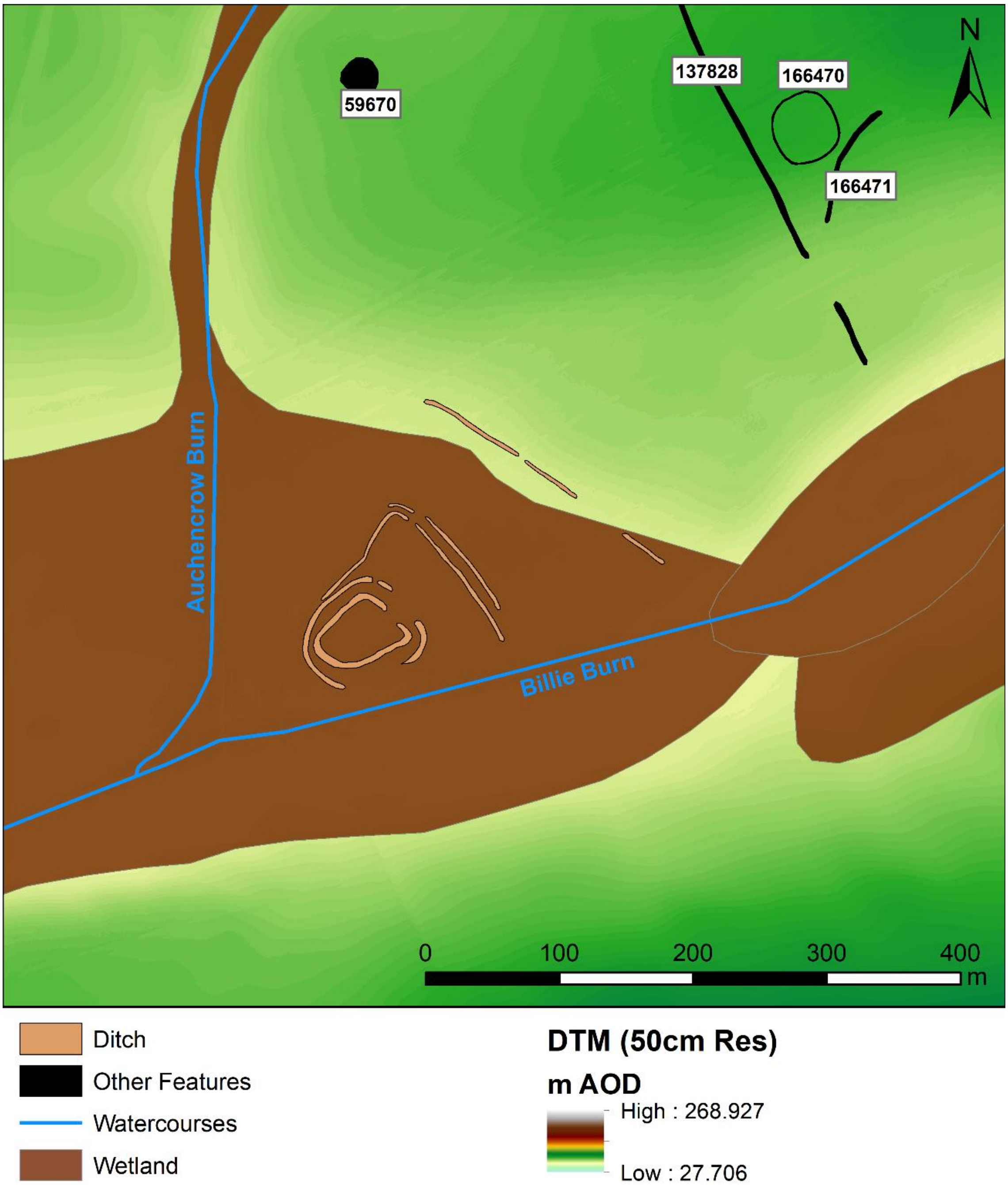


FIGURE 18. PLAN OF BILLIE MAINS.

An additional north-west – south-east ditch can also be identified to the north-east of the site, though aerial photography does not show it as connected. This ditch broadly corresponds with a drop in the topography, as shown on the DTM. Given the enclosure's location, overlooked by the promontory to the north-east, it is possible this ditch formed an outer boundary, controlling any approach as they got within proximity of the main enclosure. This layout and function could be comparable to the much larger Late Iron Age territorial oppida in southern Britain (e.g. Radford, 2013: 43). That is not to say the two are the same, but they may have served broadly similar functions. Without excavation, however, it cannot be confirmed whether this feature is real or contemporary.

Darker patches in the interior of the enclosure identified from aerial photography may also indicate the presence of structures. These appear generally amorphous and no interpretation can be drawn regarding their possible identity (see Canmore 59657). The site is unexcavated, and no internal features have been confirmed. The site also remains undated. It has been classified by Canmore as a prehistoric settlement, although there is no explanation in the record for this. While the outer works forming the annexe may represent a later phase, they appear to respect the smaller core enclosure. It seems likely that this was still in use at the time of the outer earthwork's construction. The site sits in a high-density prehistoric landscape (see Figures 17 and 18). To the south, the site is overlooked by an Iron Age hillfort on the slope of the valley (Oldcastles - Canmore 59655). This site is more typical of the Iron Age forts in this region: a circular enclosure with multiple concentric earthworks. Other prehistoric monuments within a 1km radius of the site include two barrows (Canmore 59658 & 59670), five pit alignments (Canmore 130505, 130517, 130519, 137828 & 166471) and a palisaded enclosure (Canmore 166470). While these are not necessarily contemporary, it suggests that the enclosure may form part of a larger social landscape.

The lack of excavation at this site makes its interpretation particularly difficult. Moreover, the site lacks any clear morphological comparison. Examinations of many other cropmarks within the parish and neighbouring parishes reveal that prehistoric enclosures of this region are typically circular or sub-rectangular. The elongated form of this enclosure and its extension appears anomalous, though a more exhaustive search may find comparisons further afield; it does at least appear rare. The combination of a core enclosure and outer annexe may be comparable with medieval motte-and-bailey castles; however, the bivallation and the elongated shape of the core enclosure would be atypical. This type of site is present in the area (e.g. Bunkle – Canmore 59699); however, they are relatively uncommon and tend to prefer the traditional hilltop location for the motte (pers. comm. Elliott, 2024). It is uncertain whether Billie Mains's enclosure is indeed prehistoric or medieval. The absence of the southern earthworks from aerial photography also impacts the site's interpretation within this study. There can be no certain analysis of how the morphology of the enclosure related to the wetland on this side. Furthermore, additional work is required to identify the nature of the wetland and how the chronology of environmental change relates to the chronology of the enclosure itself. In terms of its size, the site is one of the smaller ones discussed in this paper, with an area of 0.6ha, including the ovoid enclosure, which measures approximately 0.18ha. The proximity of a similar-sized enclosure, Oldcastles, 650m to the south, raises further questions about the site's function as a significant centre. It seems more likely that it is a defended farmstead or similar enclosure, although there remains the possibility of a symbolic purpose connected with the water or wetland.

4.2.6 Bomere Wood

Bomere Wood, named for its location, is situated 1.3km east-south-east of Bayston Hill, south of Shrewsbury, Shropshire (NGR 350104 308093). It sits at 80-90m AOD in woodland, north-east of Bomere Pool. The site is listed as a possible marsh-fort in the Atlas of Hillforts (Lock and Ralston, 2017).

The Atlas of Hillforts classifies the topographical situation of the site as situated on a knoll, hillock or outcrop (Lock and Ralston, 2017). A site visit carried out on 19th July 2021, however, revealed the site is better described as occupying a ridge, set high above Bomere Pool to the south-west and agricultural land with underlying peat deposits identified in BGS mapping to the north-east. The wetland appears to have been drained. The drain leading to Shomere Pool to the south-east and the modern agricultural land use support this assessment. The ridge consists of glaciofluvial sand and gravel deposits, the extent of which almost identically mirrors that of the scheduled area of the site. Bomere Pool would have formed a prominent feature of the Iron Age landscape and provided a promising resource for any historic occupation nearby. The past extent and nature of the pool is, however, unclear, and records are contradictory (e.g. Leah et al., 1998: 60, cf. BGS Superficial Deposit mapping).

A field observation carried out by the Ordnance Survey in 1962 identified 'long and narrow defences' cutting off either end of the ridge between the pool and marshland. It details ditches '20m wide… [with] a minimum depth of 3m', a '1.5m high' bank on the north-west side and a 'barely traceable bank' to the south-east (Ordnance Survey, 1962b, in Shropshire HER 00059). Burrow similarly references large banks and ditches (1978). The site visit, within this research, was unable to confirm this.

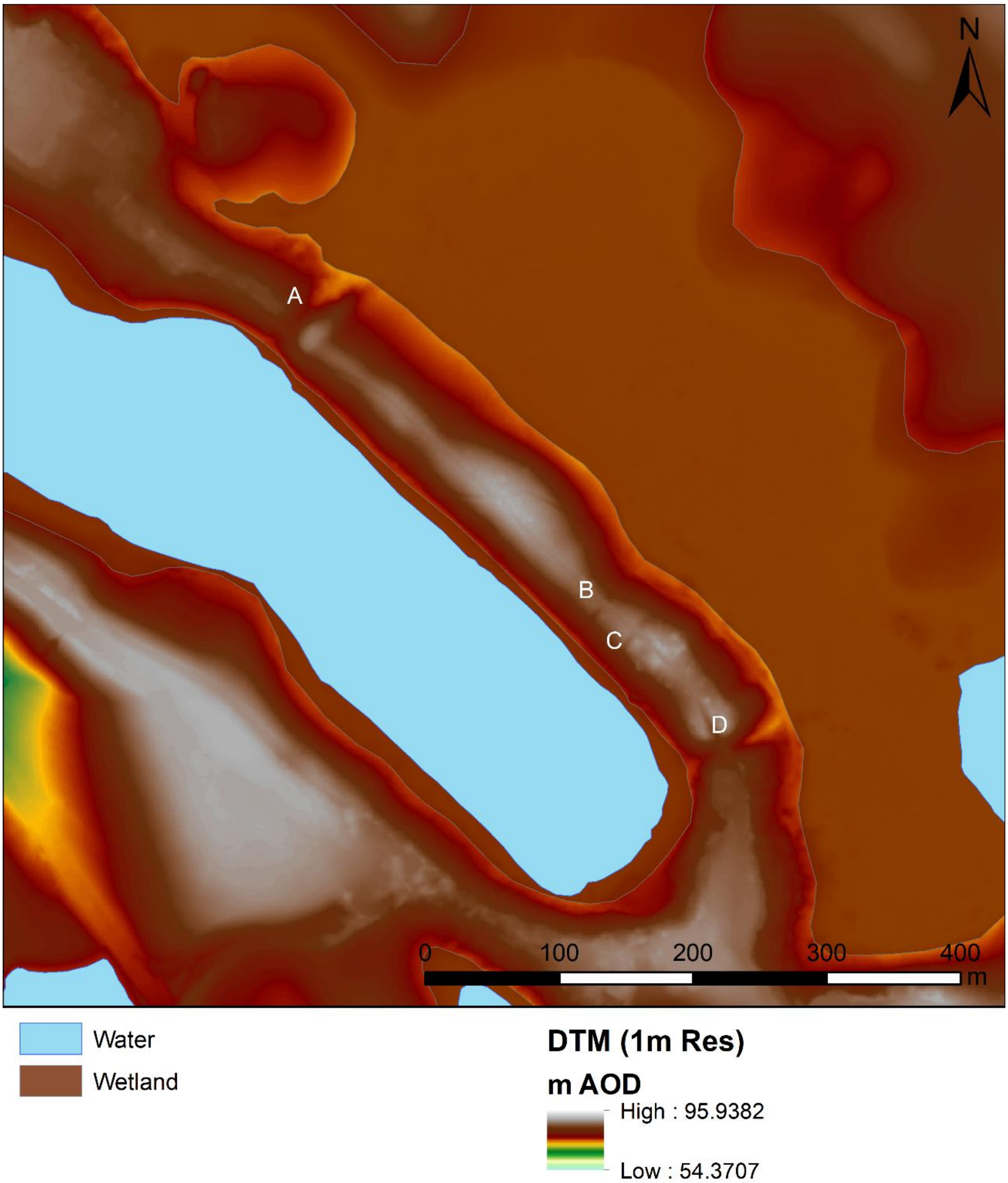


FIGURE 19. PLAN OF BOMERE WOOD.

Approaching the site from the south-east along the public footpath, the ground drops off suddenly and sharply to the north-east and south-west at point D (Figure 19). The ground then rises across the ridge line, forming what is assumed to be the south-east bank referenced in the HER. There is a single break on the line of the footpath. Given the narrow nature of the ridge, it is difficult to determine whether the drop off either side of the path is the remains of a ditch. Another possibility is that it results from gravel quarrying into the slope. It may also be entirely natural, however, with the location of the feature coinciding with the boundary between the Glaciofluvial Deposits of the ridge and the Devensian Till to the south-east. It was also deemed possible that the rise behind the alleged ditch was not an archaeological earthwork but a geological feature. The form of the break supported this. The steep face of the cut through the feature suggests it is much more recent, possibly a modern break related to access via the footpath. This topographic feature was mirrored at the north-west end of the ridge (Figure 19 - A). Two further linear undulations across the ridge line have been identified through a LiDAR-derived DTM (Figure 19 - B and C). These may be interpreted as potential archaeological features; however, given the issues with the south-east 'earthworks' and the general unevenness of the ridge top, such an interpretation cannot be determined with any certainty absent investigative fieldwork.

The interior of the site was long, narrow and uneven. This appears to confirm Tyler's (1981, Sites and Monuments Record (SMR) site visit, in Shropshire HER 00059) observational comments, which also note the absence of evidence for housing platforms cut into the slope. The shape, size, and internal topography of the site make it unclear whether there is any real or hypothetical function of the site.

Overall, there is insufficient evidence to determine the validity of this site as a hillfort. The reported earthworks appear just as likely to be naturally formed ridges or result from gravel extraction activity that has substantially impacted the local area. While there are wetland deposits located to the north-east of the site, without further work to confirm any archaeological remains, it does not seem appropriate to classify this site in any sense as a marsh-fort.

4.2.7 Boney's Island

Boney's Island is situated just south of Beccles Marshes, Suffolk (NGR 643101 290941). The site is on private land, encircled by Beccles Common. Most of the site is covered in woodland, except for an area in the south-east quadrant where Island House and the Beccles Golf Club pavilion are located. The site sits at just 4m AOD. It is briefly mentioned in the Sutton Common monograph as a potential candidate for categorisation as a marsh-fort; however, it is noted that there is insufficient dating evidence (Fletcher, 2007: 173).

The site overlies a spur of Aldeby Sand and Gravel Member deposits jutting out into the Beccles Marshes. Breydon Formation peat forms a large band of broadly E-W deposits located approximately 60m to the north of the site. Palaeoenvironmental analysis indicates this was predominantly alder fen carr with reed swamp (Gearey et al., 2016: 119-136). BGS mapping shows an off-shoot of the peat deposits, curving around approximately 1km to the east of the site, ending approximately 150m to the south-west (see Figure 20). As a result, peat deposits nearly surround the site, with the only break to the west. While the site is positioned near the neck of this sand and gravel 'dryland' spur, it does not span the entire width of the neck on the BGS mapping.

With the surrounding Beccles Common at approximately 0.5m AOD, the site appears on LiDAR to occupy an island of higher land. The western half of the interior of the enclosure sits slightly lower than the rest at 1m AOD, but this may be the result of quarrying. The closest neighbouring ground higher than 5m AOD is approximately 530m to the south-west. Land drains recur frequently across the landscape surrounding the site, shown on OS mapping, suggesting the land was considerably wetter in the past and reinforcing the suggestion that the enclosure occupied an island surrounded by wetland. If this is the case, it is not clear how wet it was and how this would have impacted access to the site. This is particularly significant given its remote location and the distance that would have needed to be traversed to access it, raising questions over possible foot routes via causeways or trackways, or access via boat. LiDAR data reveals that the higher land corresponds with the extent of the enclosure but also spreads approximately 170m to the east-south-east. It is unclear, however, whether this spread in an easterly direction is natural or the result of dumping or levelling related to the construction of the modern buildings in the interior or rubbish dumping near the site by Beccles Borough Council (Holt-Wilson, 2017: 93).

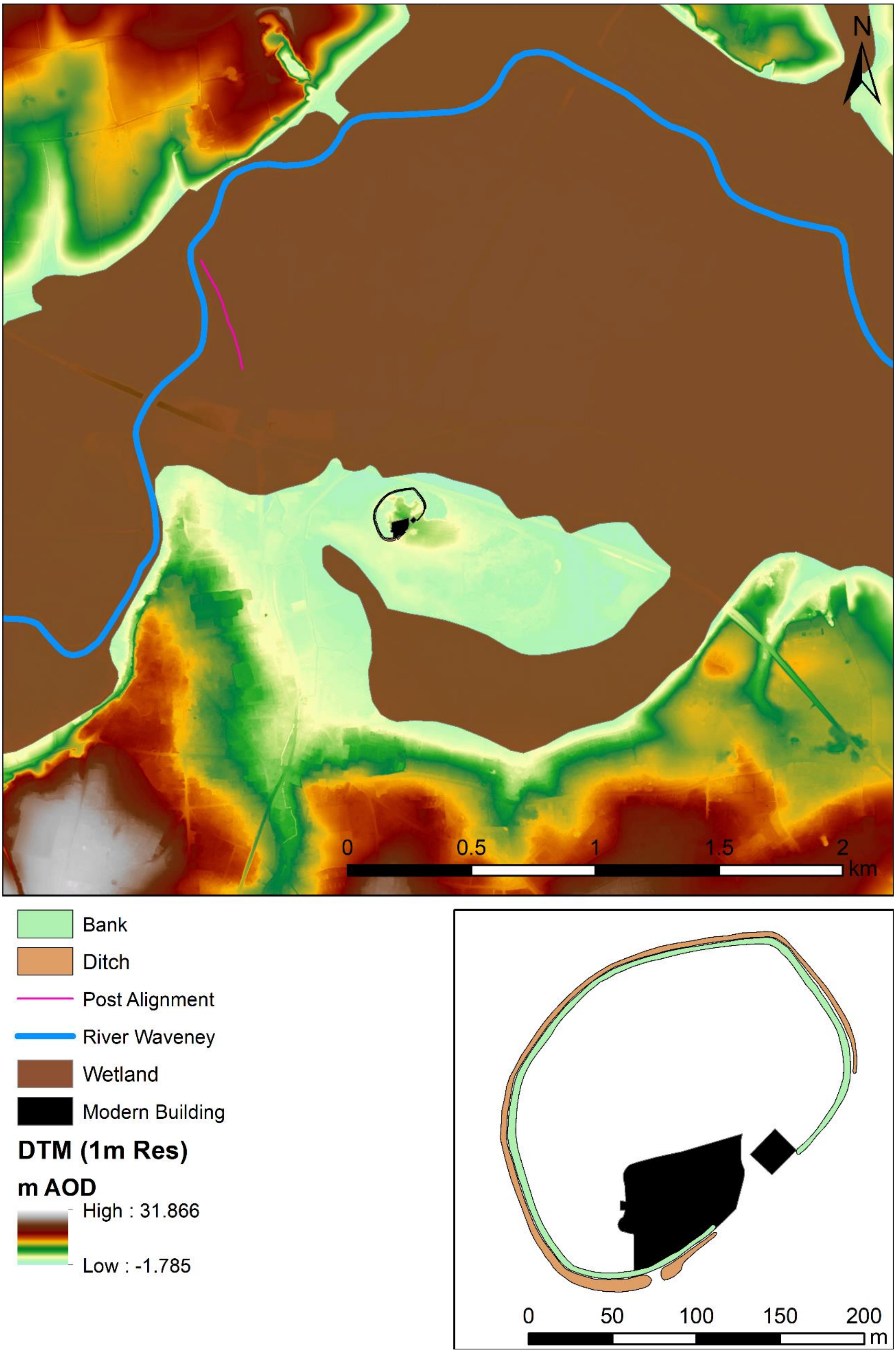


FIGURE 20. PLAN OF BONEY'S ISLAND EARTHWORK ARCHITECTURE AND WIDER LANDSCAPE SETTING (POST ALIGNMENT, AFTER GEAREY ET AL., 2016: FIGURE 4.48).

The earthworks have previously been described as bivallate (Fletcher, 2007: 173). A site visit carried out on 11th August 2021, however, identified no secondary vallation. While access to the site was restricted with fencing, the site appeared univallate. Except for the south-east quadrant, where modern buildings in the interior have destroyed the earthworks, the bank appeared continuous around the remaining circumference of the enclosure, surviving to various heights. The bank was, for the majority of its length, approximately 1m high, although this was exaggerated in places to appear 2m high by its positioning at the summit of the natural slope up to the island. In these places, the bank was approximately 2m higher than the exterior surface level but 1m higher than the interior. The ditch survives only partially. A shallow impression could be identified on the north side of the enclosure, widening and deepening around the west side, appearing best preserved on the south side (see Figure 21). No breaks were identified around the surviving circuit, indicating the original entrance may have been in the area now destroyed, facing south-east.

The difficulty in classifying this site, as mentioned by Fletcher (2007: 173), is the lack of dating evidence. While the earthworks suggest an Iron Age date, this is a matter of dispute. The HER records reference the site as a Prisoner of War camp in the Napoleonic Wars (Suffolk HER BCC023); however, there is no documentary evidence to confirm this. The only references to Napoleonic prisoners of war in Beccles relate to 15 officers on parole there in 1796 (Goodwyn, 1968; Abell, 1914: 285). There is no evidence, however, to indicate they were kept at Boney's Island beyond the name which references Bonaparte, although this may have been assigned later, conforming to the oral tradition of the prisoners of war regardless of whether it was accurate. The site may also be associated with the post alignment in the wetland to the north-west and dated to the later Iron Age period c. 75 BCE (Gearey et al., 2011; 2016). This would have extended to the dryland near Boney's Island and has been interpreted as marking or providing access to the river and reinforcing themes of identity and territory (Gearey et al., 2016: 176-197).

The morphology of this site is consistent with that of an Iron Age hillfort type, and while in the absence of excavation, this cannot be confirmed, it does appear likely. The relationship between the site and the wetland mainly depends on determining how wet the landscape was in the Iron Age. If the area was heavily saturated or flooded, it would make the site incredibly isolated. This raises questions over the function of the earthworks; it is unlikely they would have made much of an impression from a distance of over 500m across relatively flat land. It would also raise questions about why, in that scenario, this form of enclosure was chosen over other wetland site types found in the Iron Age, e.g., lake villages such as Glastonbury. Alternatively, if the band of sand and gravel on which the site was located managed to stay dry despite being so low, it could be regarded as curious that the entrance would appear to be south-easterly facing, away from the proposed dryland access from the west. This would mean anyone travelling to the site would walk around the southern side of the enclosure.

FIGURE 21. THE SOUTHERN STRETCH OF EARTHWORKS AT BONEY'S ISLAND, FACING EAST (AUTHOR'S).

4.2.8 Borough Fen

Borough Fen is a bivallate enclosure 1.5km north-west of Newborough, near Peterborough, Cambridgeshire (NGR 519078 307293). The site is bisected by Decoy Road and a parallel drainage ditch. The land is currently under pasture, with sheep and cattle grazing the land. Testimony from a farmworker who has lived in the area for 51 years, however, states that the land has, until relatively recently, been ploughed intensively (taken during a site visit on 9th August 2021; see also French and Pryor, 1993: 68).

Despite this the earthworks remain largely extant, albeit heavily truncated particularly east of Decoy Road. The site is listed as a marsh-fort in both Fletcher (2007) and Lock and Ralston (2017).

The site is on sand and gravel River Terrace Deposits, atop Oxford Clay Formation Mudstone and Limestone bedrock. BGS mapping records alluvium deposits across the south-east half of the enclosure; however, excavations show that this post-dates Roman activity at the site (Malim and McKenna, 1993: 55). LiDAR data reveals the extent of the site mirrors a topographical 'island' sitting proud, at approximately 4m AOD, on a peninsular extending north-east into the Fens to its closest point with the Iron Age coastline (Figure 94). Nordelph Peat deposits form the composition of the Fens, 237m to the south-east and c. 460m to the north of the site, along the edges of the peninsular. French and Pryor (1993: 68) have previously suggested that the wetland was considerably closer, even going so far as to suggest that the absence of the monument on a map in CE 1637 was due to the spread of peat over the site. The site did not appear on any OS mapping until the 1970s, however, and it seems far more likely that the earthworks had just not been recorded until this point. While the site is located at the neck of the peninsular, it does not appear on LiDAR data or BGS mapping to span the entire width, suggesting it would have still been possible to circumnavigate the enclosure, even prior to the draining of the Fens.

FIGURE 22. AERIAL PHOTOGRAPH OF BOROUGH FEN, LOOKING NORTH (AUTHOR'S).

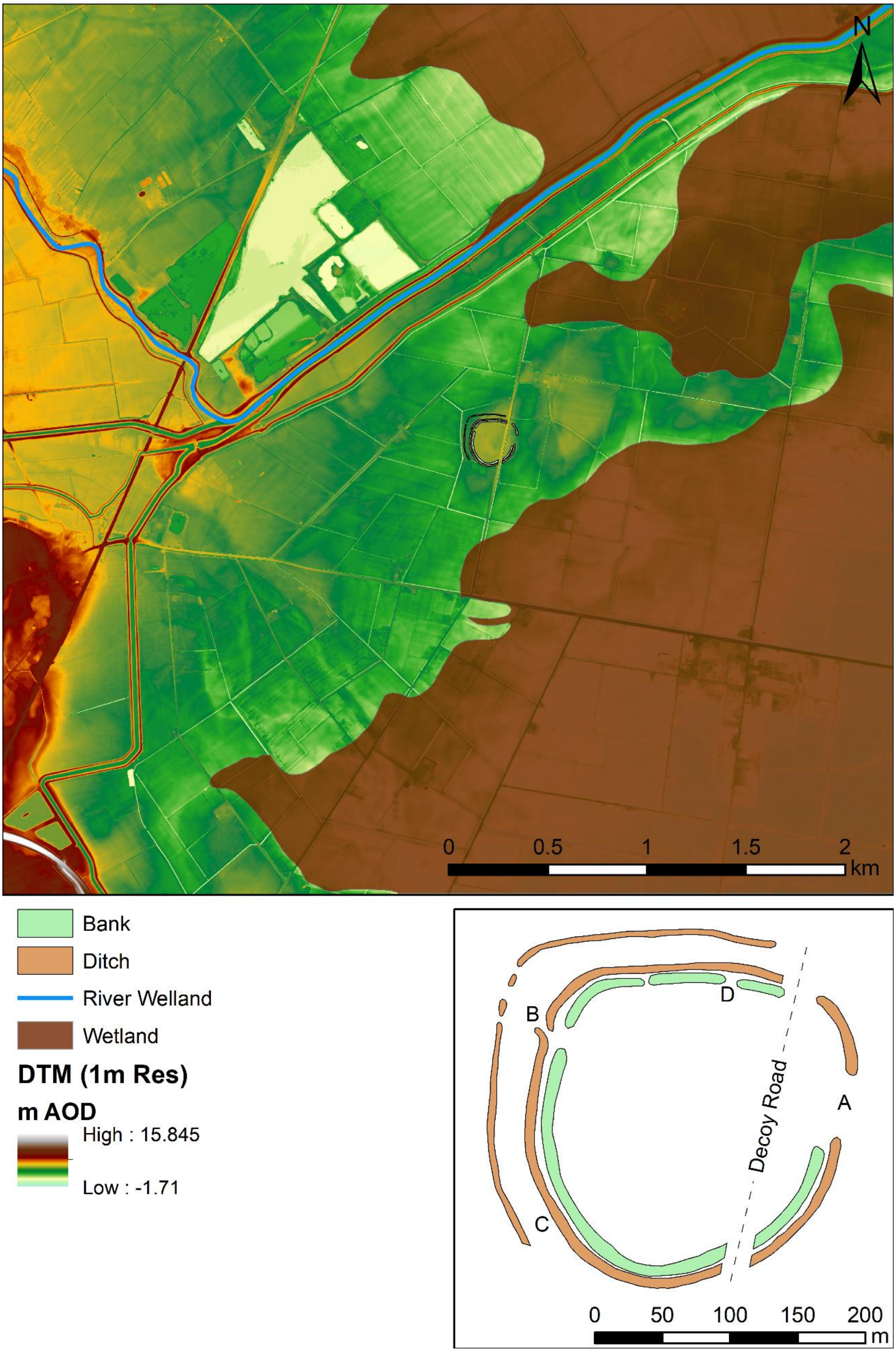


FIGURE 23. PLAN OF BOROUGH FEN EARTHWORKS ARCHITECTURE AND WIDER LANDSCAPE SETTING.

The earthworks of the site are partially bivallate. The inner bank and ditch form a broadly circular enclosure with an internal area of 3.8ha. Outer earthworks on the north and west sides do not appear to continue around the rest of the enclosure. The outer earthworks, however, survive to a much slighter degree than the inner, becoming barely discernible in places. It is possible that given the ploughing of the site in the past and, in particular, the damage to the eastern side of Decoy Road, any earthworks which may have once been here have since been destroyed from surface observation. It is also notable that this discrepancy in the comparative visibility of earthworks broadly corresponds with the extent of the later alluvial deposit, indicating that it may survive to a greater degree sub-surface.

Excavation related to the cutting of the drainage ditch along Decoy Road revealed the northern ditch to be 2.3m deep from the present surface, 10.5m wide at the top, with a flat base 4.4m wide (Malim and McKenna, 1993: 55). Basal deposits indicated the ditch was likely waterlogged since its creation. The profile of the ditch is likely due to water ingress, making it difficult to dig deeper. Modern accounts by a local farmworker suggest that the ditches are still prone to waterlogging despite partially infilling since they were cut and despite modern attempts to drain the land. As such, the ditches in the Iron Age may likely have featured standing water. This would not only have made it more challenging to traverse but would also have obscured the true depth of the ditch. This feature also included large sherds of scored pottery, dating broadly to the Middle Iron Age, and a complete mature horse skull (Malim and McKenna, 1993: 55). Where the section cut through the northern (inner) bank, a vertical edge to the basal deposit, provides tentative evidence that the bank may have been revetted (Malim and McKenna, 1993: 57). It appears fairly evident therefore that these earthworks in their original form would have made an imposing obstacle to anyone approaching or wishing to access the enclosure.

The southern earthworks west of Decoy Road are cut by a roughly east-west drainage ditch, representing a historic field boundary. Here, the earthworks appear to stop abruptly, raising the possibility that they originally continued south of this boundary but have since been destroyed. The surface of the land to the south is flat and may have been ploughed in the past. The boundary has since been moved further south, with this area incorporated into the field under pasture, likely due to the scheduling of the monument as the new boundary appears to follow its extent.

There are several breaks in the earthworks. Regarding original entrances, there is one main contender: facing east (see Figure 23: A). Here, LiDAR and other mapping indicate a probable in-turned entrance. Two additional points (B and C) feature causeways across the inner bank and ditch, facing north-west and south-west, respectively (see also Figure 24 for a photograph of the causeway at point C). The extant earthworks at these points, however, are heavily eroded and most likely represent modern routes through the field for the farmer. An additional break in the northern earthworks, D, also likely represents a modern break rather than an original entrance, made more apparent by its alignment with a gate in the north-east corner of the field west of Decoy Road. The break slightly west of point D is only through the inner bank, with no indication of a break in the adjacent ditch. As with the other breaks, this may result from modern access, damage or differential erosion. Historical mapping reveals that the road bisecting the site pre-dates the 1880s. Land draining in the area was enabled by the 'Borough Fen Common Inclosure and Newborough Parish Act' (1819). It is likely that the construction of the road dates to somewhere in the mid-nineteenth century. There is no evidence to suggest the route of the road cut any original entrance, and given the evidence for an east-facing entrance as well, it seems unlikely that there would have been one in close proximity.

FIGURE 24. PROBABLE MODERN CAUSEWAY ACROSS INNER SOUTH-WEST EARTHWORKS AT BOROUGH FEN (AUTHOR'S).

Despite only minimal interventions within the interior of the enclosure, the excavations have yielded high quantities of pottery, bone, and charcoal within a buried occupation layer (French and Pryor, 1993: 104). Analysis of the bone revealed signs of butchery, and most of the pottery assemblage has been attributed to small or medium-sized bowls or jars (French and Pryor, 1993: 72). This, therefore, seems indicative of domestic activity within the enclosure. Molluscan analysis also suggests the presence of sheep grazing, suggesting the possibility of a pastoral economy near the site. Dating of the pottery and charcoal from occupation layers within the enclosure has given dates of the Middle Iron Age and 361 cal BCE – 112 cal CE (French and Pryor, 1993: 68, 120; radiocarbon dates recalibrated, *95.4% probability*, Har-8512, 2090±80 BP). Excavations also revealed some small features in the interior, such as post-holes; however, the excavation area is too small to draw any conclusions about structures at the site (Malim and McKenna, 1993).

Comparing the earthwork morphology and landscape using GIS, it appears somewhat curious that the sole original entranceway faces east towards the Fens. Wetland deposits do not appear to have extended immediately up to the enclosure, and it would have been possible for people to walk around the enclosure to gain access. Given the absence of an elevated topographical position by which to display the prowess of the earthworks, making users walk around the enclosure may have had a comparative effect. Given the distance from the peat deposits to the entrance, it is unclear whether the orientation of the wetland has a deliberate correlation. Hill (1996: 110) indicates that east-facing entrances had a particular significance in the Iron Age, appearing as a feature of multiple hillforts. It is possible, therefore, that the orientation had some cosmological or other meaning.

The site appears to have had some domestic function, although the extent of this will not be known without further excavations. Environmental analysis has suggested a landscape of predominantly grasslands grazed by sheep. It could, therefore, be inferred that the site plays some form of central place role as an economic focus for the management and distribution of livestock. Malim and McKenna (1993) followed a traditional interpretation of a defensive function, citing the size of the earthworks and comparisons with other enclosures along the tribal boundary between the Catuvellauni and Coritani. The earthworks are certainly imposing, and positioning the entrance on the opposite side from the most likely approach would force people approaching to walk around it, taking in the earthworks and potentially being attacked with projectiles by defenders, compensating for the lack of a topographic advantage. While both domestic and strategic functions are certainly possible, neither are assured nor exclusive. The relationship with the wetland is unclear without a better examination of its nature, date, and exact proximity.

4.2.9 Borough Hill

Borough Hill is located in Sawston, Cambridgeshire (NGR 547183 249487). The site is occupied by an electric sub-station and a disused industrial paper mill. It is not mentioned as a marsh-fort in either the Atlas of Hillforts (Lock and Ralston, 2017) or the list in the Sutton Common monograph (Fletcher, 2007). The site was instead included in this study upon the recommendation of Fletcher (pers. comm. 2020), who produced the Sutton Common list (Fletcher, 2007). The site is mentioned in the Atlas of Hillforts but is listed as a partial contour fort, occupying an inland promontory. It sits at a height of 20m AOD. The site is on private land, and access was restricted during a site visit on 10th August 2021.

Geological mapping shows the site overlies chalk bedrock with alluvium to the north, west and south. Test-pitting to the north-east of the site revealed evidence for peat accumulation as decaying plant matter gradually infilled palaeochannels and resulted in further flooding (Paul et al., 2016: 76). The bedrock promontory corresponds with an area of higher ground shown on LiDAR data (the interior of the enclosure was approximately 3m higher than the surrounding floodplains). The result is Borough Hill overlooking the River Cam, which curves around the west and south of the site, and its floodplains.

Though modern construction has almost destroyed the site, geophysical surveys have revealed multiple buried ditches on the northern half of the site. These buried remains consist of three ditches: two more substantial ditches with a lesser discontinuous ditch between them (GSB Prospection, 2000). They enclose an area of approximately 7ha. Excavation across the north and north-east earthworks revealed that the middle ditch is part of an earlier phase of the enclosure, replaced by the outer and then later, but broadly contemporary, the inner ditch (JSAC, 2003: 15, 40). The excavated sections of the middle ditch measured

5.25-5.48m wide and 2.70-3.00m deep (JSAC, 2003: 14-15). This profile is in contrast to the outer and inner ditches, which measured 17.20m wide and 3.88m deep, and 17.50m wide and 3.90m deep, respectively (JSAC, 2003: 14). Traces of the bank material were identified through a combination of excavation and aerial photography analysis. The bank of the outer ditch is recorded as sealing the fills of the middle ditch, indicating it represents an earlier phase of the site (JSAC, 2003: 16). It is likely that any bank or upstanding structure accompanying the phase 1 ditch was destroyed by the construction of the later earthworks. These investigations suggest the site initially existed as a univallate enclosure, later replaced by a bivallate form with substantially larger earthworks (see Figure 26). The upper fill of the middle ditch included Iron Age burnished pottery, possibly Early Iron Age (EIA) (JSAC, 2003: 32). The primary deposits of the inner ditch contained two sherds from a Late Iron Age wheel turned bowl c. 100 BCE-CE 75 (JSAC, 2003: 32). Although dating of the EIA pottery is not completely certain, these dates provide the best approximation for the terminus ante quems for the end of the earlier and creation of the later forms of the enclosure.

A 30m wide gap on the east side of the earthwork circuit, albeit distorted by ploughing, is likely to be an original entrance (Lock and Ralston, 2017). Lock and Ralston (2017) have suggested that the geophysics indicates a possible ‘elaborate’ second entrance in the north-west section of the earthworks. While some features have been noted parallel to the inner ditch, to the east of this area, though, the only possible gap in this area appears to be an area of magnetic disturbance. Neither the greyscale image nor the original interpretation appear to suggest the presence of this entrance, lest not in any clear ‘elaborate’ form (JSAC, 2000). It does seem possible that there may have been an entrance here, though its nature is unclear.

A partially exposed feature in the corner of one of the trenches, in the interior of the enclosure, contained wheel-made Late Iron Age and handmade Middle Iron Age pottery dated to the mid-late first century BCE (JSAC, 2003: 14, 32). This feature has been interpreted as a ditch, but the trench plan shows the feature only partially exposed, so this cannot be corroborated. The feature also included a range of domestic animal bones, an un-retouched flint flake, iron nail, copper alloy decorated strip and pieces of fired clay interpreted as from an oven (JSAC, 2003: 14). This represents domestic waste and is therefore indicative of domestic activity and probably occupation within the enclosure. The dating evidence from the site indicates occupation, whether continuous or disjointed, throughout the Iron Age and forming part of a longer story of the site, with activity in the Neolithic and Bronze Age through to the Roman and possibly Saxon periods (JSAC, 2003).

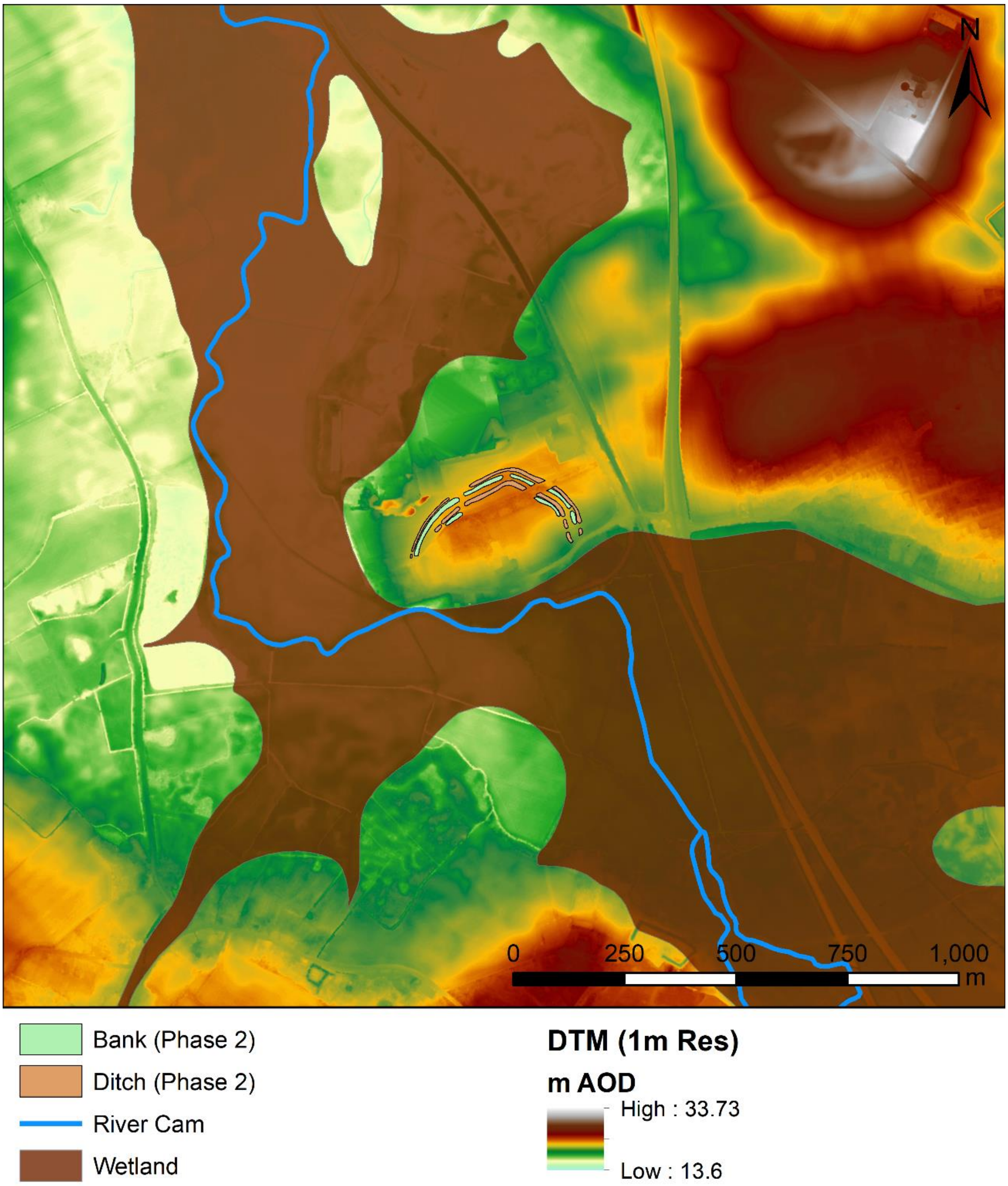


FIGURE 25. PLAN OF BOROUGH HILL.

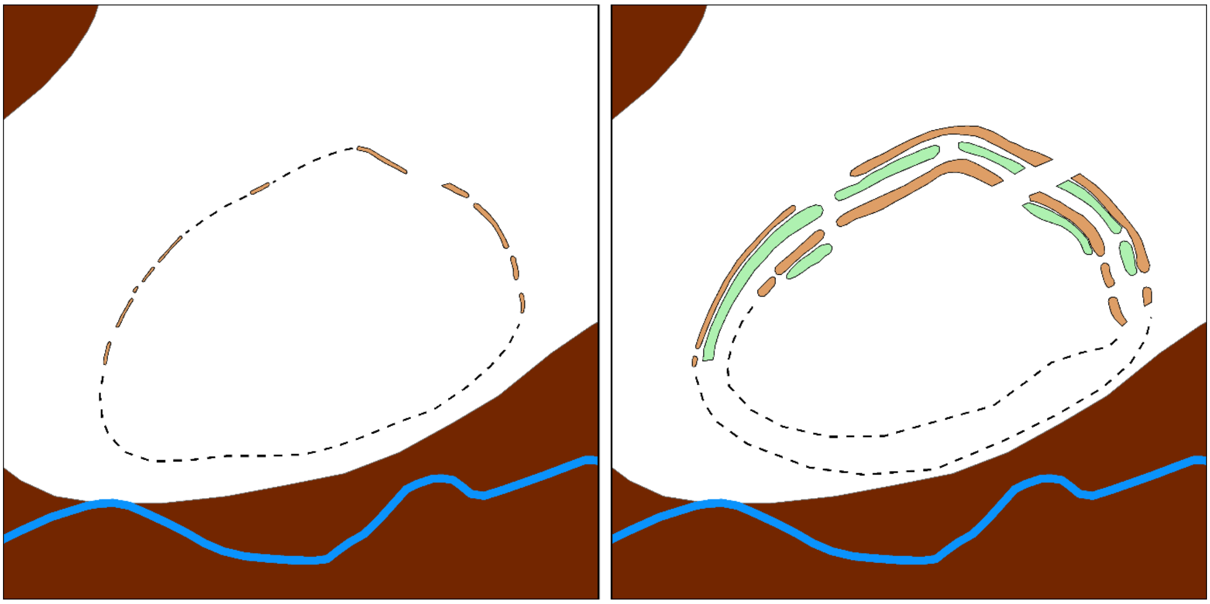


FIGURE 26. PHASES OF THE DEVELOPMENT OF THE EARTHWORKS AT BOROUGH HILL (SEE FIGURE 25 FOR KEY).

It is unclear to what degree the landscape of the site constitutes marshland. The river around the site constitutes a defined body of water, with the alluvial deposits representative of periodic flooding. While it is not necessarily true that the river today appears as it would have in the Iron Age, and there is evidence to suggest some alteration for use by the mill (see diversion of the river in historical mapping, e.g. Ordnance Survey, 1886), it does seem more likely that the enclosure was located here to make use of the river rather than its floodplain. The river would have provided both a natural defence, a water source for occupants and potentially a transport route. It is perhaps, therefore, more prudent to regard the enclosure as a 'riverside enclosure' than a 'marsh-fort'. The assessment of an elaborate north-west entrance by Lock and Ralston (2017) does raise some questions. Given the nature of the Atlas of Hillforts database, it does not go into detail to substantiate these claims. It is unclear whether this is an inaccurate reference to the geophysical report or their own reassessment. The site requires further examination, ideally excavation, to determine the nature of this entrance. An entrance at this point could be explained as an access point for the river, but if it is indeed more elaborate than its eastern counterpart, as Lock and Ralston appear to suggest, this would imply an additional significance. Reverence for wet places is not necessarily reserved for wetland, with water having equally 'magical' properties (Bradley, 1998; see Section 6.4.2). Therefore, it is possible that this entrance's extra monumentality represents a purpose other than purely functional.

4.2.10 Bryn Maen Caerau

Bryn Maen Caerau is another possible marsh-fort mentioned by the Atlas of Hillforts (Lock and Ralston, 2017). The site forms the foundations of a hamlet on the B4343, 1.5km east of Lampeter, between Cwmann and Pentrefelin, in Ceredigion, Wales (NGR 259700 248360). Residential buildings occupy the site's interior, but parts of the earthworks survive in the boundaries of modern properties (see Figure 27). The hamlet runs parallel, 45-60m away, on the south-east side of the River Teifi. It sits at an altitude of 120m AOD. The site is not included in the list of proposed sites by Fletcher (2007).

BGS mapping positions the site on a band of sand and gravel Glaciofluvial Sheet Deposits, broadly the width of the hamlet. Diamicton Till lies to the south-east, and alluvium to the north-west, following the line of the River Teifi (see Figure 27). Despite the alluvium deposits interpreted as wetland under the methodology set out in Section 3.1.3, there was little evidence of historic wetland on the ground. The ground was firm underfoot at the time of a site visit on 28th July 2021, and even following wet weather at the time, there were no signs of saturation. The farmer who owned the land also attested that no marshy conditions were present during other seasons (pers. comm. Jones, 2021). It should be considered, however, that current conditions do not necessarily reflect those of the distant past and these observations simply indicate a changing environment. Topographically, the site sits near the base of a valley that follows the River Teifi. Its western side forms a terrace with the ground sloping down to the north-west from the south-east. LiDAR data reveals an approximate 4m drop in elevation on either side of the enclosure in this direction. The interior of the enclosure appears relatively level. It is unclear whether this is natural or a result of levelling. Given the combination of geological and LiDAR data, it seems likely that the alluvium deposits represent the historical border of the river rather than marshlands. While the river margins may once have been slightly wider and wetter, it would appear that the river likely formed the more dominant landscape feature.

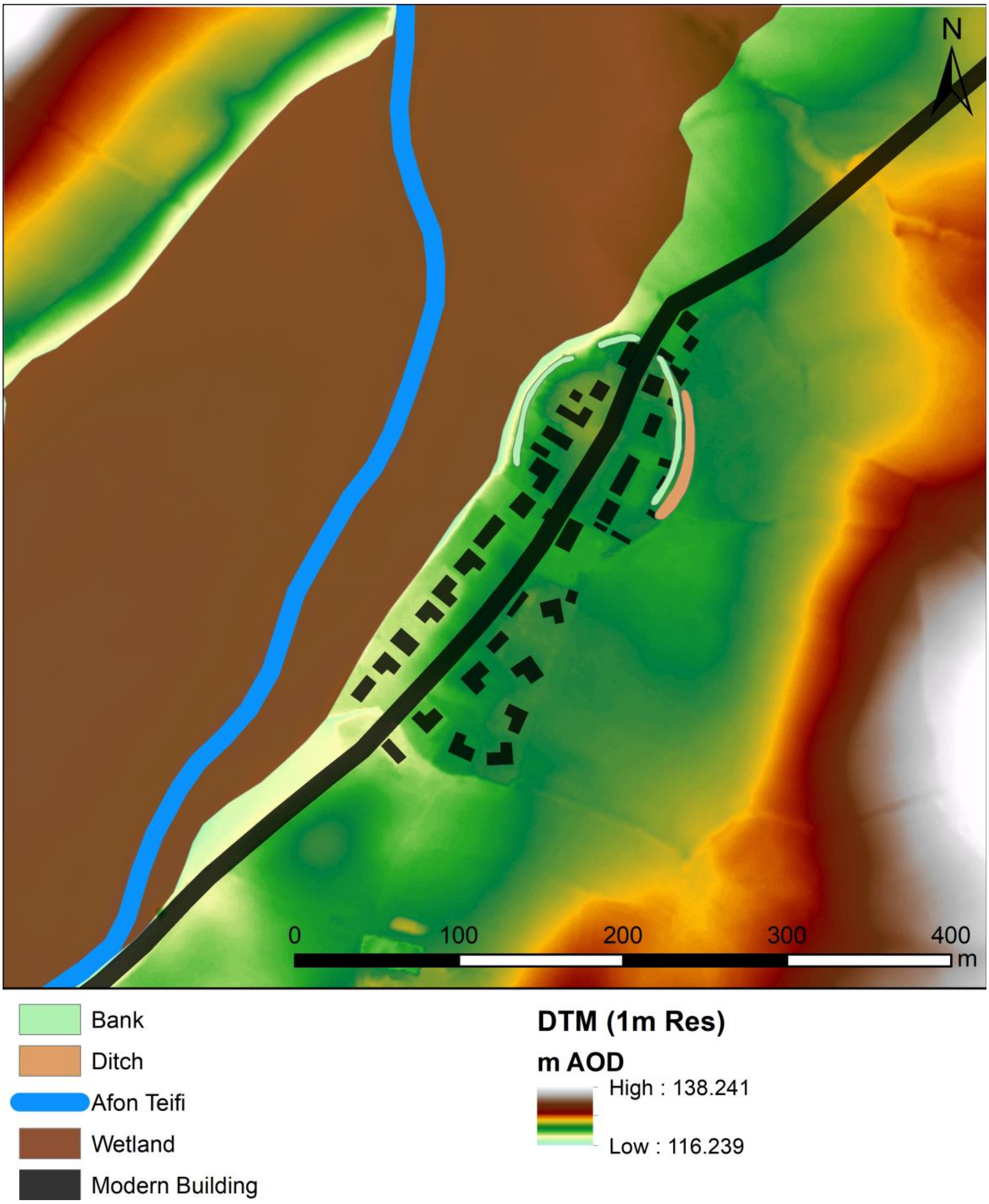


FIGURE 27. PLAN OF BRYN MAEN CAERAU.

The site is sub-circular, enclosing an area of approximately 0.8ha. Despite the destruction of the interior, about 80% of the enclosing bank survives (Lock and Ralston, 2017). The north-western side of the enclosure features a steep scarp, approximately 2m high from the floodplain. This was, however, heavily overgrown so it was not possible to identify any further characteristics. At the boundary of the Arnant and Dolgarrog residences, the scarp merges with a straight stretch of scarp that continues south-west. This scarp appears similar in form to the sub-circular enclosure but may represent a modern raising of the ground level to build more residential buildings. A section of this scarp has been terraced with the construction of a stone supporting wall (see Figure 28). The south-eastern side of the enclosure is considerably harder to access. OS mapping, LiDAR data and satellite imagery, however, clearly show the presence of a bank along the boundary of the residential area, forming the south-eastern extent of the enclosure. The HER also records the presence of a ditch on this side (HER Dyfed 786). The variation in the earthworks likely relates to its topography. The interior occupies a terrace above the floodplain to the north-west. As a result, the south-eastern side cuts into the hillslope, while the north-east sits naturally higher than the floodplain. It is unclear whether a bank would have originally topped the scarp on the north-west side.

FIGURE 28. MODERN STONE WALL REVETTING SCARP ON WEST SIDE OF BRYN MAEN CAERAU (AUTHOR'S).

Excavation has suggested the site had origins predating the Iron Age, with an older palisaded enclosure preceding the bank and ditch (Williams, 2001). Earlier activity predating the construction of hillforts is common at similar sites in Wales (Driver, 2023: 75-76).

Partial excavation of the southern entrance places it approximately on the line of the B4343 (Williams, 2001). It revealed a ditched trackway from the south, now built over. It is unclear whether a corresponding northern entrance existed; however, some have deemed this unlikely on the grounds of topography (Lock and Ralston, 2017).

Williams (1977, in HER Dyfed 786) suggested the site most closely fit in the category of hillslope enclosure. It is atypical of this category, however, in the levelling of the interior. As described in Section 2.1.5, hillslope forts usually follow the slope. This variation again highlights the weaknesses of the current classificatory system, which fails to recognise the nuances of the individual site. Despite the categorisation in the Atlas of Hillforts, Bryn Maen Caerau does not necessarily fit into a descriptive or interpretative application of the term 'marsh-fort'. The most likely explanation for the location of the enclosure would be access to the River Teifi.

4.2.11 Bullsdown Camp

Bullsdown Camp is located in Hampshire between Bramley Green and Sherfield on Loddon, 4.5km north of Basingstoke (NGR 467080 158380), at 67m AOD. Approximately 90% of the earthworks still survive, with later activity destroying a section in the north-east corner. The site is one of the twenty-three sites classified as 'marsh-forts' by the Atlas of Hillforts (Lock and Ralston, 2017). It is not recognised by the Sutton Common monograph; however, this list is not exhaustive (Fletcher, 2007).

The site sits on a slight plateau north of Bow Brook, near its convergence with the River Loddon. The surrounding landscape is mainly flat, with the fields immediately around the site used for agriculture. The site, both earthworks and interior, is covered by woodland. It is geologically positioned on London Clay Formation bedrock. A band of alluvium curves around the site to the south and east, 200m and 300m away, respectively, following the course of Bow Brook and the River Loddon. The distance of the alluvium from the site raises questions about the degree to which any wetland would have impacted access to or use of the site. The ground in the lower field adjacent to Bow Brook was soft and highly saturated during a site visit on 17th September 2021, and this was likely the rationale for its inclusion as a marsh-fort in the Atlas of Hillforts.

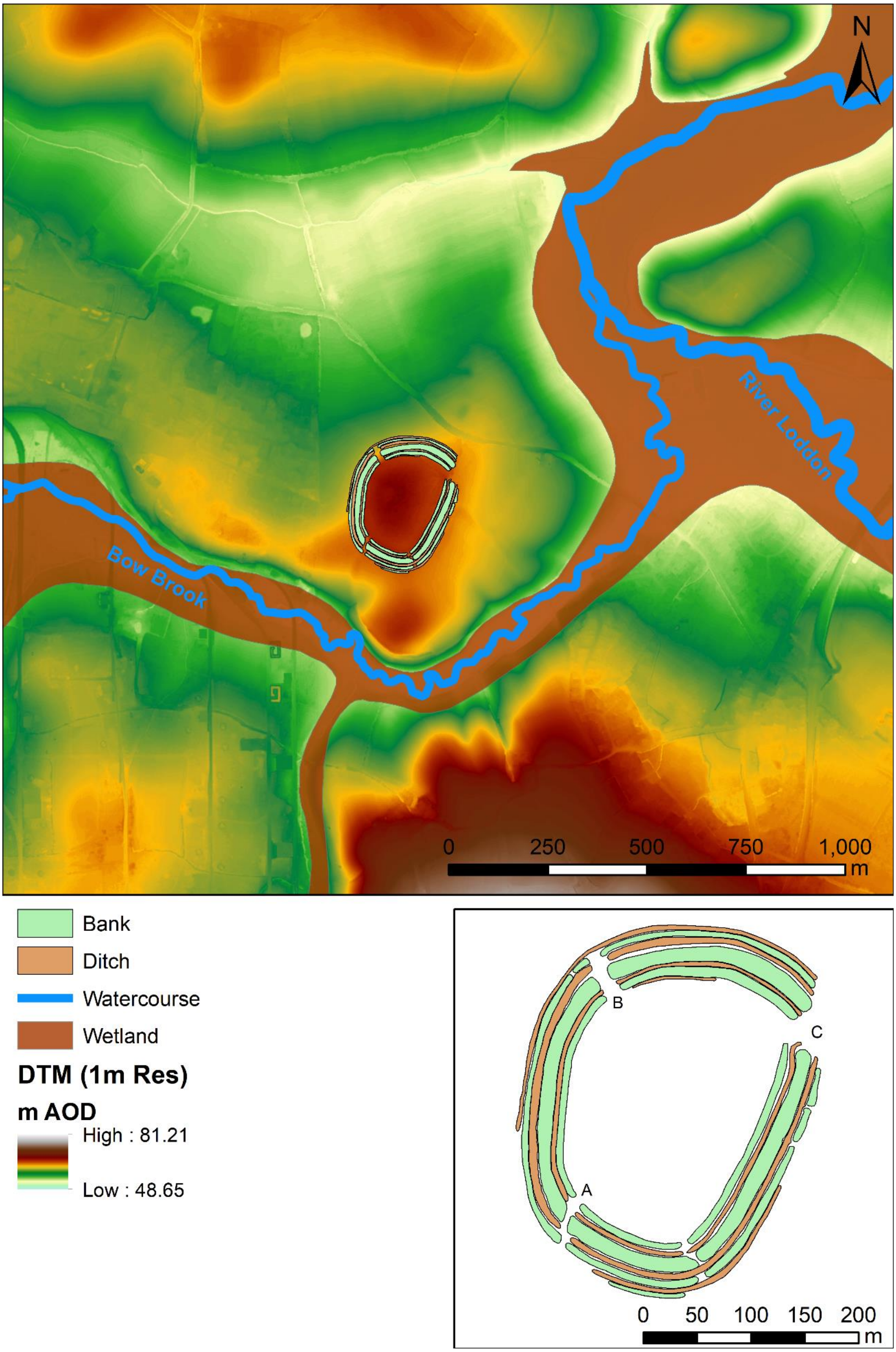


FIGURE 29. PLAN OF BULLSDOWN CAMP EARTHWORKS ARCHITECTURE AND WIDER LANDSCAPE SETTING.

FIGURE 30. EAST EARTHWORKS AT BULLSDOWN CAMP, LOOKING SOUTH-WEST ACROSS THE MIDDLE BANK (AUTHOR'S).

The earthworks are multivallate and form a broadly oval-shaped enclosure with an internal area of 3.4ha. They consist of three banks, separated by two ditches. A slight trace of a possible third partial outer ditch can be observed on the ground or in LiDAR data on the south side of the enclosure (also Truscoe, 2017), and a LiDAR-derived DTM has suggested the possibility of a small bank or counterscarp at the southern edge of the enclosure (see Figure 29). The middle bank is considerably wider, with a berm behind the front of the bank (see Figure 30). There has been some discrepancy in the way this has been described. Williams-Freeman (1915: 361) described it as topped by a 'broad platform… [which] is slightly worn down in the middle, and is in part occupied by a track', Forde-Johnston (1976: 150-151) identified it as two separate banks, and more recently Bayer (2017) referred to it as a berm. Without excavation through the earthworks, it is unclear how the banks were constructed and how they were intended to function. On the west side of the enclosure, the earthworks differ slightly, which may provide one possible interpretation. There is no evidence of an inner ditch, with the space between the middle and inner bank occupied by a flat terrace before a scarp up to the inner bank (see Figure 31). It is possible, therefore, that the middle bank is a product of the natural topography or a continuation of it from the eastern side, where the edge of the enclosure more closely follows the shape of the plateau on which it is built (cf. Figure 29). Bayer

(2017: 15), however, has alternatively posited that the terrace is the result of deliberate levelling of the earthworks after the Iron Age and not indicative of their original form. The wider middle bank has also been compared to similar features at Buckland Rings and Whitsbury, both Hampshire and Hammer Wood, West Sussex (Williams-Freeman, 1933: 109; Burton, 1956), though it is noted that the overall plan of these sites differs vastly from Bullsdown Camp (Bayer, 2017: 28). Neither reference offers an insight into the intention or function of this wider bank, however, beyond the comparison.

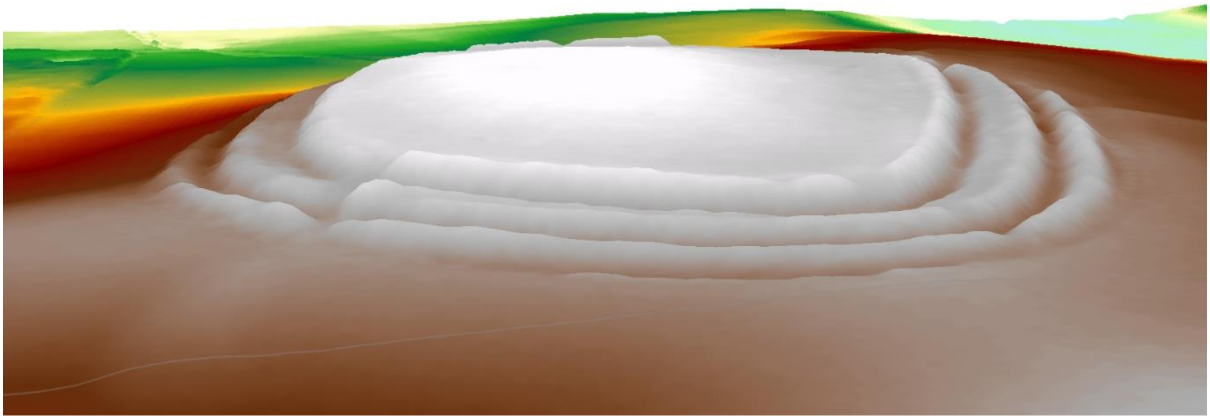


FIGURE 31. 3-DIMENSIONAL VISUALISATION OF BULLSDOWN CAMP EARTHWORKS, LOOKING NORTH.

There are a series of breaks through the earthworks at Bullsdown Camp (see Figure 29), with the most notable through the south-west (A), north-west (B) and north-east (C). The south-west entrance is most likely modern. The upcast on either side of the track clearly shows where the earthworks have been cut through, and material dumped (see Figure 32). In the north-west of the circuit, Bayer (2017: 20) records a series of aligned gaps 8-10.5m wide, previously described as a simple gap entrance with the outer bank inturned across the line of the ditch (Burton, 1956). The site visit, however, was unable to identify clear evidence of an original entrance here. While there is unquestionably a gap with evidence of modern use, it appears to be the point at which the relatively flatter western earthworks give way to the more substantial banks and ditches of the northern side. Given the current evidence, the provenance of this entrance appears inconclusive. It is widely assumed that the original entrance would have been situated in the north-east section of earthworks that have since been destroyed. Geophysical surveys across this area have revealed the buried remains of the continuing ditches from the north section, where they have been cut off abruptly at the surface level. The surveys have identified a 22m gap between the buried ditches and the northern limit of the extant eastern earthworks (Fry, gradiometer and earth resistance survey reports, referenced in Bayer, 2017 but never published). It is suggested that this is the location of the original entrance. Absent excavation, however, little is known about its exact structure.

FIGURE 32. LOOKING NORTH-EAST THROUGH THE SOUTH-WEST BREAK IN EARTHWORKS AT BULLSDOWN CAMP (AUTHOR'S).

No excavations have been recorded at the site and no surface finds or evidence have been identified dating to the Iron Age. As such, little is known about activity at the site or its date. It has been suggested to date to the Middle Iron Age on the basis of comparison with other southern hillforts (Bayer, 2017: 30) and may have been abandoned upon the founding of the nearby oppida at Calleva, approximately 4.8km to the north-west (Boon, pers. comm. quoted in Burton, 1956). This is, however, tentative at best in the absence of tangible evidence.

Given the distance of the site from the wetland as interpreted from BGS mapping, it is uncertain whether the enclosure was situated to interact directly with the wetland. The alluvium deposits also appear to follow the route of old waterways, and it is unclear what the exact nature and extent of the wetland would have been in the Iron Age. Without further work to clarify this, it is difficult to determine the nature of the relationship between the site and its landscape, whether it was located for the nearby water resource or the other resources wetlands afford. While the enclosure appears to have had an entrance facing the wetland, it is close enough to the northern side of the earthworks that it would not have caused a significant inconvenience to anyone approaching the site from the dryland route to the north-west. Hill (1996: 110) has suggested that east-facing entrances were a popular feature of hillforts more generally, and it seems likely that these provide an equally justified alternative explanation.

4.2.12 Burgh Camp

Burgh is a bivallate enclosure in the village of Clopton, near Grundisburgh, Suffolk (NGR 622350 252360). The earthworks are quadrilateral and aligned on a north-west – south-east orientation. The surviving earthworks are spread across two fields north-east of the B1079, bisected by Drab's Lane, and partially occupied by St Botolph's church. The north and east fields are under pasture and arable crops, respectively. Burgh is listed as a possible marsh-fort in the Sutton Common gazetteer (Fletcher, 2007). The site is categorised as a hillslope fort in the Atlas of Hillforts (Lock and Ralston, 2017). Following a period of disuse, a smaller enclosure was constructed within the enclosure, incorporating some of the earlier earthworks. This discussion focuses on the earlier, larger enclosure. The later enclosure is excluded as less pertinent to the analysis of the decision to build at this location (see Martin, 1988: 4-8, 72-73 for discussion of the inner enclosure, dated to the late pre-Conquest period, 30-43CE).

The surviving parts of the site overlie north-west – south-east banded geology. From the north-east, it crosses Lowestoft Formation diamicton and sand and gravel Glaciofluvial Deposits. A band of Red Crag Formation sand bedrock separates it from alluvium deposits, approximately 130m wide, along the north-east bank of the River Lark. Topographically, Burgh sits at the edge of a hillslope down into a valley that follows the route of the river. The river is now positioned on the south-west edge of the valley, with the alluvium deposits matching the width of the valley and indicating the river may have once been larger or meandered across the valley base over time. This hypothesis likely also explains the banded appearance of the geology as a result of gradual erosion.

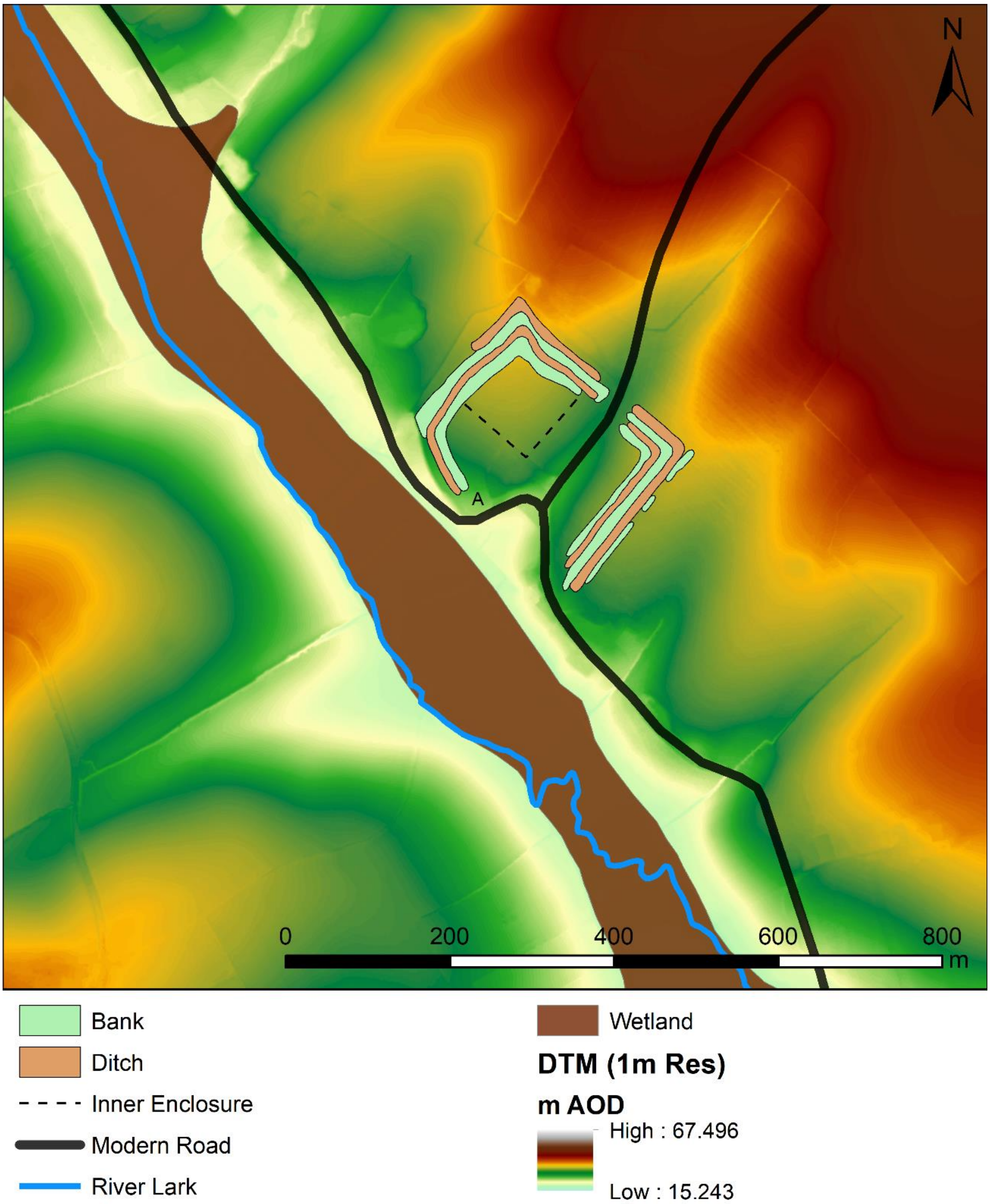


FIGURE 33. PLAN OF BURGH CAMP.

Burgh is atypical of traditional "hillfort" morphology in the overall plan of the earthworks. The site is quadrilateral, perhaps the cause of its original misinterpretation as a Roman fort (referred to as Combretonium in Raven, 1895: 28, 34; also Cromwell, 1819: 86, though its location is incorrect). The earthworks are bivallate, except for a small bank or likely counterscarp on the south-east-facing side. Ploughing has since all but destroyed their extant remains. Contrary to reports in the Atlas of Hillforts, the north-east side is no longer discernible on the ground or in LiDAR data. LiDAR data does, however, show the outer ditch on the south-east side. This was not confirmed during a site visit on 11th August 2021, though, due to crops in the east field. No earthworks have been identified on the north-west or south-west sides of the enclosure. The earthworks enclosed an area of 7ha. A trench cut across the north-west earthworks was unrecorded, other than to note an absence of masonry (Martin, 1988: 4). A contemporary trench through the north-eastern inner ditch, however, had a depth of 2.4m (Martin, 1988: 4). It is unclear whether this was the full depth of the ditch or the trench. It seems likely that the 3m wide, 5m deep ditch mentioned by Lock and Ralston (2017) refers to the south-eastern ditch of the inner enclosure (cf. Martin, 1988: 6). This inner enclosure appears to join the main enclosure earthworks, defining a 0.9ha square enclosure in what is approximately the northern quadrant of the interior (see Figure 33).

Lock and Ralston (2017) identified a single north-east facing entrance from soil marks adjacent to Drab's Lane. There is no mention of this in the HER or Martin (1988). The construction of the B1079, church and other buildings destroyed much of the south-west of the enclosure, without which it is not possible to accurately assess the overall morphology of the site and placement of entrances. While a north-east facing entrance seems likely, it remains uncertain without excavation. It is also unclear whether the enclosure would have been open or closed on the side facing the river.

Excavation south-west of the church (Figure 33 - A) in 1975 for the new graveyard revealed a large pit which appeared to have been left open and unused but for the deposition of an isolated human skull in the lower deposits (Martin, 1988: 9-14). Similar deposits can be found at other Iron Age sites and may indicate structural deposition with a ritual aspect (see Wilson, 1981: 135). The pit's alignment with the inner ditch and the nature of the fills indicate that material came in from the east side, possibly from a clay bank (Martin, 1988: 14). If this is part of the original earthworks, the ditch at this point was 3.2m deep and 6.35m wide (Martin, 1988: 72). Ultimately, however, the feature is a pit, and there is little other evidence for the continuation of the ditch on this side. This may be interpreted as the location of a south-west entrance or indicate the enclosure was open on this side.

Within the interior, the ground level in both fields slopes down towards Drab's Lane. The north corner of the site is at 38m AOD, while the intersection of the north-east boundary and Drab's lane is at 30m AOD.

The road is cut deeper but appears to have followed a dip in the landscape that appears so wide it is most likely natural.

Based on the large pit, four phases for the enclosure were identified (date estimates from pottery in brackets; Martin, 1988: 37, 72). The first, initial construction, was dated to the Late Iron Age (25 BCE – CE 1) by the presence of associated pottery in the lower fills. This phase was followed by a destruction horizon dated to the early first century CE (CE 1-25), followed in turn by an increase in 'wheel-made "Belgic" pottery' indicating close links with the Trinovantian capital of Camulodunum as well as the flattening of the enclosure bank (CE 25-50) (Martin, 1988: 72). It is possible that the flattening of earlier defences ties in with the establishment of the smaller enclosure. The date coincides with the time before or shortly after the Roman conquest in CE 43, and it seems plausible that this is a reflection of this change.

This sequence of development forms part of a longer history of activity at the site, with evidence from the Mesolithic, Neolithic and Bronze Age in the form of worked flints and pottery indicating earlier activity and possibly occupation of the site (Martin, 1988). A hypocaust and tessellated floors, interpreted as the remains of a villa, and the late Saxon church provide evidence for its continued use afterwards (ibid.). While the destruction horizon and later levelling could be interpreted as abandonment, it does not appear that this would have been long-lasting, and the area appears to have been more or less continuously occupied, indicating its value as a result of locally available natural resources.

Fletcher (2007: 172) acknowledges Burgh's surroundings are not 'wetland' but comments on the poor drainage and low-lying setting as justification for their exclusion from other hillfort categories and mention in the gazetteer. It is much more likely that the site was located for its proximity to the River Lark. The evidence for activity at the site before and after the Iron Age are a testament to the natural resources available at the site. Indeed, this association may have even survived in the mythology of the hill as the 'home of a demon fond of water' (Knott, 2008). Martin (1988: 73) has suggested that the site would have been a tribal centre and later, in its reduced form, the seat of a subordinate chieftain in the late Catuvellaunian/Trinovantian 'empire' c. CE 30-43. While this interpretation is clearly reflective of the larger paradigm in hillfort studies of the time, the evidence of domestic occupation and involvement in trade networks paints a clear picture of the site at the time as a socio-economic centre. The deposition of the skull may also be indicative of a religious aspect.

4.2.13 Cash Mill

Cash Mill in Dunshalt, Fife (NGR 324630 710160), is the northern-most site within this study. It is listed as a marsh-fort in the Atlas of Hillforts (Lock and Ralston, 2017). The site sits at 45m AOD. The site was visited on 4th August 2021, but was inaccessible and too overgrown to draw any valuable interpretations of its morphology. It does appear considerably smaller than other sites, with an internal area of 0.1ha and a total footprint of 0.72ha (Lock and Ralston, 2017). The site is incorporated into a Dunshalt Tile Works plantation, perhaps accounting for its survival.

Geological mapping shows the site overlies gravel, sand and silt Glaciofluvial Sheet Deposits. It abuts a thin band of alluvium to the north of the access road to Brickworks Cottage, along the line of the River Eden. Quarternary period gravel, sand, silt and clay Glacial Fluvial Deposits and River Terrace Deposits (Undifferentiated) (BGS) lie on the other side of the river. The superficial deposits, in conjunction with the LiDAR DTM, indicate the original extent of Rossie Loch, which was drained into the Eden between 1635 and completion in 1805 (Taylor, 2006). John Ainslie's 1775 map of Fife and Kinross portrays the landscape prior to the final drainage (Figure 34). Dunshalt, labelled Dunshill, is shown on the map east of Rossie Loch. This map shows the Loch in an intermediate stage of drainage but demonstrates its location in relation to the enclosure. It also labels the ground between Dunshalt and the loch as 'bog', indicating a broad margin of wetland around the water representing historical conditions. The RCAHMS (1933: 142) also reports the site is on 'low-lying ground which was originally marshy but, at a later time, was drained and planted'. The DTM suggests the site is located on the edge of a slight promontory, with the ground dropping off to the east towards the location of Rossie Loch (Figure 35). BGS mapping shows this area is overlain by River Terrace and Lacustrine deposits (both incorporated into the wetland shapefile in the GIS plan, Figure 35, based on Ainslie's annotation of ground conditions in these areas). Combined, these provide a narrative of environmental change with a much larger body of water shrinking to Rossie Loch (and other smaller separated bodies) as a result of natural processes before drainage was completed by human activity to convert the land to agricultural use. The chronology of this process is unclear, but historical maps and records suggest that wetland conditions persisted until relatively recently, regardless of when the water disappeared.

FIGURE 34. EXTRACT OF 1775 MAP OF FIFE AND KINROSS (AINSLIE, 1775; REPRODUCED WITH THE PERMISSION OF THE NATIONAL LIBRARY OF SCOTLAND).

The enclosure is circular, with earthworks consisting of four concentric banks and three intermediate ditches. The north-western outer earthworks were destroyed in 1854 by a clay pit and access road (Lock and Ralston, 2017). The outer ditch is flat-bottomed, 9m wide, and it has been posited that it would have originally been wet (RCAHMS, 1933: 142). The earthworks were covered by dense vegetation at the time of visitation, but LiDAR reveals they survive over 1m in places, from the bottom of the ditches to the top of the corresponding internal bank. As a counterpoint to the usual notions of monumentality created by larger earthwork enclosures, the density and number of successive earthworks in a relatively small site create a sense of magnitude and an imposing impression equitable to that of larger enclosures. They appear unnecessary for the scale of the site and, therefore create significance.

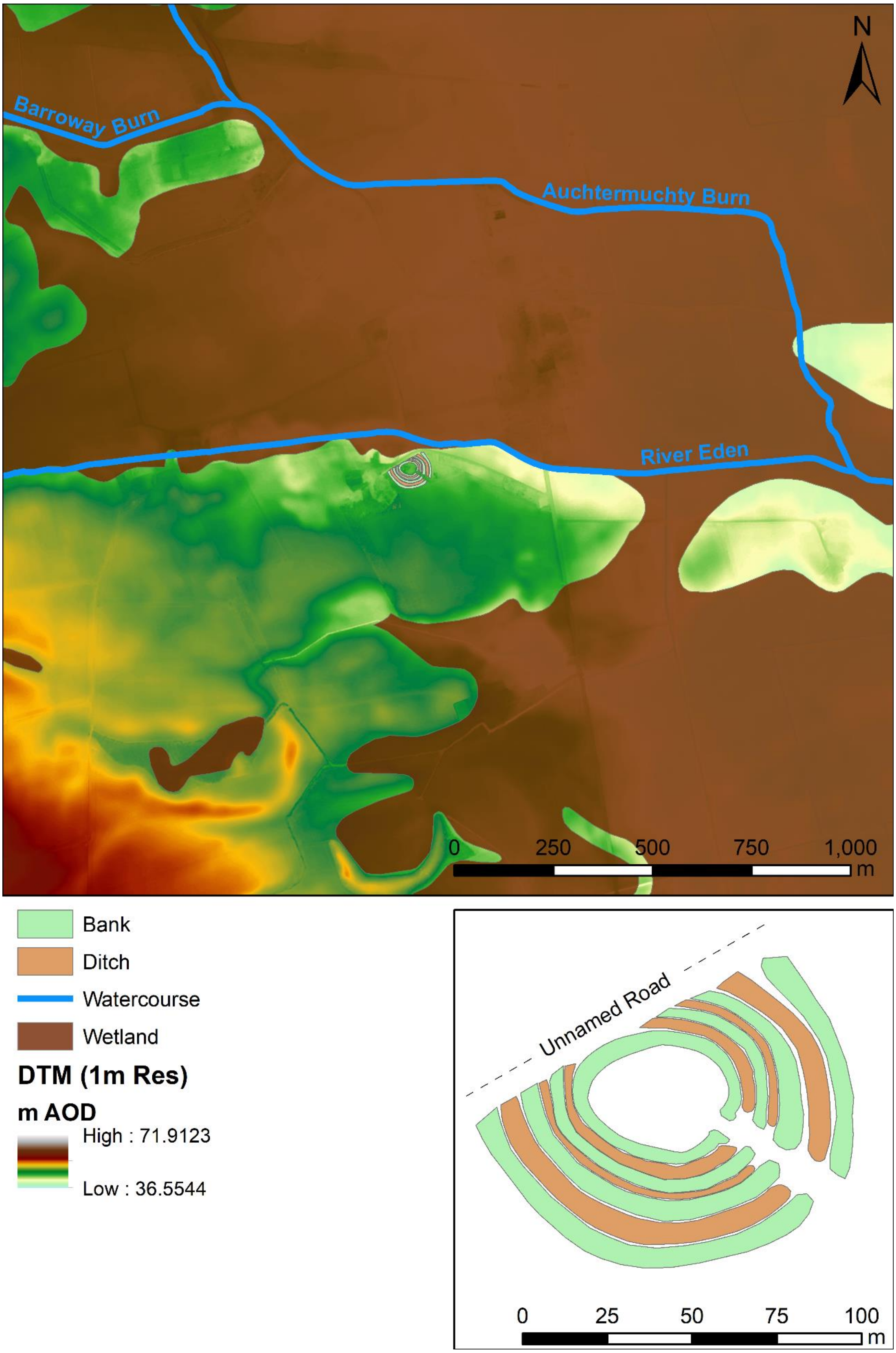


FIGURE 35. PLAN OF CASH MILL EARTHWORKS ARCHITECTURE AND LANDSCAPE SETTING.

There is considerable damage to the north-west earthworks and evidence of a gap cut through the outer bank on the north-east side. This gap was the product of tree clearance associated with the Tile Works (RCAHMS, 1933: 142). A simple gap entrance, 4m wide, to the south-east appears to be the single original entrance.

The site has not been excavated and there are no recorded findspots at the site. As such, the site remains undated. Within the interior is a further circular enclosure, 14m in diameter, within a low bank. This feature has been interpreted as a possible roundhouse, separate from the enclosure (Lock and Ralston, 2017). A similar structure at Scotstarvit Covert, Fife, was excavated and revealed to be the remains of a wooden domestic structure with pottery dating its occupation to the Bronze Age and Iron Age (Bersu, 1950). Steer alternatively suggested the site is a rath, a term used more commonly in Irish archaeology to describe a type of medieval fort or residence for tribal chiefs (Canmore 30290). The function and dating of this structure, however, remains unconfirmed due to the lack of excavation.

This site stands out from the other case studies in this report due primarily to its size. The small size and its location make it an outlier from the majority of other sites being considered. The lack of dating evidence raises questions about its Iron Age date. As such, in the absence of further investigations, it cannot be factored into the discussions within this project. Comparisons with other sites also raise the likelihood of an altogether separate category of site.

4.2.14 Cherbury Camp

Cherbury Camp is located 1.4km north-north-west of Charney Bassett, in Oxfordshire (NGR 437450 196350), at 70m AOD. The site is not listed in Fletcher (2007) but is categorised as a marsh-fort in the Atlas of Hillforts (Lock and Ralston, 2017).

The site occupies the southern half of a geological island of Kingston Formation sandstone and limestone bedrock surrounded by alluvium. The deposits of alluvium north of the enclosure form relatively narrow linears, reflecting ancient watercourses and likely conforming to valleys. The alluvium widens out to the south and south-east of the site, forming a basin stretching from the eastern entrance of the enclosure as its northernmost point. Environmental analysis by Arkell (1939) has suggested that there would have been a dryland approach from the north of the site. Whilst the BGS data suggests the site occupies a geological island, the DTM appears to suggest the site is located on a spur of higher altitude land which continues uninterrupted from the north-east, signifying that the site is on a promontory instead (Fenner, 1994: 28; as illustrated in Figure 36).

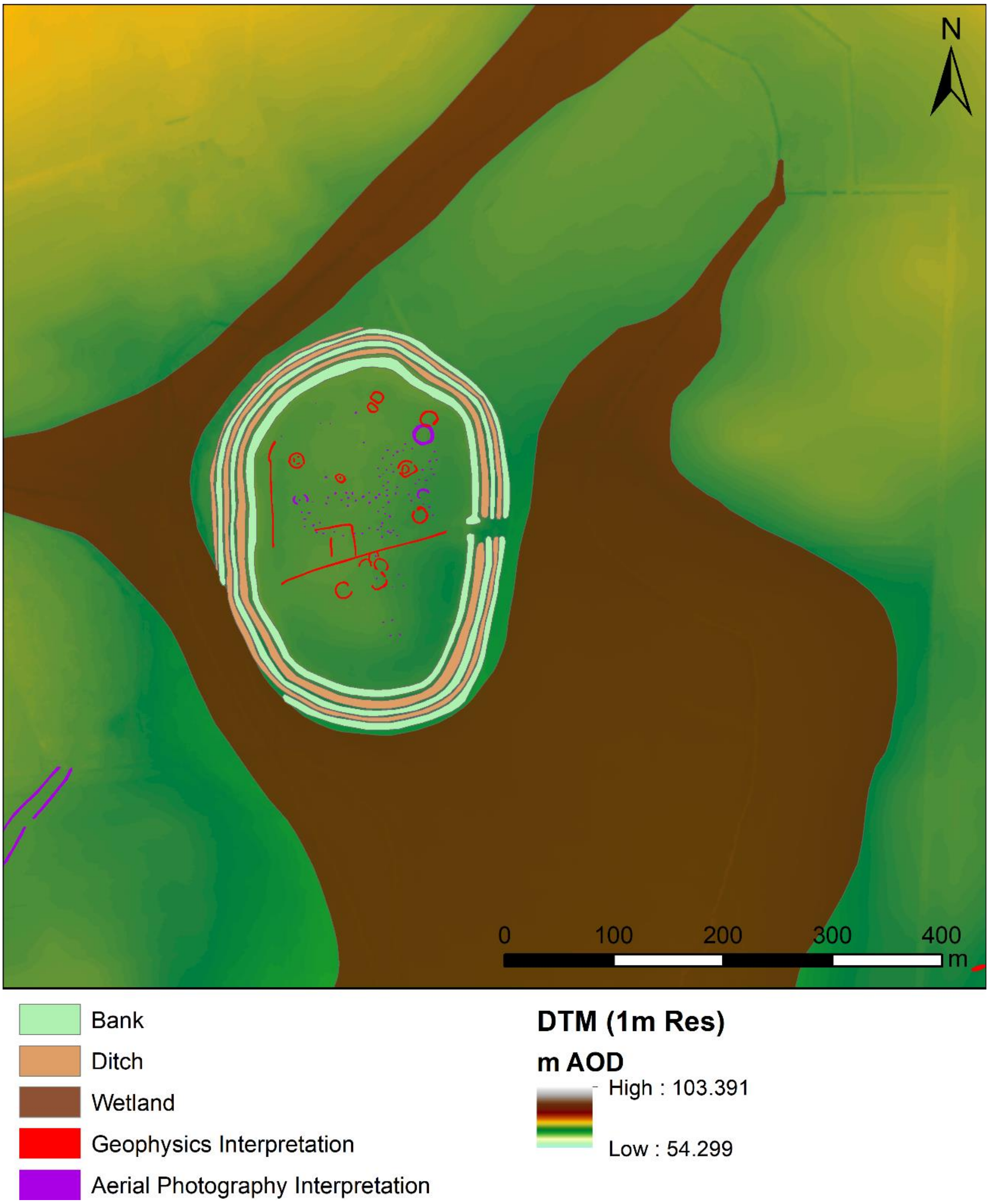


FIGURE 36. PLAN OF CHERBURY CAMP (GEOPHYSICS AFTER WINTLE ET AL., 2009).

FIGURE 37. AERIAL PHOTOGRAPH LOOKING NORTH-WEST TOWARDS CHERBURY CAMP (AUTHOR'S).

The enclosure is multi-vallate; three concentric banks, separated by two ditches, encircle the site (Wintle et al., 2009: 67; Figure 37). A fourth rampart originally identified in the north-east quadrant has since been dismissed as counterscarp (Bradford, 1940: 16). The earthworks along the southern and south-east edge are composed of dumped sandy material, supported and faced by a dry-stone revetment wall. On the opposite side of the enclosure, the ramparts were constructed with an oolitic rubble core. Bradford (1940: 17) suggested that the material used was dependent on local availability. The ditches were broad and shallow, and their form has been linked to constraints imposed by the wetland environment (Bradford, 1940: 16).

Investigations by Bradford (1940: 17) have dismissed two breaks through the earthworks, facing north and south-east, as later alterations linked with agricultural access but identified the east-facing break as the single original entrance. Post-holes were identified during the excavation, providing evidence of a gate structure occupying the stone-revetted entranceway with a cobbled surface (Bradford, 1940: Plate IV, B). Two possible access routes can be suggested. One follows the route around the north-east section of earthworks and then off to the ridge at Lovell's Court Farm. This route seems the most logical based on the geological and LiDAR data. An alternative heads directly east from the entrance across the wetland to an area of raised ground that can be seen in the DTM (Figure 36). This route intersects the stream, where

Bradford (1940: 18) noted a 'distinctive stone spread' that may represent the remains of a former causeway. Beyond a surface observation, however, this does not appear to have been validated by any further work. Ultimately whichever access route was used, the landscape around Cherbury Camp has since been so intensively ploughed that it is unlikely any archaeological evidence would have survived.

Ring ditches and pit clusters have previously been identified within the hillfort (Wintle et al., 2009). At least a dozen ring ditches were identified, which were interpreted as representative of Iron Age roundhouses (Wintle et al., 2009: 68). Discrete features have been interpreted as either hearths or pits. The presence of pits is curious. Iron Age pits are typically associated with grain storage; however, Wintle et al. (2009: 68) state that the damp environment at Cherbury would not have been conducive to this function. Alternative purposes for pits include structured and unstructured deposition (see Cunliffe, 1972).

Bradford (1940) initially dated the site to the early first century CE based on its multi-vallation and pottery evidence. Cunliffe (2005) has suggested that multi-vallate hillforts are predominantly a characteristic of the Middle-Late Iron Age. Harding (1972: 52-53), however, has since revised Bradford's pottery dates to no later than the second half of the first century BCE and suggested that the site was abandoned by the last quarter of the first century BCE, substantially earlier than the Roman conquest. Harding (1972) and Hingley (1983) have also suggested that the extant earthworks represent a reworking of the enclosure in the Middle Iron Age, obscuring earlier ramparts, indicating a main phase of occupation at the site dating to the Early and Middle Iron Age. While excavation has not confirmed this, evidence from comparable sites in the vicinity has been used to support this hypothesis (Fenner, 1994: 27).

Arkell (1939) has previously argued that the wet and boggy environment provided a natural defensive position, substituting the usual topographic advantage of hillforts. Bradford (1940: 15) has also suggested that the location would have afforded defensive qualities in hiding the enclosure. While this is a possible interpretation, it derives from the predilection for focusing on 'hillforts' as primarily defensive, which was common at the time of their writing. While modern agriculture has undoubtedly transformed the landscape around Cherbury Camp, there appears to be a consensus that it would have once been surrounded by marshland. Whether primarily defensive or not, this would have restricted access to the site. The tentative evidence for the access route into the enclosure warrants further work and will undoubtedly factor into the interpretation of the site and how it utilised its landscape. If access was from the north, near Lovell's Court Farm, it may be considered significant that the entrance is east-facing, rather than more conveniently located on the north side. This could relate to the wetland, a cosmological significance proposed by Hill (1996: 110), or an altogether unidentified significance. Alternatively, if access was across the wetland, this represents the most convenient access point but still does not discount additional functions or significance. Morphologically, the site appears typical of hillfort enclosures such as Badbury Rings, adopting its wetland surroundings in a manner comparable to the topography around a contour fort.

4.2.15 Clare Camp

Clare Camp is located in common land, in the market town of Clare, Suffolk (NGR 576860 245840). The site is 600m north of the River Stour, near its confluence with Chilton Stream, which passes east of the site. It is listed among the potential marsh-forts in Fletcher (2007). The Atlas of Hillforts lists it instead as a hillslope fort (Lock and Ralston, 2017). A site visit was carried out at the site on 10th August 2021 as part of this project.

FIGURE 38. SOUTH EARTHWORKS AND ENTRANCE AT CLARE CAMP, FACING NORTH (AUTHOR'S).

The site is located on the eastern edge of Lowestoft Formation diamicton, overlaying chalk bedrock, with a north-south band of clay, silt, sand and gravel Head separating it from a band of Alluvium along the route of the Chilton Stream. The stream is a tributary of the River Stour to the south. The alluvium corresponds with the base of the valley. The land here is now drained, evidenced by drainage ditches. There are, however, some indications of its former nature in the vegetation and cluster of ponds in this area east of Clare Camp. The form of some of these ponds, as seen on OS mapping, suggests a natural origin formed from cut-off former sections of the stream. It suggests a fluid landscape, with dynamic or multiple channels of the stream feeding through the valley and creating a much wetter environment than is present now. An archaeological watching brief at 22 Bridewell St, which backs onto the eastern side of the site, reported clayey soils and poor drainage, with trenches quickly filling with ground water during the excavation (Westall, 2011). The site sits on a slight hillslope towards the Chilton Stream, between 58m and 52m AOD, at its west and east, respectively. Given the size of the enclosure, however, this presented more as a gradual gradient.

The earthworks form a roughly D-shaped enclosure, with the straight side east-west to the south. The site is bivallate except for the eastern earthworks and the eastern half of the southern earthworks. Here, the site has been encroached upon by the town of Clare. Excavations at the properties on this side of the enclosure have revealed evidence of the continuation of the outer bank and ditch (Westall, 2011). The earthworks are best preserved on the north side and western half of the south side. As seen from the photo of the southern earthworks, the inner earthworks are more substantial (see Figure 38). The inner bank measures approximately 2m high, and the ditch is approximately 2m deep in its current state, in contrast to the outer ditch, which was approximately 1m deep at this point. The inner and outer ditches were spaced approximately 3m apart, and whilst the ground level was the same height as the exterior of the enclosure, it seems likely that there was originally a bank here. The absence of a bank may result from damage; however, the base of the outer bank is considerably narrower than the inner bank, indicating it would have still been smaller in its original form. Field observations and a DTM of the site also identified a ledge inside the outer bank in this section of earthworks. It does not appear to have been a feature of the rest of the circuit. Without excavation, it is unclear whether this is an original feature. If it is, it may represent the core of a stepped timber-framed rampart structure, similar to that interpreted at Blewburton Hill, Berkshire (Harding, 2012: Figure 3.3A, described 60-61).

Clare Camp has two probable original entrances, facing south (A) and east (B) (see Figure 40). The south-facing entrance is a simple gap with a causeway through the earthworks (Figure 38). Erosion of the earthworks has made the break of slope on either side diffuse, making it difficult to measure the width of the entrance, but it appears to be approximately 4m. The east-facing entrance is inturned. In its current state, the eastern entrance is approximately 18m wide. A slight terrace sits between the two inturned banks, with ditches on either side (Figure 39). The northernmost of the two continues broadly west-north-west to the centre of the enclosure, turning sharply north and running to the northern earthworks. The southern ditch continues west, approximately half the width of the enclosure, abutting the manor complex. It is cut by a feature labelled on OS mapping as a pond, but which appears likely to be the remains of small-scale quarrying. It seems likely that these and many other earthworks identified in the interior are related to a medieval manor complex identified in the western half of the enclosure (Oswald and Kenney, 1993). It is unclear which aspects of the current form represent the original features of the enclosure. The inturned banks on either side are likely original (see Payne, 1994). The 'terraced' platform, however, could be a medieval feature, or the result of cutting in relation to the properties to the east. Regardless, its width makes it appear likely that this was a far more substantial entrance than its southern counterpart.

FIGURE 39. LOOKING SOUTH-EAST, ACROSS THE EASTERN ENTRANCE AT CLARE CAMP, WITH A SMALL TERRACE BOUNDED BY DITCHES (AUTHOR'S).

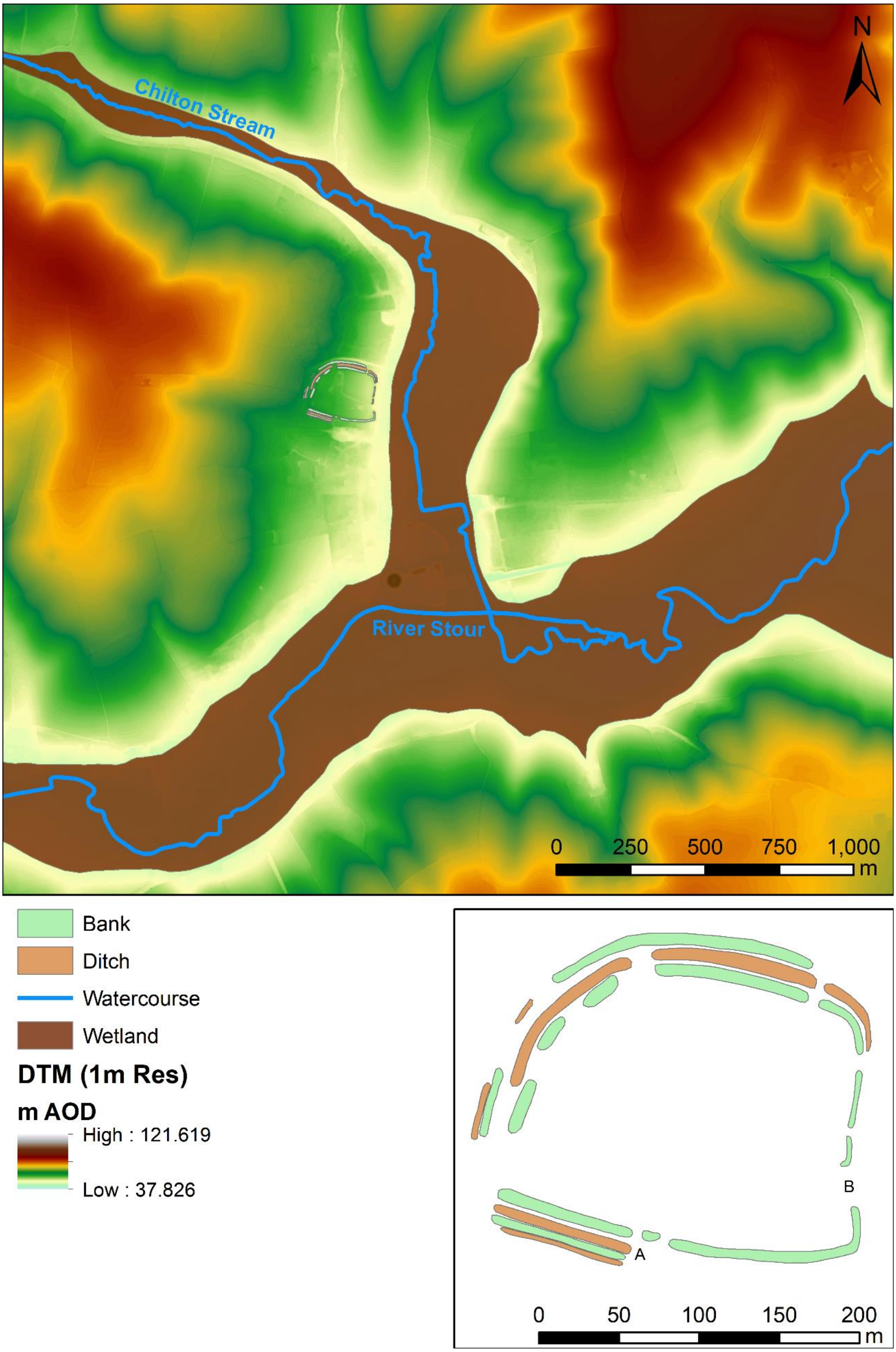


FIGURE 40. PLAN OF CLARE CAMP EARTHWORKS ARCHITECTURE AND LANDSCAPE SETTING.

The HER and Atlas of Hillforts record the site as undated (CLA 010; Lock and Ralston, 2017). An archaeological watching brief at the Old Vicarage, located over the missing section of the southern outer ditch, however, recovered a single sherd of possible Iron Age pottery from the ditch (Everett, 2008). While this remains tentative, the morphology of the site is consistent with other Iron Age enclosures (see Oswald and Kenney, 1993). Beyond the two watching briefs on its periphery, there have been no other excavations at the site. Aerial photography and geophysics have also provided no evidence for features within the interior, although medieval activity at the site would raise issues over dating any of the features that these methods could identify.

There is sufficient evidence for wetland to justify Clare Camp as a marsh-fort in some form. While the comments by Westall (2011) provide some evidence of this, it is unclear exactly how close the wetland came to the eastern entrance. It is, therefore, difficult to assess how accessible the eastern entrance would have been. Its size, particularly in relation to the smaller southern entrance, suggests it is likely to be the main point of access. It also seems likely that the earthworks in their original form would have had water in the ditches, but whether this was an intentional design feature is unclear. The profiles of the ditches are not flat-bottomed as in other wetland enclosures such as Arbury, where water prevented deeper excavation. The proximity to a water source provides a compelling explanation for the site's location. Further work would be required to provide a fuller understanding.

4.2.16 Dinas Dinlle

The site of Dinas Dinlle is unique among the other sites discussed in this paper in its location. It is located high on a coastal cliff edge in the village of Dinas Dinlle, 1km west of Llandwrog, Gwynedd, north-west Wales (NGR 243700 356350). Dinas Dinlle is used in the text below to refer to the enclosure unless explicitly stated otherwise. The site is categorised as a potential marsh-fort by Fletcher (2007). The Atlas of Hillforts recognises it as a 'contour hillfort sited on fast eroding glacial drumlin' (Lock and Ralston, 2017). Griffiths (1949) refers to the site as a cliff fort, while other mentions of the site use more generic terminology: hillfort (Smith, 1993), hilltop enclosure (Davidson, 2002) etc. Over a quarter of the site is believed to have been lost to coastal erosion (Lynes et al., 2021; CHERISH, 2021; Figure 43). As a result, the site has been subject to recent work by Gwynedd Archaeological Trust and the RCAHMW as part of the CHERISH project. The site has functioned as a golf course and a WW2 defensive position in the past, but it is now used for sheep grazing and tourism.

The topographical position of Dinas Dinlle creates an imposing feature of the landscape (see Figure 41). At a height of 26-30m AOD and with steep sides, it towers over the surrounding land, which sits only 2-4m AOD. Lock and Ralston (2017) suggest that the coast would have been further from the site in the Iron Age. This has been corroborated by the recent work of the CHERISH project (pers. comm. Robson, 2023; Figure 43). Geological mapping shows the site on an area of Hummocky (Moundy) Glacial Deposits. BGS mapping shows an area of peat 130m to the south-east, extending 650m away from the enclosure, before fish-hooking to the west. The site sits on a geological promontory into clay, silt and sand Raised Tidal Flat Deposits, 150m to the north and east. Its western extent is now lost to coastal erosion, perched on a cliff edge, with a sand and gravel beach below leading to the Irish Sea. Field observations on 29th July 2021 indicated marshy ground north-east and east of the site. This is now largely drained, with a sea wall preventing marine incursions, but its former wetland nature is still evident in some of the vegetation. Factoring OS map annotation of marshy ground extending beyond the peat (corroborated by the aforementioned field observations) and incorporating areas of tidal flats and land heights relative to sea level, it is likely that the extent of the historic and prehistoric wetland was originally much larger (as represented interpretatively in Figure 42).

FIGURE 41. PHOTOGRAPH LOOKING WEST TOWARDS DINAS DINLLE (AUTHOR'S).

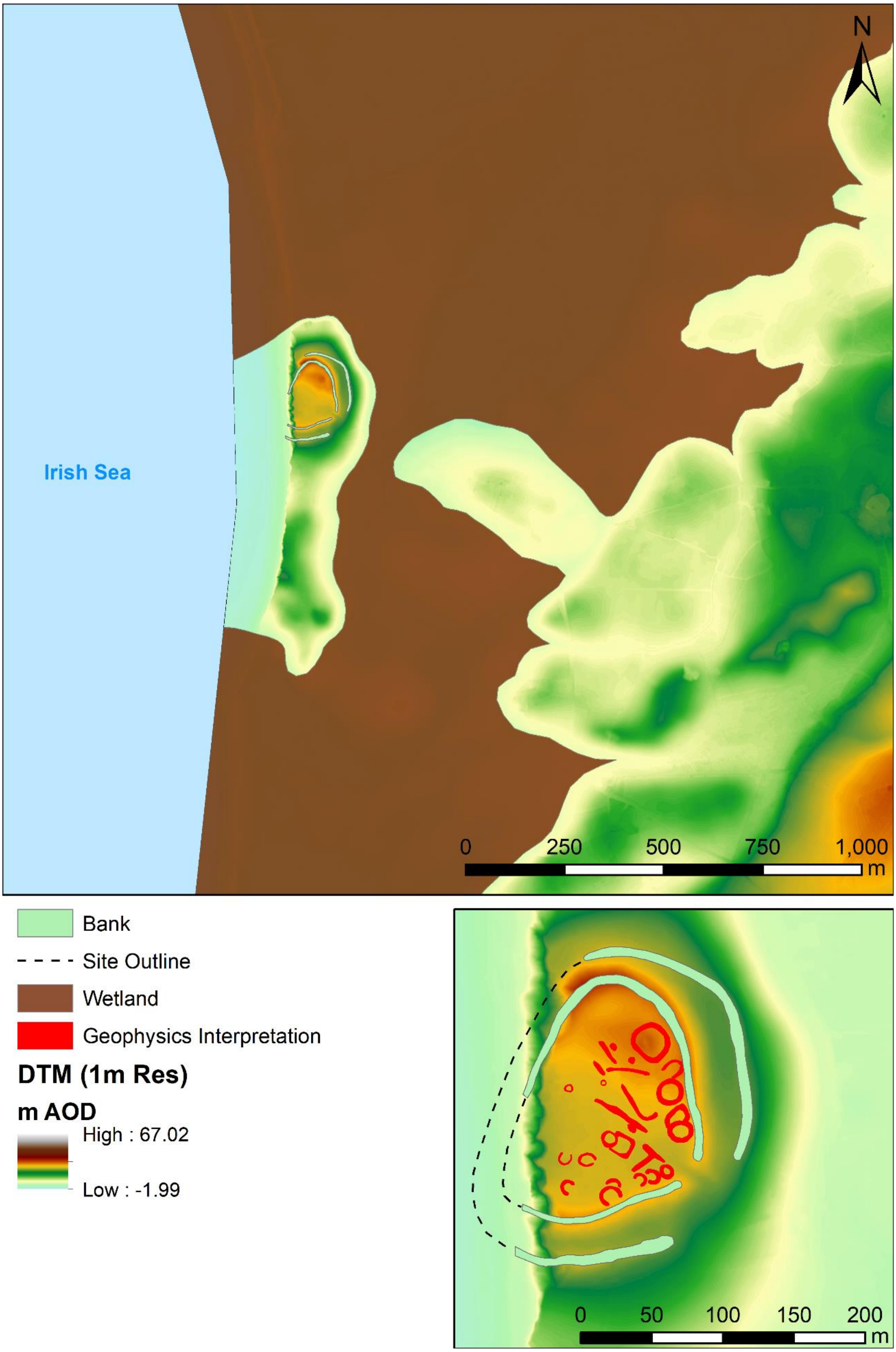


FIGURE 42. PLAN OF DINAS DINLLE EARTHWORKS ARCHITECTURE AND LANDSCAPE SETTING, WITH PARTIALLY ARTISTIC REPRESENTATION BASED ON HISTORICAL MAPPING AND OTHER DATA TO INTERPRET THE POTENTIAL EXTENT OF PREHISTORIC WETLAND. GEOPHYSICS AFTER HOPEWELL, 2018.

FIGURE 43. RECONSTRUCTION OF DINAS DINLLE, FEATURING EROSION LINE (WESSEX ARCHAEOLOGY; © CROWN COPYRIGHT: RCAHMW, 2023, LICENSED UNDER THE OPEN GOVERNMENT LICENCE).

The surviving sides of the enclosure are bivallate. The inner bank tops the crest of the hill, with the outer part way down its slope. The earthworks were cut such that they terraced the hill and thus created a *de facto* bank between the two. They are highest on the north side, where the bank is 3.6-6m higher than the interior. On the east and south sides, the internal height of the inner bank measures 2-2.6m high. From the summit of the inner bank, the 'ditch' between the two banks measured 6-10m. The outer bank is best preserved on the east and south sides, to a height of 1.5-3m from the base of the intermediate ditch. Given the partial destruction of the site, it is difficult to measure its size. Its current extent, measured to the cliff edge, covers a total footprint of 2.8ha, enclosing 1.2ha. Coflein (National Primary Record Number (NPRN): 95309) suggests the site would have originally enclosed an area of 4ha, although it seems more likely that this would have been the original footprint, with the enclosed area measuring the 1.6ha referenced in the Atlas of Hillforts (Lock and Ralston, 2017).

The site has one entrance: a simple gap through the south-east section of the earthworks. It is approximately 6m wide. A gradiometer survey of the site indicated a possible stone surface through the entrance, interpreted as an attempt to prevent erosion (Hopewell, 2018). This feature is, however, undated. Without the missing western earthworks, it is impossible to determine with certainty that this was the sole original entrance.

The interior of the enclosure is relatively flat but features a mound in its north-east corner. Geophysics of the interior may indicate a ditch encircled this mound, though it should be noted that this feature was not mentioned in the discussion (Hopewell, 2018: Figure 1). One could suggest this to be the remains of a barrow; however, given the varied uses of the site in the post-medieval and modern periods, it is difficult to interpret the results with a sufficient degree of surety. The geophysics has also indicated the presence of multiple potential roundhouses (Hopewell, 2018; see Figure 42). Excavation has since confirmed this, along with occupation layers (Lynes et al., 2021). Radiocarbon dating of samples from occupation layers has produced the following dates:

TABLE 13. RADIOCARBON DATES FROM DINAS DINLLE EXCAVATIONS (LYNES ET AL., 2021: 67-70; RECALIBRATED).

Context Description	Material	Lab Code	Radiocarbon Age (BP)	Calibrated date (95.4% probability)
Occupation layer from centre of roundhouse	Spelt wheat glume	SUERC-94824 (GU55724)	1925±24	27-204 cal CE
	Alder charcoal	SUERC-94825 (GU55725)	1749±24	241-381 cal CE
Occupation layer	Alder charcoal	SUERC-94826 (GU55726)	1696±21	259-415 cal CE
	Oak charcoal	SUERC-94827 (GU55727)	1916±24	31-210 cal CE

It is uncertain whether the earlier dates represent deposited material from earlier occupation. Other dating evidence from within the enclosure is artefactual, including second-century CE Samian ware and black-burnished ware, and a fourth-century CE jet bead from a necklace (Lynes et al., 2021). Other artefacts have been regarded as potentially Iron Age. Previous evidence correlates with the later dates, indicating an occupation phase dating to the Roman period. Coins dated CE 253 to 296, an intaglio and a sherd of black burnished ware pottery dated to the second or third century CE have all been previously found at the site (Griffiths, 1949). The pottery has since been described as late third to mid-fourth century CE by Smith (2005: 12), although there is no publication of any reassessment to this accord. The dating is inconclusive but hints at domestic activity within the enclosure from the Iron Age onwards.

Dinas Dinlle is a particularly interesting example of the current marsh-fort classification. Its topographic position gives it many advantages commonly associated with hillforts. The steep hillslopes increase the effort required to access them, and its height juxtaposed with the surrounding low ground makes for an imposing feature of the skyline. This topographical advantage is atypical of most marsh-forts, which are more commonly low-lying. Indeed, this is reflected in the application of alternative categories to the site, notably 'contour fort' by Lock and Ralston (2017). That said, the marshland to the north, east and south-east make compelling evidence for its marsh-fort status. Before modern land draining, it is possible to imagine that these wetland areas may have impacted access to the site. The landscape has been significantly altered by coastal erosion and other processes, requiring further investigation and modelling to imagine it in its original form.

4.2.17 Green Island

Green Island is another unusual enclosure among the sites currently grouped within the marsh-fort category. It is located beside Milton Loch, between the village of Crocketford and the hamlet of Milton, in Dumfries and Galloway (NGR 283850 571640). The Atlas of Hillforts lists the site as a marsh-fort (Lock and Ralston, 2017). The Sutton Common monograph does not list the site within its gazetteer but does not extend to Scotland. Field observations were carried out on 5th August 2021.

The site occupies an inland promontory on the western edge of Milton Loch. The location overlies diamicton Devensian Till. The promontory extends from the base of a hillslope to the west (Figure 45). Patches of wetland are common throughout the surrounding landscape. Peat deposits are situated 450m to the north, and alluvium 500m to the west and 425m to the south-west, enclosing the hill from which Green Island extends. The land is now drained and primarily agricultural with the exception of the peatland to the north, which still features wetland vegetation.

Geological mapping shows the promontory as a continuous extension from the hillslope. Field observations and the DTM, however, have revealed a slight depression at the base of the hillslope, where the ground is approximately 1m deeper than the interior of the enclosure (interior: 127m AOD). Due to the proximity of this ground to the water level of Milton Loch, the ground was heavily saturated and boggy when crossing.

No causeway was identified. This topographic feature effectively cuts off the promontory and forms a barrier to access. Tall vegetation obscured its exact form during the site visit, making a full assessment difficult (Figure 44). A more extensive survey is required to determine whether this sunken area was anthropogenic or natural, and whether it would have been present at the time of the enclosure's construction. The feature and the boggy ground within may also explain the site's categorisation in the Atlas of Hillforts. To the north, east and south of the enclosure, there is an 18-45m buffer of lower ground (125-126m AOD) sloping gently towards the Loch. On the south side of the enclosure, the ground appeared solid, with outcrops of stone. By contrast, the margin of land to the north and east appeared somewhat softer, suggesting these environmental constraints limited the extent of the enclosure (see also Coles, 1893: 110).

FIGURE 44. GREEN ISLAND, FACING NORTH-EAST TOWARDS MILTON LOCH FROM THE HILLSLOPE TO THE WEST (AUTHOR'S).

The earthworks at Green Island are univallate. A single bank and ditch form an east-west elongated oval enclosure around an interior of 0.12ha (Figure 45). These earthworks appeared at their highest and deepest at the western end of the enclosure. Truckell (1963: 92) recounts that the landowner had previously ploughed up preserved timbers from a rampart; however, there is no evidence to suggest where precisely these were found, and they have since been lost. The extant earthworks do not appear to have been subject to ploughing, so these timbers may have been from a now-destroyed outer earthwork. Given the preservation, such an earthwork may have been located in the lower area, cutting across the promontory. Without a more accurate record, however, the timbers cannot be definitively attributed to this enclosure. There is a single, simple gap entrance at the west end of the enclosure, measuring 2m wide. The internal height of the bank measures up to 0.9m, while the ditch is described simply as shallow (Lock and Ralston, 2017). Although obscured by tall vegetation, field observations estimate the ditch to be up to 0.5m deep. At the western end of the enclosure, the ditch features squared corners rather than following the curvature of the bank. Though fairly low, the profile of the earthworks remains steep. We may tentatively suggest that their gradient indicates they have not had as much time to erode and are, therefore, less likely to be of Iron Age origin.

Coles (1893: 111) identified three slightly raised, stony mounds within the interior. Due to the thick vegetation, however, these could not be confirmed during the site visit. It is unknown what these features were or whether they represented archaeological remains. The remainder of the enclosure appeared flat. No features are known within the interior due to a lack of archaeological investigation.

Whilst no dating evidence has been recovered from the site, Piggott has suggested the site to be medieval (Piggott, 1953: 135). Piggott's comments come from her excavation report of an Iron Age crannog 190m north of the site. An additional crannog has since been located 540m to the south-east on the opposing bank of Milton Loch (HER Dumfries & Galloway MDG5485). Truckell (1963: 92) has also suggested that the site may be Viking. It seems likely that this has been derived from the vaguely ship-shaped outline of the site (see Söderberg, 2005: 123 for an example of ships influencing Viking architecture). An alternative comparison can be drawn with the enclosure at Hurlstone Point, Somerset (HER Exmoor MSO8051). This enclosure is morphologically similar, with nearly identical measurements, and occupies a coastal position that is analogous to the lakeside position of Green Island. The Hurlstone Point enclosure has been categorised as a post-medieval enclosure. There appears to be limited justification for this dating, however, beyond a possible association with a nearby field system of this date.

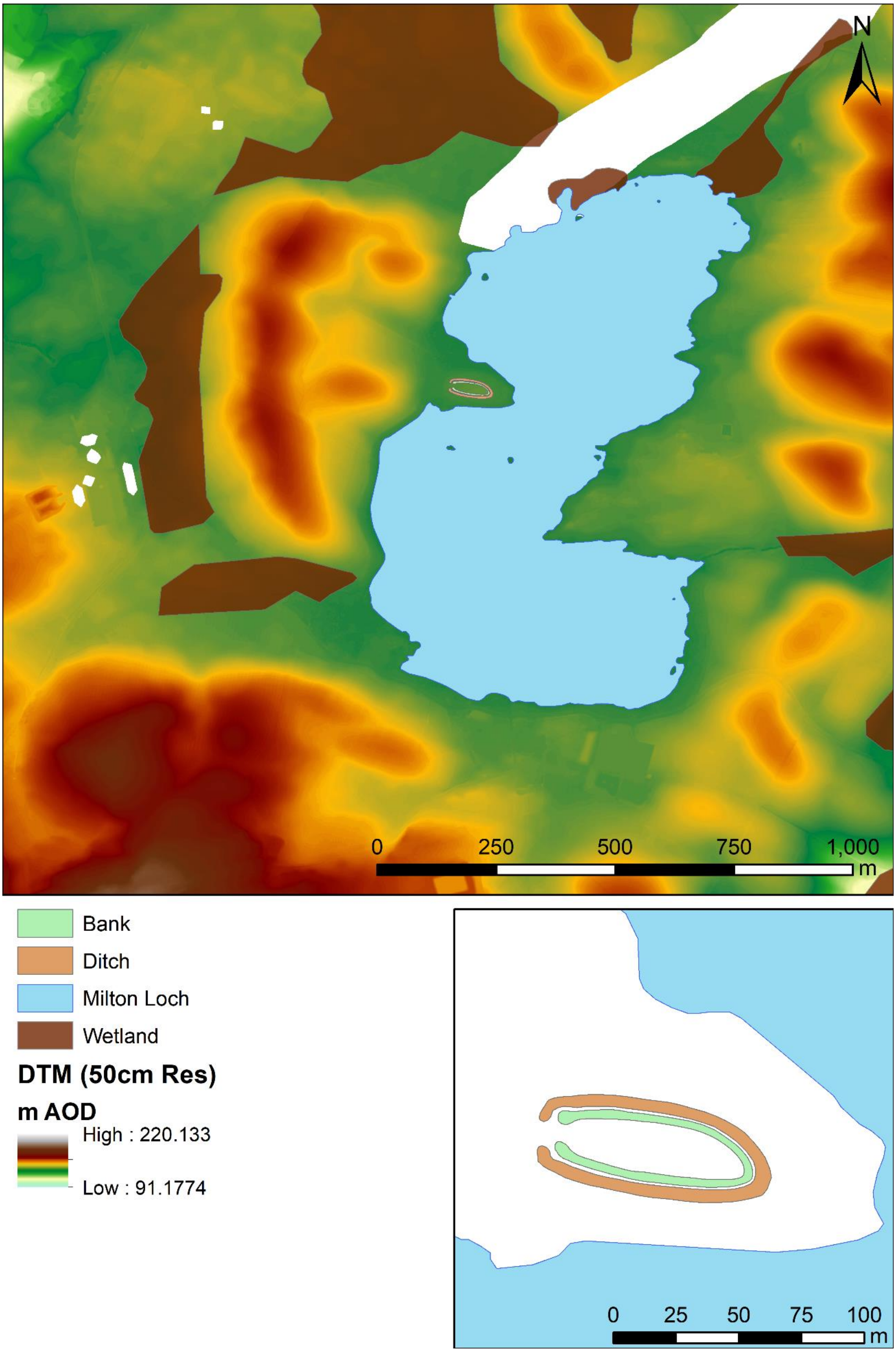


FIGURE 45. PLAN OF GREEN ISLAND EARTHWORKS ARCHITECTURE AND LANDSCAPE SETTING.

The peat and alluvium deposits in the wider landscape could suggest the site was cut off, with access restricted to a few gaps between the areas of wetland. That said, further work would be required to determine the nature of the alluvium, particularly to the west and south-west, where no traces of a previous wetland were identified in the current landscape. It seems likely that the enclosure has been located to utilise the natural promontory and its proximity to a water source. The main issue, however, in categorising this site is whether it fulfils the criteria of the 'fort' aspect of 'marsh-forts'. Its size is of particular note. The site is one of the smallest in the study. While its shape is primarily a result of geological constraints, the elongated shape is atypical of Iron Age sites. The squaring of the western termini of the earthworks also supports this. While based largely on morphological examination and undoubtedly warranting further work, the earthworks have been largely regarded as medieval. It is, therefore, unlikely that this can be considered an Iron Age marsh-fort. It is perhaps described as a water-edge promontory enclosure.

4.2.18 Hetha Burn West

Hetha Burn West is situated in the Northumberland National Park, 1.7km south-west of Hethpool, near Wooler, Northumberland (NGR 387880 627480). The Atlas of Hillforts has categorised the enclosure as both a marsh-fort and a hillslope fort (Lock and Ralston, 2017). It is not referenced in Fletcher (2007).

The site occupies the lower slopes of a north-west facing hillslope between 176m and 196m AOD. Hetha Burn runs north-east along the base of the slope. The stream is relatively small in its current extent, up to 1m wide and fairly shallow. The enclosure overlies Devensian Till (diamicton), which occupies much of the valley base and lower hillslopes. The underlying bedrock and higher slopes are formed of Cheviot Volcanic Formation andesite. Geological mapping reveals some alluvial deposits 650m to the north-east along Elsdon Burn, which Hetha Burn feeds into, but they have not been identified closer to the site. Marshy ground north-west of the site, along the valley bottom, has been recorded (Lock and Ralston, 2017); however, this was unable to be verified due to access constraints during a site visit on 4th August 2021. The reported marshy conditions are likely the result of water run-off from the slopes into the valley, feeding Hetha Burn. Geological mapping by the BGS shows no indication of the formation of wetland sediments in immediate proximity, in contrast to other watercourses further north where areas of alluvium and peatland have been recorded in association. The lower slopes around the enclosure were occupied by heathland vegetation. The landscape beyond the protected area around the site has been cleared and given over to grazing.

The site is bivallate, comprising two earth and stone ramparts up to 1.3m high and 5m wide, and an intermedial ditch, only recorded on the eastern half, 0.5m deep and 4m wide (SAM 1014497). A field observation in 1955 suggested the earthworks survived better on their eastern site (HER Northumberland 637). This bias is equally apparent in the LiDAR DTM. On the western side, the space between the two banks expands to 16m, and previous reports have recorded no trace of a ditch (Lock and Ralston, 2017). A detailed earthwork examination using a LiDAR-derived DTM, however, has revealed the potential remains of at least a partial ditch on this side (see Figure 46). Whether by design or survival, it is not apparent on the surface in the north-west quadrant between the two banks, where their spacing widens to 16m. If intentional, this may suggest a division of space with activity in this area. Given the site's hillslope location, the ditch may have only been cut on the east side to redirect water around the interior. It is equally possible, however, that a western ditch may have been infilled by colluvial activity. The earthworks form a sub-oval enclosure with an interior of 0.2ha. Entrances are recorded on the north and south sides, with a possible guard chamber west of the southern entrance (Lock and Ralston, 2017). Due to poor access to the site and the low resolution of available LiDAR data and satellite imagery, this has not been able to be confirmed.

There is no known excavation or survey of the site. No features have previously been identified within the enclosure. A re-examination of LiDAR data and aerial photography within this research has produced similar results. The Iron Age date is dependent on morphological comparison with other hillslope forts.

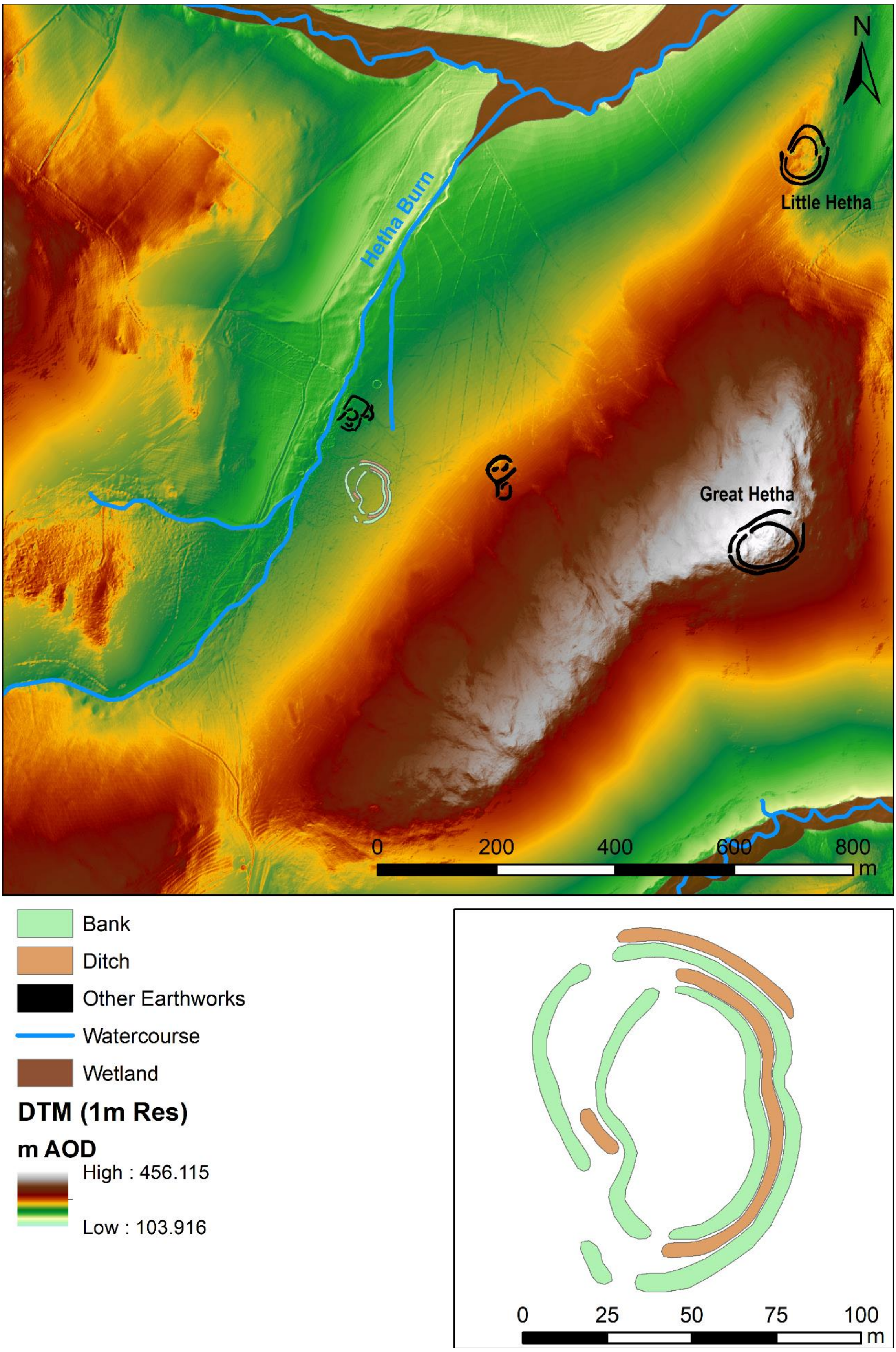


FIGURE 46. PLAN OF HETHA BURN WEST EARTHWORKS ARCHITECTURE AND LANDSCAPE SETTING.

FIGURE 47. EARTHWORK REMAINS OF POSSIBLE ROMAN PERIOD SETTLEMENT 40M NORTH OF HETHA BURN WEST, FACING SOUTH-EAST (AUTHOR'S).

To the north of the site, further down the slope, some earthworks have been included within the same scheduled area as the main enclosure (see Figure 46). The SAM record for the site refers to this as a Roman period settlement. While this appears as a series of irregular earthworks on OS mapping, field observations suggest it appears more likely to be the remains of a rectangular structure or enclosure approximately 31m by 38m, and small-scale quarrying (see Figure 47). A 40m gap between the two suggests the feature and enclosure are not connected. Both the SAM record and the Atlas of Hillforts mention an annexe to the north-east of the site. It is described as a sub-rectangular area of levelled ground, approximately 113m by 40m, defined by a low, broad bank up to 0.5m high and 4m wide and trackways running along each side. The annexe was not identified during field observations or from the DTM. It is unclear whether this possibly relates to the smaller enclosure 170m to the east (SAM 1015193; see Figure 46), although this is also listed as a Roman period settlement. It comprises a series of terraces cut into the hillslope for roundhouses.

The wetland designation of Hetha Burn West appears to stem from its proximity to the stream at the base of the hillslope. Absent further investigations, it is impossible to determine the function of the enclosure and any activities that would have taken place in or around it. However, the site forms part of a much larger and active landscape through this period and into the Roman period. It is located 565m downslope from the hillfort of Great Hetha, a hilltop or contour fort, with substantial bivallate earthworks and evidence of prehistoric domestic buildings (SAM 1014508; see Figure 46). The Iron Age is a vast time period, however, so whilst it may be tempting to think of the site as a contemporary satellite enclosure, it could also relate to an altogether separate period of activity. The proximity of the water course and the evidence for occupation at other local sites highlight the site's value as a domestic site, although this is by no means a definitive or exclusive interpretation. It does not, however, appear to suit the marsh-fort classification designated by the Atlas of Hillforts project.

4.2.19 Holkham Camp

Holkham Camp is located on the north Norfolk coastline, within the Holkham National Nature Reserve (NGR 587430 344730). At only 5m AOD, the site is one of the lowest marsh-forts examined in this project. The site has been classified as a marsh-fort by both gazetteers (Fletcher, 2007; Lock and Ralston, 2017). Fletcher takes particular note of its similarity to Sutton Common; however, this is largely due to its height and setting. The site is protected as a SAM, but also due to its location within the nature reserve, which is a part of the North Norfolk Coast Site of Special Scientific Interest (SSSI).

FIGURE 48. EXTRACT OF MAP OF NORTH NORFOLK COAST (BUDGEN, 1815; REPRODUCED WITH THE PERMISSION OF THE BRITISH LIBRARY).

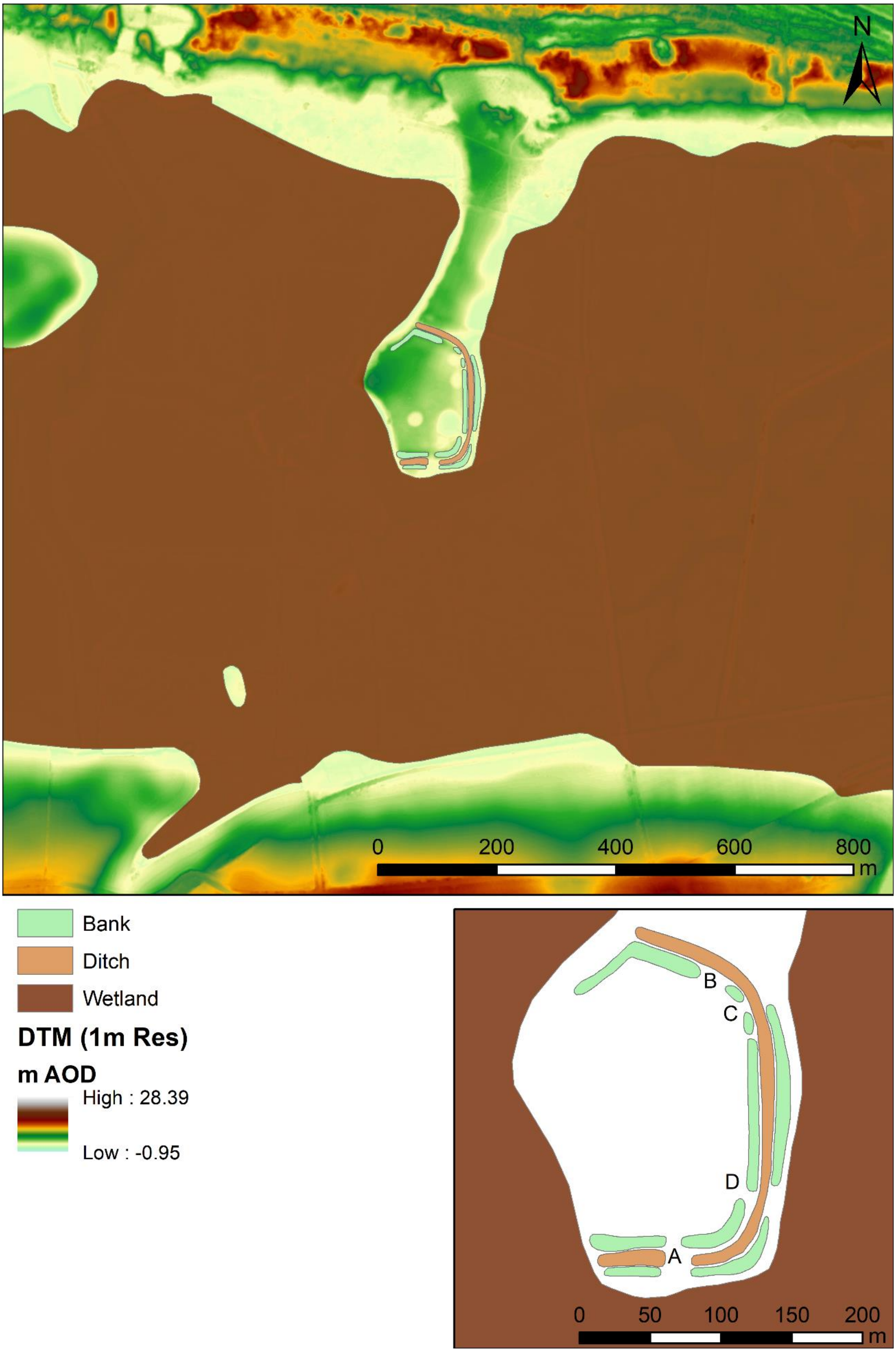


FIGURE 49. PLAN OF HOLKHAM CAMP EARTHWORKS ARCHITECTURE AND LANDSCAPE SETTING.

Holkham Camp is one of only two potential marsh-fort sites from either gazetteer which are located on the coast (the other, Dinas Dinlle). The enclosure at Holkham is located less than 1km from the sea and surrounded by salt marsh. It is built on the southern end of a spit, specifically its recurve. Longshore drift appears to have continued later, creating its current form as a promontory that extends into the centre of Tidal Flat Deposits (see Figure 49). The promontory extends from the north, forming a natural causeway to the enclosure. The spit itself is comprised of blown sand. The current landscape around the site is typical of coastal wetland; however, it is important to note that it is the product of gradually receding arable horticulture replaced by grazing and rewilding of the saltmarsh over the last century. Between 1639 and 1859, a series of embankments were constructed between Burnham Overy and Wells-next-the-Sea (Hiskey, 2016: 434). This was done to convert the land for agricultural use, although much of the land has since been reverted to form the nature reserve. Through this process, however, the landscape has been dramatically altered. Prior to the construction of the embankments, tidal creeks through the marshes were large enough to allow ships to reach a staithe at Holkham village via the harbour at Wells-next-the-Sea (Hiskey, 2016: 437). A map from 1815 shows a waterway passing immediately south of the enclosure, although it is not certain that its course at the time had remained the same since the Iron Age (Figure 48).

The earthworks at Holkham enclose an area of approximately 2.5ha. They are partially bivallate. An inner bank and ditch define the enclosure on the northern, eastern and southern sides. A less prominent outer bank surrounds the southern and eastern sides. The western side features no earthworks but is defined by a steep scarp, approximately 3m higher than the surrounding wetland. The level of the interior appears higher towards the west side of the enclosure, so it seems likely that this scarp was perceived to be a sufficient barrier for this edge of the site. The banks survive up to 2m high, and the ditch up to 1m deep. The ditch on the eastern side appears to have been recut as part of a drainage ditch. As such, the eastern outer bank is separated from the rest of the earthworks. It is possible that this instead represents upcast from the later recutting; however, it does appear to follow the line of the bank from the south. Unfortunately, during a site visit on 12th August 2021, this stretch of earthworks was covered by shrubs. The outer earthworks also do not appear on any maps predating the drainage ditches; however, this has been interpreted as a lack of detail rather than an indication of their absence. Excavation would be required to determine the true nature and date of the earthworks.

There are four breaks through the bank(s): one facing south (A), and the other three on the east-facing stretch (B, C and D) (Figure 49). The three eastern breaks have been interpreted as modern, related to the drainage of ponds in the interior or agricultural access (Lock and Ralston, 2017; HER Norfolk 1776). The access route along the spit from the north, however, makes a compelling argument for an entrance on this side of the enclosure. The northern-most eastern entrance is the most suitable of these (labelled B, Figure 49). The entrance is narrower than the southern entrance, only approximately 2m wide, with the bank gradually sloping on either side (see Figure 50). No causeway has been identified across the northern ditch connecting the enclosure to the rest of the spit. It is likely, however, that the ditch was recut to connect it to the land drainage system as part of the transformation of the land for agriculture. Such works have the potential to have destroyed earlier features, such as the hypothetical causeway. The south-facing entrance is a simple gap through both lines of earthworks. This entrance may have allowed access to the tidal creek shown passing here on the nineteenth-century map (Figure 48); however, without a chronological understanding of the development and movement of the channel, such interpretations are restricted. There appears to be no other access route to this entrance beyond a possible water route.

FIGURE 50. GAP (B) IN NORTH-EAST SECTION OF EARTHWORKS AT HOLKHAM CAMP, FACING SOUTH-WEST (AUTHOR'S).

No known excavation or other intrusive archaeological fieldwork has been conducted at the site. As a result, little is known about the date of the enclosure or any activity that took place therein. Two tentatively dated sherds of handmade pottery recovered from the surface represent the only Iron Age artefacts directly associated with the site (HER Norfolk 1776). The earthworks have been dated to the Iron Age based on morphological interpretation. Excavation would be required to confirm the accuracy and determine a more precise date. Several Mesolithic and Neolithic lithic artefacts have also been identified at the site, indicating earlier activity there (HER Norfolk 1776). This evidence for continued use could support an argument for the value of resources found at the site. Due to the limited information, it is difficult to determine the exact use of the enclosure in the Iron Age. The enclosure has been suggested to be the site Tacitus describes where the Romans defeated a rebellious faction of the Iceni in CE 47 (*The Annals* 12.31), the alternative candidate being Stonea Camp.

Further work is undoubtedly required to support any sufficient interpretation of Holkham Camp. While a modern reconstruction, the current biodiversity of the wetland landscape demonstrates the wealth of potential resources that may have surrounded the camp. In a relatively flat area of Britain, the site provides a suitable alternative to a hilltop for constructing such an enclosure. Land access appears restricted to only a single route from the north, and the earthworks follow the natural extent of the raised land. Here, however, the comparison with hillforts ends, and there appears to be something unique to marsh-forts. The earthworks appear improperly biased. Despite the supposed access from the north, the earthworks are focused towards the wetland, with the addition of an outer bank on the east and south sides. An argument may be made for lines of sight across the wetland from the original coastline approximately 550m to the south, however, further work would be required to determine this. Given the low-lying nature of the landscape and the distance, though, it is uncertain that this would have made a significant impression. The south-facing entrance adds to this conundrum. It is the only clear original entrance. While it may have been accessed via boat, the evidence for this is inconclusive. It also seems unlikely that this would have been the main entrance. Evidence for inland water transport in the Iron Age is restricted to log boats (see Dunkley, 2014). Whilst this entrance may not have been the only one into the enclosure, with the possible suggestion of another facing north-east, it is by far the largest. Substantially more effort was expended in its construction, which does not appear to be balanced in terms of use, given the limitations of access using small vessels.

4.2.20 Island Covert

Island Covert has also been categorised as a potential marsh-fort in the Atlas of Hillforts (Lock and Ralston, 2017). The site is located just off the B4211, approximately 1.3km west of the River Severn, near Longdon Heath, Upton-upon-Severn, Worcestershire (NGR 384383 238539). The site is not mentioned by Fletcher (2007). The site is in dense woodland, surrounded by arable land.

The enclosure overlies the edge of an area of Holt Heath Sand and Gravel Member superficial deposit, overlaying Rugby Limestone Member. Alluvium deposits run along the River Severn. At their closest point these deposits are 1km east of the enclosure. At this point, the River Severn bends ninety degrees to the north-east. OS maps show land drains following the original north-west orientation. Given the irregular shape of the drains, they do not appear to be anthropogenic cut features and may represent the original path of the Severn. The alluvium deposits fork here along the lines of the land drains and the current path of the river. Photos of previous flooding (e.g. Webb Aviation, 2007) show water restricted to the area of low elevation, which matches these deposits. Flooding did not reach the enclosure. The site is located in a slight hollow in an otherwise relatively flat area of land, at 21m AOD, immediately north of Tipney Hill. The inside of the enclosure sits 1-2m above the surrounding landscape.

Price (1989) describes the marshy ground around the site as a product of a ditched stream which drains through the site from the east. While the site's location in a hollow supports the likelihood of water gathering here and creating marshy ground, the dating of the stream that feeds it is less clear. OS mapping reveals a ditch along field boundaries forming a relatively straight line from the east; this continues west of the site. However, the line of the ditch appears to skirt deliberately around the edge of the extent of the woodland covering the site, suggesting it may post-date it (see Figure 51). The curve follows an 'Ƨ'-shape immediately west of the wooded area. This shape is likely to follow the natural contour of the land. Though it could be interpreted as an indication of ridge-and-furrow field systems, there are no other local indications of this on OS maps, current or historic. If this does indeed post-date the woodland, it raises questions about whether the land was marshy at the time of the enclosure's creation.

The site is univallate, enclosing an area of 0.3ha. A survey of the earthworks in December 1989 by South Worcestershire Archaeological Group has produced two significantly different plans (cf. Darlington, 1989 and Price, 1989). A site visit on 16th September 2021 attempted to verify their respective accuracies; however, efforts were hampered by the density of the woodland and scrub. It is likely that this is the reason for the variation between the two surveys. Comparison with the DTM has suggested Price's to be the more accurate (Reeves, 2024b). A rectified version based on LiDAR DTM data is shown here (Figure 51). The enclosure is roughly sub-ovoid. Limited recorded data exists regarding the surviving condition of the earthworks. A section on its eastern side that could be accessed revealed a bank approximately 2m wide and 0.5m high (external height), with the remains of a shallow, in-filled ditch 4.5m wide and less than 0.5m deep. Unrecorded augering at the site suggested that the fills of the enclosure ditch were permanently saturated (Price, 1989). No breaks or causeways have been identified that would indicate an entrance, although, as mentioned previously, the density of the woodland makes a detailed survey difficult.

The site is undated, and no archaeological features have been identified in the interior. As such, little is known about the function of the enclosure. The absence of a causeway across the ditch differs from typical Iron Age 'hillforts'. It is possible that later reuse of the site or recutting of the ditch for drainage may have destroyed any former causeway. Alternatively, the site may represent an altogether different class of monument. This remains speculative, and future excavation is required to address these issues.

Etymology also provides a possible route for understanding the site and its origins (Darlington, 1989; Price, 1989; Reeves, 2024b). The site lies on the border with the parish of Holdfast, and may have once come within this parish. The Survey of English Place-Names records the etymology of Holdfast as 'holh fæsten' meaning 'stronghold in the hollow' (The English Place-name Society, 2022). There are no other known sites within the parish which occupy hollows. It seems plausible, therefore, that this is the site to which it refers. The name is first identified as 'Holanfæstene' in CE 967 (BCS1205, in de Gray Birch, 2012). This suggests the site's origins pre-date CE 967.

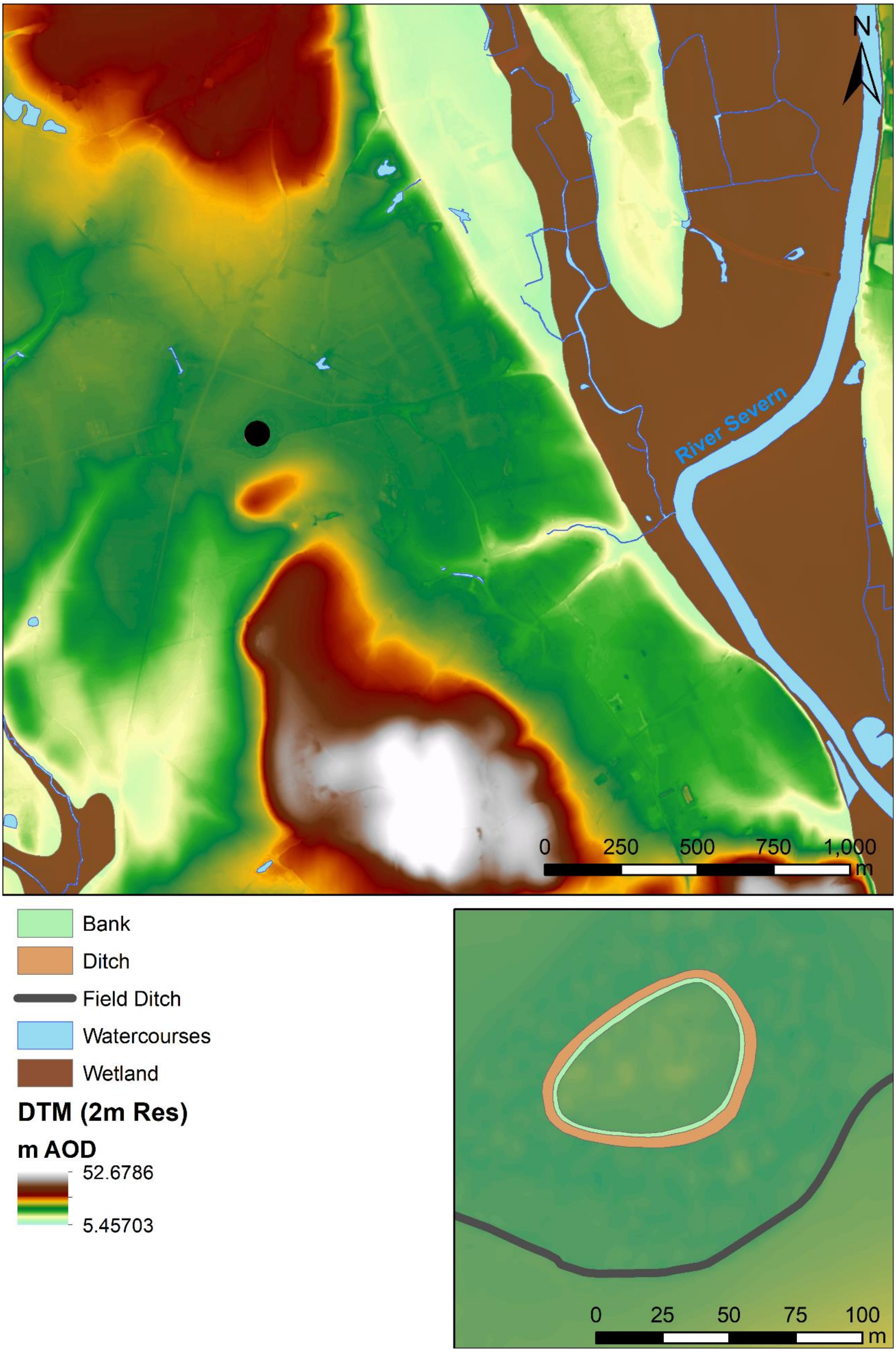


FIGURE 51. PLAN OF ISLAND COVERT EARTHWORKS ARCHITECTURE AND WIDER LANDSCAPE SETTING.

The current marshy ground around the site has undoubtedly played a role in the site's current categorisation as a marsh-fort. However, questions surrounding the origins of this feature of the landscape need to be addressed in future fieldwork to verify the validity of this interpretation. Ultimately, very little is known about this site, its morphology, function, and date, and how it is related to its surrounding landscape. The location is curious. It sits at the base of a hill, with plenty of potential alternative topographically advantaged sites nearby. With the origin of the so-called 'stream' in question, the site also does not appear to offer any particular advantages regarding resources such as water supply. Further fieldwork is required to determine the most suitable classification for the site.

4.2.21 Narborough Camp

Narborough Camp is located in the Narborough Hall estate, east of the village of Narborough, near Kings Lynn, Norfolk (NGR 575130 313090). It sits at 15m AOD. The site was listed as a potential marsh-fort in the Sutton Common monograph (Fletcher, 2007). The Atlas of Hillforts lists the site but categorised it as a partial contour fort on a low plateau or hillslope (Lock and Ralston, 2017). The site is currently covered in woodland.

It is situated on the edge of an area of higher ground overlooking the Nar valley immediately north of the site (see Figure 52). A body of water extending, but now cut off, from the River Nar passes between Narborough Hall and the enclosure, abutting the western earthworks. This water is labelled as a moat on the 1st Edition Norfolk County Series 1:2500 map from 1885. Rickett (1991: 66) reports that the lake expanded to its current extent in the early nineteenth century. BGS mapping shows it overlies West Melbury Marly Chalk Formation. Sand and gravel River Terrace Deposits come close to the site, 70m to the north-east and 115m to the west, following the line of alluvial deposits from the River Nar. Peat deposits are located 2.3km to the south-west at its nearest point; however, this is likely too far to have had an immediate direct impact on the enclosure. That said, it paints a broader picture of the River Nar flowing downhill from the east, past Narborough Camp, to this larger peat deposit, which may indicate a much wetter landscape in the past. The wider River Terrace Deposits also indicate a much larger extent to the wetland than is necessarily represented by the alluvium deposits along the River Nar. There is a significant area of small lakes and woodland north of the river, including and around Bradmoor plantation, with a network of land drains which may indicate previous wetland. Access to the enclosure was restricted to the south-west quadrant during a site visit on 12th August 2021, but no indications of wetland were observed. The surrounding land is part of the Narborough Hall estate, and it is likely that it may have been subject to landscaping that has since disguised its original nature.

The enclosure is univallate; a single bank made of chalk rubble with an external ditch forms a sub-ovoid enclosure with an internal area of 1.6ha. The interior is also higher than the surrounding land, suggesting it is built around a natural knoll. A representative profile of the eastern earthworks, obtained from LiDAR data and verified by field observations, measured a bank of 1-2m external height, 1-1.5m internal height and a ditch 0.5-1m deep and approximately 9m wide. This profile is in contrast to the 3m internal/ 3.6m external high bank recorded by Lock and Ralston (2017). Given that LiDAR shows the eastern earthworks to be the best surviving, it is unclear what this measurement refers to. Curiously, Rickett (1991: 66) records the vertical distance from the base of the ditch to the top of the bank as 3.9-4.9m; however, this was also not able to be replicated using current DTMs. Few remains of any earthworks survive on the west side of the enclosure, with a scarp dropping down steeply 2.5-4.5m to the 'moat'. Rickett (1991: 66) suggests the presence of a bank on this side, which was levelled, possibly between 1810 and 1832. The DTM reveals a very slight rise at the top of the scarp which represent the remains of a bank. Nonetheless, the earthworks form an imposing boundary (see Figure 53).

The enclosure features a single confirmed entrance, facing south-east. This is a simple gap with a causeway across the ditch. Given the height difference between the interior and neighbouring land, there is still a slope up to this entrance, which presents as a dip in the bank at the top (see Figure 54). Lock and Ralston (2017) interpret two additional breaks to the north and south-west as modern. A re-examination using the LiDAR-derived DTM identifies three breaks. One in the north-west appears to be the most likely candidate for an additional original entrance. This break is most likely a simple gap entrance with slight inturned ends. The DTM appears to show this entrance fully inturned. Factoring the condition of the rest of the bank, however, it is likely that bank material has been strewn beyond the original footprint of the bank by later disturbance. This may be the northern entrance referred to by Lock and Ralston, but due to access restrictions during the site visit, it was not possible to examine it in more detail. The two other gaps are more clearly the result of later disturbance. One faces south-west at the point where the remaining bank material begins to give way to the heavily destroyed western bank. The trace of any earthwork features here is too subtle to detect in the LiDAR data, but given the level of disturbance around this point, it seems likely to be more modern. The last and most subtle break faces north-east. This represents a slight dip in the bank but has no indication of a corresponding causeway across the ditch. It is most likely the result of erosion or damage to the earthworks. Indeed, it is located near the neighbouring Park Cottage and seems likely to act as a modern access point from this side.

No recorded excavation has occurred within the enclosure; however, surface finds and earthwork morphology indicate an Iron Age chronology. Surface finds from the site include an Iron Age rim, a possible Iron Age sherd, as well as some later Romano-British sherds and a medieval sherd (Rickett, 1991: 66). Spelman's 1727 publication Icenia also reportedly mentions 'bones and armour' found at the site about 1600, but these finds have been dated as early Saxon (HER Norfolk 3975). With no further reference or detail about the findspot or current whereabouts of the artefacts, this offers little more than hearsay to the interpretation of the site. The woodland obscuring aerial photography and the lack of excavation or geophysics means it has not been possible to identify any features within the interior.

Alluvium deposits have been identified north of the site, but these appear to be the margin of the River Nar, rather than any marshland per se. Fletcher (2007: 172) describes the site as 'overlooking the river crossing and the fen edge'. Further work would be required to determine the exact extent of the wetland, whether it extended to Bradmoor plantation and closer to the enclosure, to be able to make a full determination of the relationship between the site and its landscape. That said, there is a clear association to be made between the site and the River Nar. Its proximity undoubtedly offers a key natural resource and explanation for the site's situation. The enclosure backs onto the river with access appearing solely from the south-east. There is no evidence of a secondary access route from the enclosure directly to the river. Future fieldwork is required to understand the function and date of the site better.

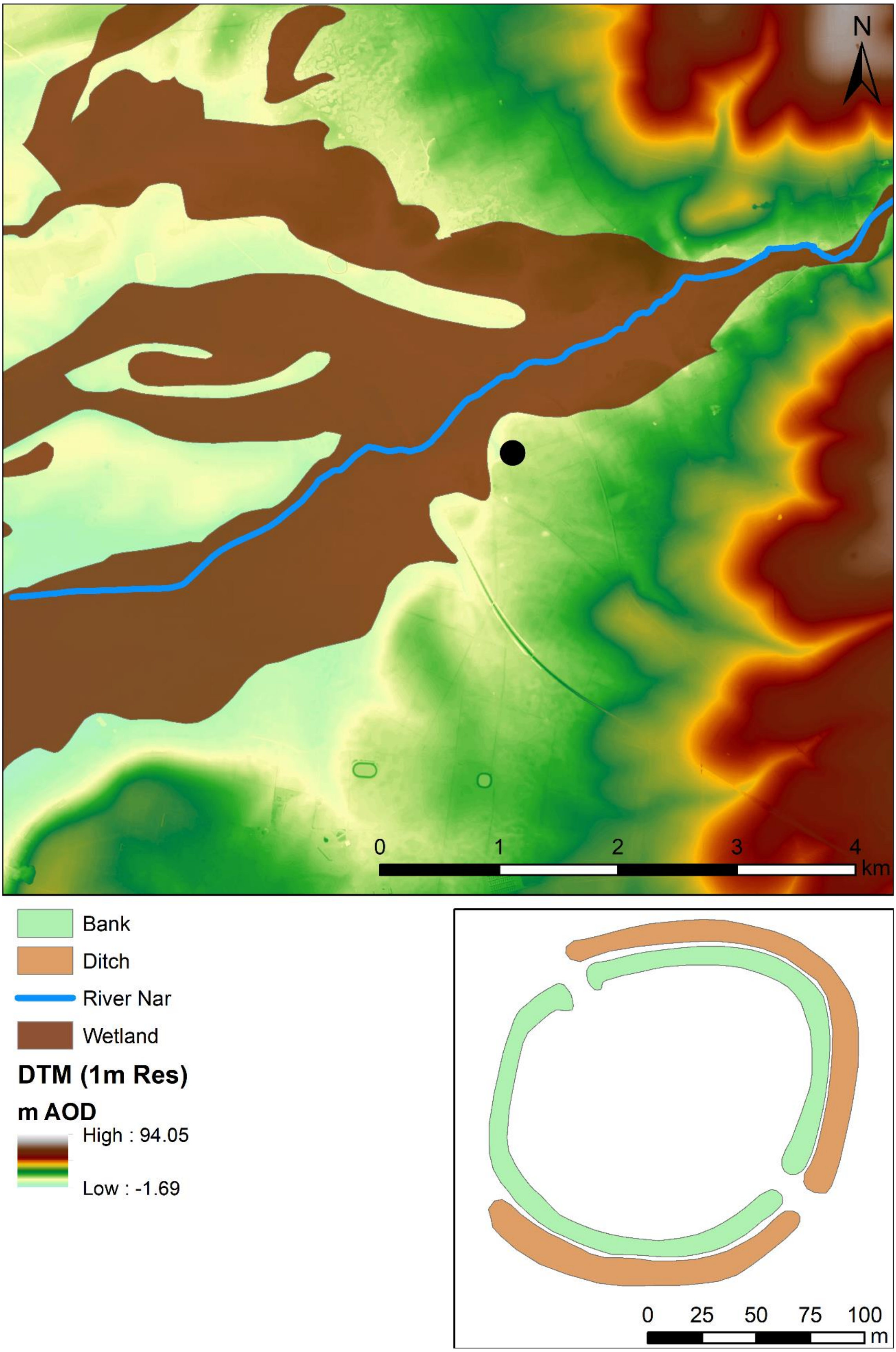


FIGURE 52. PLAN OF NARBOROUGH CAMP EARTHWORKS ARCHITECTURE AND WIDER LANDSCAPE SETTING.

FIGURE 53. EASTERN EARTHWORKS AT NARBOROUGH CAMP, FACING NORTH-WEST (AUTHOR'S).

FIGURE 54. SOUTH EAST ENTRANCE AT NARBOROUGH CAMP (AUTHOR'S).

4.2.22 Oakmere

The enclosure of Oakmere occupies a promontory on the east side of Oak Mere, a large oligotrophic lake formed in a kettle hole, for which the site is named. It is situated north of the intersection of the A49 and A54, in Cheshire West and Chester (NGR 357600 367800). The site is on private land and currently under grass, though it has been ploughed in the past. The site is not mentioned in the gazetteer within the Sutton Common monograph (Fletcher, 2007). The Atlas of Hillforts categorises it as both a marsh-fort and a promontory fort, although the accompanying description only mentions the latter (Lock and Ralston, 2017). The application of the category 'marsh-fort' without a justification demonstrates the lack of in-depth understanding of the term.

BGS mapping shows the site overlies sand and gravel Devensian Glaciofluvial Deposits. A narrow band of alluvium skirts the western edge of the promontory, separating it from Oak Mere. Peat deposits off the north-west and north-east corners of the mere may indicate an originally larger extent. Woodland over this area of wetland spans the 200m between Oak Mere and a larger lagoon to the north, identified by the light turquoise area in the DTM (Figure 55). The lagoon was formed from the former Fourways Sand Quarry pit. A comprehensive study of the landscape by Leah et al. (1997: 116-117) uses historical mapping to reveal that the mere was originally much larger and contained six islands. The shrinkage of the mere is attributed to terrestrialisation by peat growth. Their examination suggests that the mere originally extended further to the north, corresponding with low-lying areas on the DTM. Using this, the wetland extent plotted in Figure 55 extrapolates beyond the extent plotted on historical maps (e.g. nineteenth-century OS map – Figure 56) to suggest a larger expanse of mere or wetland. Further environmental modelling is required to determine the rate of peat growth and shrinkage of the mere and its extent at the time of the enclosure's construction. In addition to this area, there are indications that wetland was spread more widely in the local landscape. The 1871 map of Delamere Forest (fundamentally the same as the 1842 edition but for the addition of railways) also shows an area north of the site labelled 'Plover's Moss' (Figure 56). 'Plover' may refer to a group of wading birds, possibly indicative of wetland, but 'moss' provides a more concrete indication. This place-name suggests wetland may have originally been more prevalent in the wider area, although little evidence of this survives in the geological record. This may be due to transformative agricultural processes.

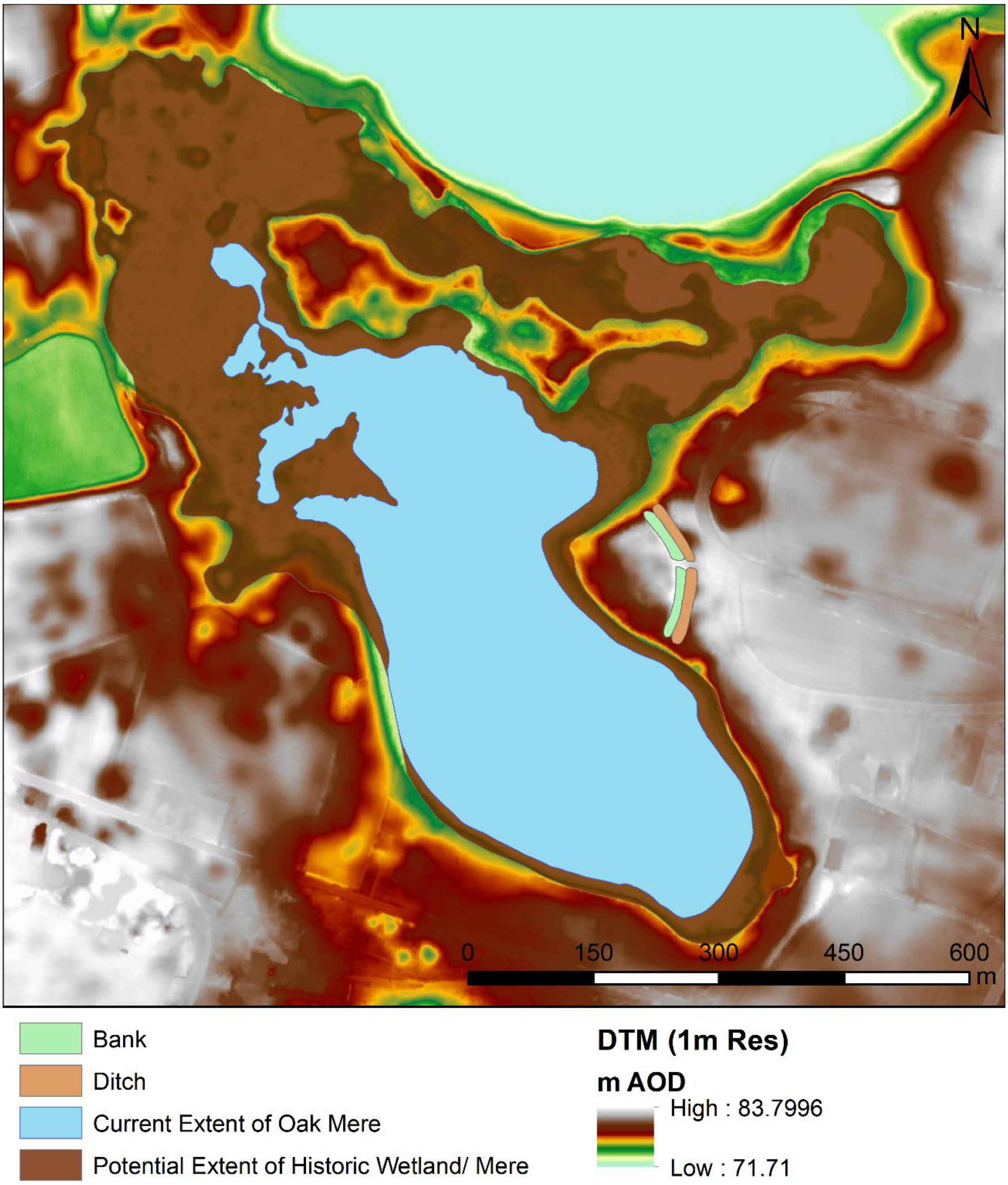


FIGURE 55. PLAN OF OAKMERE.

Beyond this, field observations (taken on 15th September 2021) form the basis of the analysis of the landscape and topography. A small area of the interior closest to the earthworks appeared relatively flat, at approximately 76m AOD. This area was broadly level with the land to the east of the site, although the land immediately east of the northern half of the western earthworks did undulate somewhat. On its south-west side, the ground gradually sloped down to the margin between the site and mere, now relatively flat and covered by woodland. It is easy to imagine, in the mere's original form, that this slope may have gone down directly to the water's edge. The north-western side of the site, however, is markedly different. A steep scarp extends west from the northern edge of the eastern earthworks, gradually tapering out to merge with the more gradual south-western slope. At the base of this scarp is an additional stretch of flat grassland, approximately 18m wide before the woodland margin of the mere.

FIGURE 56. EXTRACT OF MAP OF DELAMERE FOREST (ORDNANCE SURVEY, 1842; REPRODUCED WITH THE PERMISSION OF THE NATIONAL LIBRARY OF AUSTRALIA).

A single bank and external ditch arc across the promontory, cutting it off and forming the western extent of the site. With the mere on the other sides, it encloses an area of approximately 1ha. Lock and Ralston

(2017) recorded the bank as up to 2m high and the ditch as 1.2–2.5m deep, although this has not been verified due to the lack of LiDAR data. It appears broadly consistent with field observations. The bank tapers out at its northern end, and whether it would have originally continued along the top of the scarp is unclear. A section through the bank suggested it was constructed of dumped earth, possibly reinforced by timber (Forde-Johnston, 1962: 21-22).

FIGURE 57. PROBABLE MODERN CAUSEWAY ACROSS EARTHWORKS AT OAKMERE, FACING WEST-SOUTH-WEST (AUTHOR'S).

There is a single break in the earthworks midway along, although this appears modern, with the causeway crossing the top of the banks (see Figure 57). Lock and Ralston (2017) have suggested this is linked to access from the horse-racing track to the east; however, no apparent association can be determined from field observations, historical mapping or aerial photography. Roseveare (2012a: 9) has suggested it relates to a modern service trench. A simple gap between the southern end of the earthworks and the slope down to the water edge has been suggested as the sole original entrance (Lock and Ralston, 2017). This entrance is not mentioned by Roseveare (2012a) or Garner (2016) but was conceivable on the basis of field observations. It also seems possible that a similar proposal could be made for the northern end, with access along the corridor overlooked by the scarp on this side and then up the gentler slope from the north-west. Geophysics have also indicated evidence for a possible inturned entrance here (Roseveare, 2012a: 9).

Forde-Johnston excavated the enclosure in 1960, but interventions were restricted to the earthworks and did not produce any recorded dating evidence (Forde-Johnston, 1962: 21-22). As such, little is known about the date of the site and any activity there. Garner (2012: 44) suggested that the site had late Bronze Age origins based on a comparison with four dated hillforts in the area. These sites (Beeston, Woodhouse, Kelsborrow and Helsby) are located in cliff edge promontory locations with a simple stone or earth bank cutting off the promontory and no noticeable break to indicate a formal entrance. It is worth noting, however, that unlike Oakmere these sites featured no external ditch. The variation at Oakmere could relate to its location at the water edge rather than a cliff edge, with a ditch required to emphasise the earthworks in a flatter landscape. The location of Seven Lows Barrow Cemetery (HER Cheshire 840/1/0) 1.1km to the south-west builds a large picture of Bronze Age activity in the area.

No excavation has occurred within the interior; however, geophysics have raised the possibility of three potential medium to large pits (Roseveare, 2012a: 9). There are no indications of any other features indicating prehistoric structures. Other features have been associated with later re-use of the site (Garner, 2016: 69-70). Excavation would be required to determine the dating of features and their relation to the earthworks.

The dating of this site is of particular importance. There appear striking similarities with other sites in the area, indicating a late Bronze Age date; however, no dateable material has been recovered to confirm this. The site seems quite clearly positioned to utilise the natural boundary provided by the mere on its western side. Indeed, the mere itself would also have provided a valuable resource for the occupants of the enclosure. Some peat deposits to the north-west of the site may justify a ‘marsh-fort’ classification. However, given the association of these deposits with terrestrialisation processes, it is likely they reflect the previously larger extent to the mere. In this hypothesis, the mere remains the prominent landscape feature. Again, the dating of these deposits is key to understanding this site. Overall, the site may be better described as a water-edge promontory fort rather than a marsh-fort, by any definition of the latter.

4.2.23 Oldbury Camp

Oldbury Camp, also known as the Toot, is located at Oldbury-on-Severn, Gloucestershire (NGR 361130 192700). Much of the earthworks are now destroyed by buildings and road construction, with part of the village directly overlying the western side. The site is not mentioned by Fletcher (2007) but has been categorised as an 'unusual and possible… marsh-fort' by the Atlas of Hillforts (Lock and Ralston, 2017). Recent work at the site, by and on behalf of DigVentures, has also described the site as a 'marsh-fort'. Wilkins et al. (2016: 9) note that its features do not fit within its current classification among a group of hillforts within the Cotswolds and suggest that there are greater comparisons to be made with Sutton Common.

The site is at the southern end of a slight elevation at around 11m AOD. This area of elevation represents a geological 'island' of Mercia Mudstone, surrounded by silty clay Tidal Flat Deposits. The 'island' is separated by 100m at its closest point from a topographical and geological promontory to the south (see Figure 59). The River Oldbury Naite Rhine passes around the east and south of the island, feeding into the Severn Estuary through a tidal inlet known locally as 'the Pill'. This river, albeit now diminished in size, cuts off the 'island' from the promontory. Geoarchaeological investigations revealed alluvium deposits at the south of the site dating to the Bronze Age; however, the depositional processes do not appear to have continued into the Iron Age (Tetlow, 2017). As such, this has been used to suggest that land, at least immediately, to the south of the site was dry by the time of the enclosure's construction (Casswell et al., 2018: 26).

The earthworks which survive in the north-east quadrant are bivallate. A profile produced from a DTM of the site shows banks and ditches approximately 1.5m high and deep, gradually stepping up to a higher interior (see Figure 58). While the profile indicates good preservation of the ditches, field observations on 16th September 2021 revealed that the inner bank was largely infilled and a hedgerow largely obscured the outer. The difference in ground levels can also be observed along Camp Road, along the west of the site, where the ground was up to 1m higher on the east side of the road towards the interior of the enclosure. The earthworks enclosed an area of approximately 4ha. Traces of ridge and furrow within the enclosure, in the field just east of Kayles House and the neighbouring orchard off Camp Road, suggest a high potential for damage to archaeological features within the interior and may explain the absence of southern earthworks. A geophysical survey of the site has not identified any trace of the southern earthworks (Lennox and Lambie, 2017). Casswell et al. (2018: 26) suggested the river on this side may have formed a natural boundary; however, given the absence of Iron Age alluvial deposits in the geoarchaeological survey, it seems unlikely the river would have been close enough for this purpose. It therefore is more likely that the earthworks have been destroyed.

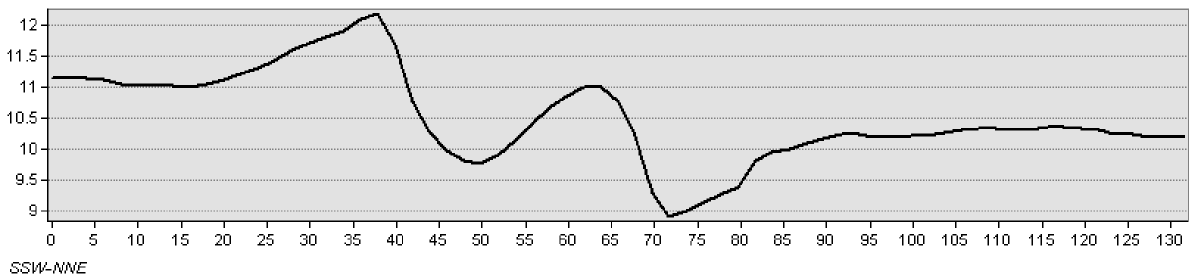


FIGURE 58. PROFILE THROUGH THE NORTH-EAST EARTHWORKS, FACING NORTH-WEST, PRODUCED FROM 1M RES. LIDAR DTM OF OLDBURY CAMP.

Excavations of the ditches and interior have provided dating evidence. Optically Stimulated Luminescence (OSL) samples taken from the inner bank and buried soil deposits indicate the enclosure was constructed in the first centuries BCE and CE (Casswell et al., 2018: 27). Pottery evidence has also indicated Middle Iron Age activity at the site (Casswell et al., 2018: 22). Whilst geophysics did not identify any distinct features, a 'honeycomb' pattern of high resistivity features in the north-east quadrant have been interpreted as either geological or potential evidence for occupation (Lennox and Lambie, 2017: 17-18). A trench in this area led to the discovery of a cow burial; however, post-medieval artefacts stratigraphically pre-dating the pit in which it was found indicate it to be recent (Casswell et al., 2018: 13). A wider area excavation would be required to determine the nature of the geophysical anomalies. Artefacts on the whole appear to be quite scarce, and it seems likely that further fieldwork is warranted to determine the nature of activity in and around the enclosure.

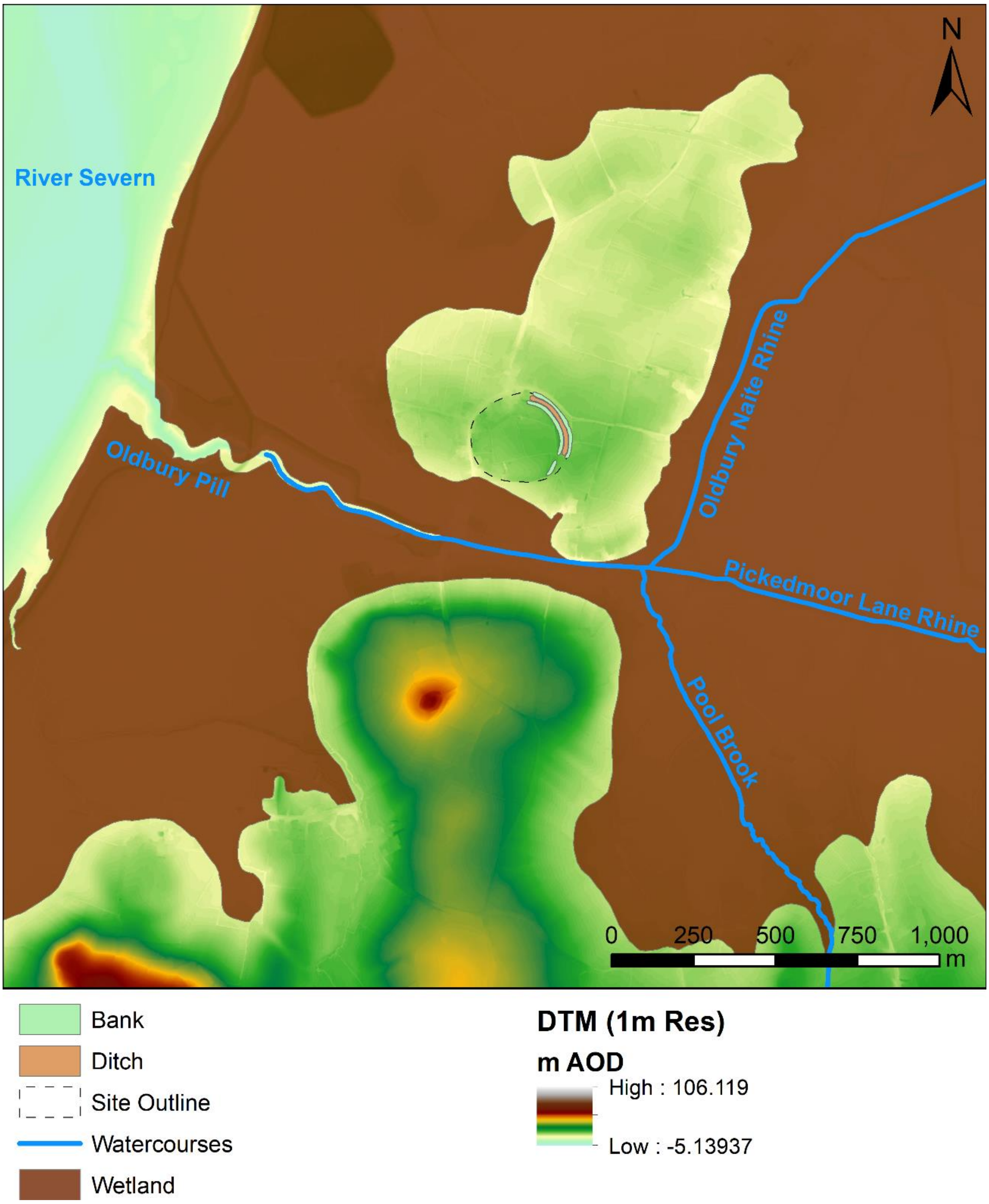


FIGURE 59. PLAN OF OLDBURY CAMP.

Casswell et al. (2018: 28-29) make valid comments about the limiting connotations of the terms 'hillfort' and 'marsh-fort' to Oldbury Camp, preferring to take a site-specific stance, focusing on the enclosure and its role within its surrounding landscape. They suggest geographical similarities with other Iron Age hillforts from the South Gloucestershire region, which overlook the rivers Avon (e.g. Stokeleigh Camp), Boyd (e.g. Wick North), Frome (e.g. Bury Hill) and the Severn Estuary (e.g. Sudbrook Camp). In this attempt to diverge from established categories, however, they have inadvertently identified a new category based on access to and control of navigable rivers. That said, the wetland location of Oldbury Camp extends beyond its connection to the Oldbury Naite Rhine. Although it is possible to argue that the river was the primary explanation for its siting, it would be remiss not to explore the wider implications of the entire landscape. The wetland deposits appear to cut off the site, isolating it on its own island. This isolation indicates heavily restricted access, possibly requiring boats or hitherto undiscovered causeways or trackways. Alternatively, an argument could be made for the promontory just 350m to the south of the enclosure, providing access to the same resources, a drier foundation and topographical advantage (with a summit of 39m AOD), and a clear access route along the promontory (see Figure 59). By our traditional understanding of these sites, this appears to offer the most logical site in the immediate vicinity. While such a proposal is purely hypothetical, it raises the question of what drew the builders of Oldbury Camp to its location in this area of wetland. Unfortunately, the destruction of much of its circuit has significantly hindered our interpretation, removing indications of original entrances and, with them, any potential interpretations about how people moved through and used the space.

4.2.24 Peckforton Mere

Peckforton Mere is located on the east side of a body of water by the same name, halfway between Peckforton and Beeston, in Cheshire West and Chester (NGR 354300 357670). The site appears in the Atlas of Hillforts as an 'inland promontory fort' and possible marsh-fort (Lock and Ralston, 2017).

The site occupies the end of a promontory extending from the north-east to the eastern side of Peckforton Mere at 77m AOD. This position corresponds with BGS mapping showing an area of Till extending into Alluvium and River Terrace Deposits. These, now former, marshland deposits flank the site to the north and south-east at approximately 73m AOD. Much of this land is now mostly dry, with boggy ground restricted to the immediate margins of the mere. Field observations and historical satellite imagery, however, show vegetation indicative of former wetland covering areas of dry land around the site. The River Gowy flows through the mere. 700m to the west, the site is overlooked by Peckforton Hills, topped by Peckforton Castle, built 1842-1851. Whilst the castle was not present at the time of the enclosure's construction, the hills themselves would no doubt have cast an imposing shadow over the site.

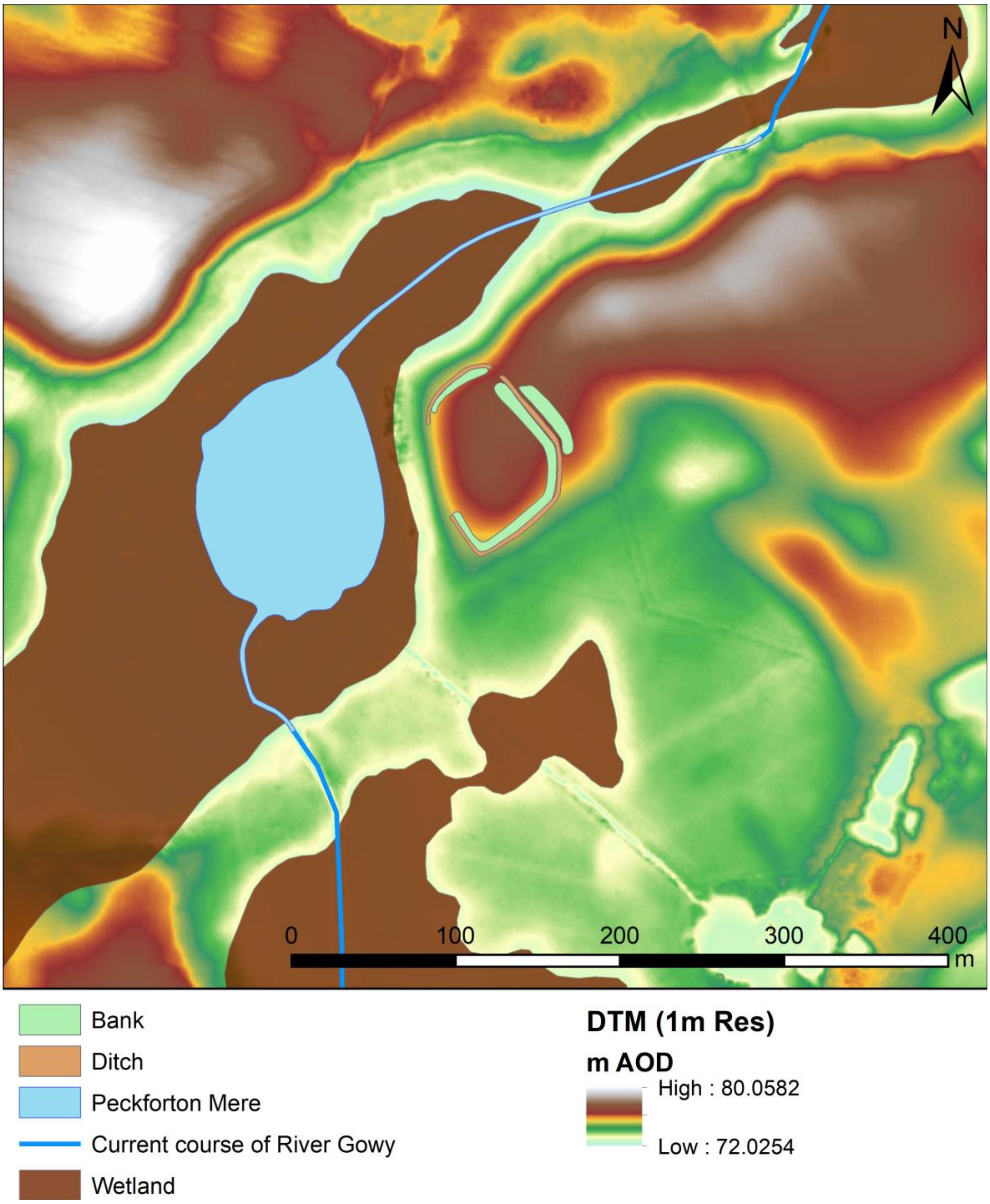


FIGURE 60. PLAN OF PECKFORTON MERE.

The archaeological remains have been substantially impacted by ploughing as recently as 2016 (Google Earth historical satellite imagery), and there is evidence for deeper ridge and furrow plough systems, both north-south and east-west across the site (Roseveare, 2012b). The only surviving trace on the surface is a shallow curvilinear ditch, no more than 0.5m deep, across the north-east approach along the promontory. Field observations verified this as a slight dip in the outline of the topography, only visible when viewed along the length of the ditch. Profiles across the earthworks produced from a DTM in GIS suggest very slight traces of an inner bank and possible counterscarp bank in places, but no indication of this was observed on the ground. A geophysical survey of the site has provided the primary data source for the detection of more extensive remains (Roseveare, 2012b). While the magnetometry survey did not produce any clear response, the electrical resistance survey showed a clear continuation of the earthworks. While incorrectly georeferenced in the original report, this has since been rectified to enable a better understanding of the enclosure architecture (Reeves, 2024a).

The geophysics confirmed the ditch seen across the north-east approach to the site, and revealed its continuation down the north-west and south-east facing sites of the promontory. While it appears slightly inturned on the west side, where it meets the mere, there appears to be an open gap in the earthworks (Figure 60). The ditch is complimented on all sides by what has been interpreted from the geophysics as an internal bank. On the north-east approach, geophysics identified the remains of a second exterior bank, with traces of a potential corresponding ditch suggested in satellite imagery but not identified in the geophysics (Reeves, 2024a). The earthworks form a sub-rectangular enclosure with an internal area of approximately 0.35ha.

Garner (2016: 66) has suggested that the passage of groundwater into the enclosure in the south-east corner, combined with the additional earthworks on this side, make it the likely location for the entrance. The rectification of the geophysics instead places this in the north corner of the enclosure, facing north-east along the promontory (Reeves, 2024a). It becomes difficult to disentangle the interpretation of water ingress in the electrical resistance survey from field observations that the surveyors may have had. However, absent this explanation, there still seems to be an adequate case for an entrance at this (relocated) point in the circuit. The placement of this entrance suggests a route of access along the ridgeway to the promontory, perhaps indicating an inclination away from access on other sides.

While the geophysics shows the possible remains of a rectilinear structure in the interior of the enclosure, this is not believed to be contemporary and has been altogether ignored by Garner (2016: 66). If there were any internal features, they have likely been heavily damaged or destroyed by ridge and furrow ploughing. No finds have been recorded at the site. In the absence of artefactual or environmental evidence, dating of the site has depended on morphological comparison. Garner (2016: 265) has suggested that the earthwork architecture conforms with the Bickerton façade scheme and dates to the Early to Middle Iron Age. The only other possible evidence for activity in the Iron Age comes from palaeoenvironmental evidence for woodland clearance and some regeneration in this period (op. cit.: 240).

Beeston Castle (SAM 1007900), 1.3km to the north-north-west, is the site of an Iron Age hillfort. Field observations suggest that this site would have been visible from Peckforton Mere. While further analysis is required to confirm and explore any relationship through intervisibility, Figure 61, taken from the south-west corner of the enclosure, offers a direct line of sight to Beeston Castle, built over the earlier Iron Age site.

FIGURE 61. PHOTO FACING NORTH-NORTH-WEST ACROSS THE WESTERN EDGE OF PECKFORTON MERE TO BEESTON CASTLE (LEFT, BACKGROUND) (AUTHOR'S).

Peckforton Mere is undoubtedly an unusual site. At first glance, it appears similar to Oakmere, approximately 10km north-north-east; both with earthworks cutting off a promontory on the side of a mere. Geophysics have since revealed the picture at Peckforton Mere to be more complex. The site comprises a more complete circuit of earthworks and is partially bivallate. The orientation of its additional earthworks is of note, facing north-east along the ridgeway and towards the likely route of access. Also of note is the small size of the enclosure. It suggests that the site, if occupied, would have only catered to a small local community. Of its wetland credentials, the picture at Peckforton Mere is less clear. The proximity of the mere and River Gowy certainly indicates wetness, but its exact nature is uncertain. Current conditions suggest marshy margins along the watercourse, but further work is required to determine its historical description.

4.2.25 Salmonsbury Camp

Salmonsbury is a large earthwork enclosure located in Bourton-on-the-Water in Gloucestershire (NGR 417400 220900). Its north-eastern and south-eastern sides are preserved in the Greystone Nature Reserve; however, its western extent has been lost due to the encroachment of the village. Excavations and geophysics have revealed the presence of a Neolithic causewayed enclosure, plough-levelled, within the extent of the later Iron Age enclosure (HER Gloucestershire 40041; visible in the geophysical results - GSB Prospection, 2004 – see Figure 62). It forms part of an extended history of activity throughout prehistory and into later Roman and Saxon occupation of the site. The site is not mentioned by Fletcher (2007) but is listed in the Atlas of Hillforts, which categorises it as a 'part marsh fort and part level terrain fort' (Lock and Ralston, 2017).

The site occupies a very slight promontory extending from the north-west, at approximately 133m AOD. Immediately east of the site is the confluence of the Rivers Eye and Dikler. To the south-west the site is bounded by the River Windrush, which also merges with the Dikler further south-east. BGS mapping shows that the underlying deposits are primarily Sherborne Member gravel deposits. Alluvium deposits follow the lines of the three rivers, converging south-east of Salmonsbury Camp. The landscape has undoubtedly been significantly altered since the construction of the enclosure. A comparison of historical mapping and aerial photography places gravel quarrying east of the site between 1953 and 1977. Drainage systems throughout the landscape and pools to the east of the site, representing the flooded quarry pits, reveal significant water management. As a result, any wetland in the Iron Age is likely now lost. That said, the need for drainage also suggests that the landscape would have been considerably wetter without it. The interior of the enclosure is relatively flat but for a slightly lower channel across the north-eastern edge of the site where a stream passes through, feeding into a pool east of the site.

The earthworks at Salmonsbury Camp define a rectilinear, roughly square, enclosure with an internal area of 23ha. They are bivallate, although substantial areas are damaged by ploughing and levelling to build houses. Surviving ramparts measure up to 2m high. On the east of the side, univallate earthworks extend to the original marshland, curving slightly inwards at the ends, creating a 6ha annexe (see Figure 62). Dunning (1976: 76) reports that the east side of the annexe was open with a stream and marshy ground neighbouring the River Dikler, forming a natural boundary. Excavations show multiple transformations of the site. An area along the north-west boundary revealed phases of occupation abandonment, quickly followed by the construction of a smaller enclosure with further occupation. This evolved into an open settlement characterised by rough stone paving, followed by Roman occupation (Dunning, 1976: 83-86). While this represents only a small section of a much larger site, it demonstrates how the site was transformed continuously to suit the needs of its occupiers.

There are two breaks through the surviving north-east and south-east earthworks (see Figure 62). The former, facing north-east, appears to be a simple gap entrance, situated midway along the bank. It is preserved as a modern field entrance with modern dry-stone walling atop the remains of the earthwork. Dunning (1976: 76) describes the south-east break as not an entrance but a break to allow for the passage of the stream through the enclosure. Work by Cotswold Archaeology has revealed the continuation of earthworks at least part way across this gap (Crees, 2015). With the annexe earthworks continuing from the main enclosure, however, this gap provides the most obvious access point into the annexe. An additional original entrance is recorded towards the southern end of the north-west side in an 1840 plan of the site; further observations suggest it was inturned (Dunning, 1976: 76; see Figure 62). Reconstructions shown on information boards at the site posit the existence of a south-west entrance; however, this side has been comparatively less investigated, and there is no clear evidence for such an entrance.

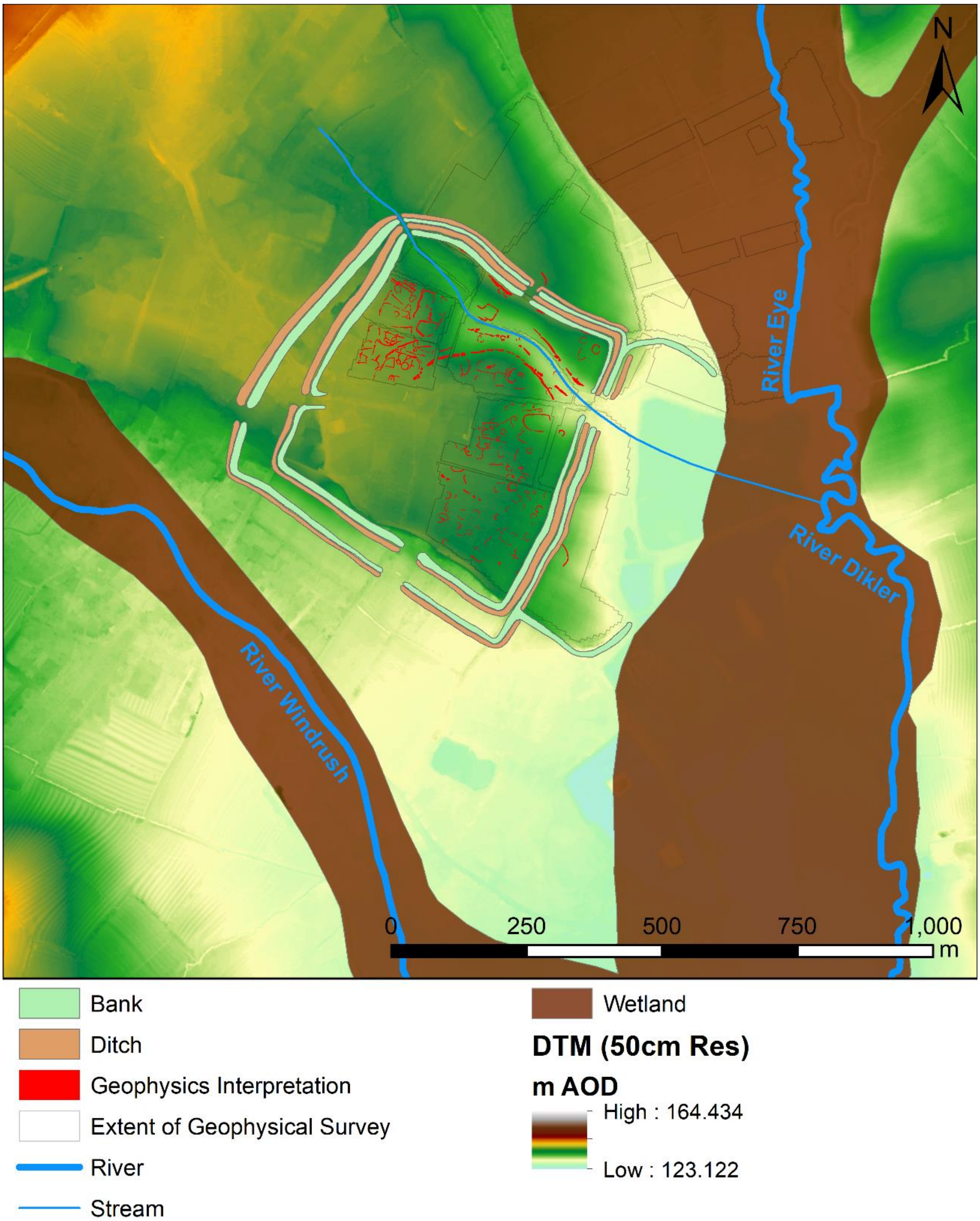


FIGURE 62. PLAN OF SALMONSBURY CAMP.

The site is one of the more intensively excavated of the case studies included in this paper. As such, a wealth of archaeological remains and artefact assemblages have been recorded and recovered, which gives us a more in-depth insight into activity in and around the enclosure. Excavations and a geophysical survey carried out across the interior of the enclosure have provided clear evidence for the occupation of the interior. This occupation evidence includes a multitude of roundhouses, enclosures, ditches, storage pits, burials, quern stones and large quantities of pottery (Dunning, 1976; GSB Prospection, 2004).

One hundred and forty-seven currency bars were also recovered from a gravel pit on the north-west side of the site, carefully arranged in two rows (Allen, 1967: 328-329). The manner in which they were laid out may indicate structured deposition, possibly a hoard. Iron currency bars are traditionally interpreted as a medium of exchange pre-dating the adoption of coinage (Brown, 2009: 164), indicating a trade network operating through the enclosure. Some other more unusual finds include a small (45mm) stone 'pyramid', which has been suggested to have ritualistic associations (Brown, 2009: 135, 139). A snake-headed bronze bracelet and small Romano-British stone altar found during gravel quarrying east of the site may indicate wetland deposition (Gloucestershire Wildlife Trust, 2006). Human remains were also found at the site, which exhibited potential signs of cannibalism, including smashed long bones to extract marrow and evidence that the brain was removed soon after death (Dunning, 1976: 116-117; cf. Harding, 2016: 206-208 maintains there is no conclusive evidence for cannibalism in Iron Age Britain).

The large size of Salmonsbury Camp has led to multiple variations as to which category it belongs. Dunning (1976: 75) regards it as an outlier of the multivallate hillforts of the Cotswolds region but otherwise does little to explore its categorisation. Meanwhile, Cunliffe and Rowley (1976) suggested that it is an enclosed oppidum. The term 'oppidum' is not listed among the hillfort types in the Atlas of Hillforts (Lock and Ralston, 2017); rather, it is regarded as a separate class of monument. The Atlas of Hillforts has classified the site as part level terrain fort, part marsh-fort. This uncertainty exemplifies the need for a more nuanced approach. The site at Salmonsbury exhibits evidence for multiple and evolving functions: a defensive site, socio-economic and trade centre, habitation, and ritual activity. The presence of the annexe, in particular, lends itself to suggesting a direct link between the wetland and the enclosure. Geophysics, albeit with only partial coverage of the annexe, has provided little evidence for the occupation of this area in the form of ring ditches or pits (GSB Prospection, 2004). Brown (2009: 55) offers multiple possible interpretations regarding the construction of annexes in general: corrals for livestock, extensions of 'living space' and spaces for ritual activity. The evidence from the geophysics appears more consistent with either the first or third of these options. The presence of wetland and its significance in prehistory highlights the potential for the latter. The wetland deposition activity indicated by the discovery of the two finds recovered during gravel quarrying supports the interpretation for ritual significance. As such, it is easy to imagine the wetland was seen not just as a natural resource but also had deeper meaning to the users of Salmonsbury Camp.

4.2.26 Skipwith

Skipwith is located in Skipwith Common National Nature Reserve, 5.7km north-east of Selby, North Yorkshire (NGR 464620 437510). The remains of the enclosure were destroyed by RAF Riccall airfield, which was constructed over the site, and there is minimal mention of the site in the HER or other literature. The site is not featured within the Atlas of Hillforts but is suggested as a potential marsh-fort by Fletcher (2007).

Burton (1754, in MAP Archaeological Consultancy Limited, 1994) mentions the enclosure, referring to it as an 'emcampment' near several tumuli on Skipwith Common. The only existing plan of the site is by Proctor (1855 in Harrison, 2010; see Figure 63). The airfield was constructed over the supposed site, and the condition of any archaeological remains is unknown.

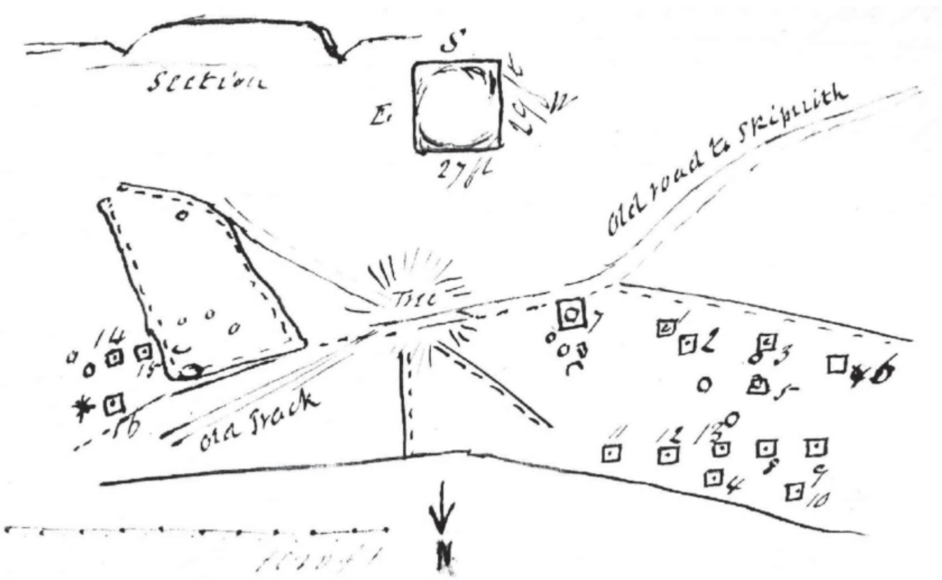


FIGURE 63. WILLIAM PROCTOR'S PLAN OF SKIPWITH COMMON FEATURING THE ENCLOSURE (HARRISON, 2010: FIGURE 4)

BGS mapping shows the site as situated on sandy, clayey, gravelly Skipwith Sand Member with little differentiation to the surrounding landscape. The nearest alluvium deposits are approximately 500m to the north, around Holmes Dike. Van de Noort (2004: 105) describes it as a 'lowland heath[land]… with some small isolated mires'. Field observations tell a different story, with vegetation indicative of wetland. The water table on Skipwith Common fluctuates about 9m AOD, and there is standing water present on the surface despite modern drainage, which has reduced the overall saturation of the landscape (MAP Archaeological Consultancy Limited, 1994: 11). The standing water likely derives from the composition of the underlying geology affording poor drainage. With the site at 8m AOD, 1m below the average water table, it is easy to imagine a wetland environment. It remains unclear, however, how the enclosure remained dry with no geological or topographical advantage. One possible explanation derives from the site's position directly under the airfield runway (see Figure 64). It is possible that the land was levelled during the runway's construction, removing any higher ground that the enclosure may have occupied. As such, this would likely have had a massive impact on the likelihood of any archaeological remains surviving. The land around the site is relatively level, with the only significant change to the north, where it drops off around Holmes Dike. The geology and topography at this point indicate a large wetland basin.

Proctor (1855) reported:

> *'Small single, double and even treble banks and ditches pass away from the elevated ground; on the east of it is an irregular enclosure like a small field, but trenched and banked after an antique fashion, and enclosing at the north-east comer two oval ring ditches'…*
>
> *'The sandy hill is the stronghold - the dykes are lines of defence - the enclosure, with openings on its sides, becomes an ancient cattle enclosure; the oval rings on its margin are herdsmen huts; the other rings are bases of dwellings; and the tumuli are the peaceful repositories of the peasants, among whose few bones neither weapons of war nor instruments of chase were wasted.'*

Proctor's description hints at some of the features. There is a possibility of multi-vallation, perhaps varied with directional focus. There is also a suggestion of a secondary possibly associated enclosure. This description varies, however, from the plan (Figure 64). This may result from a lack of detail in the creation of the map or other factors, such as selective representation based on the state of preservation.

Unfortunately, due to the subsequent destruction of the enclosure, it is not possible to corroborate the description or the plan.

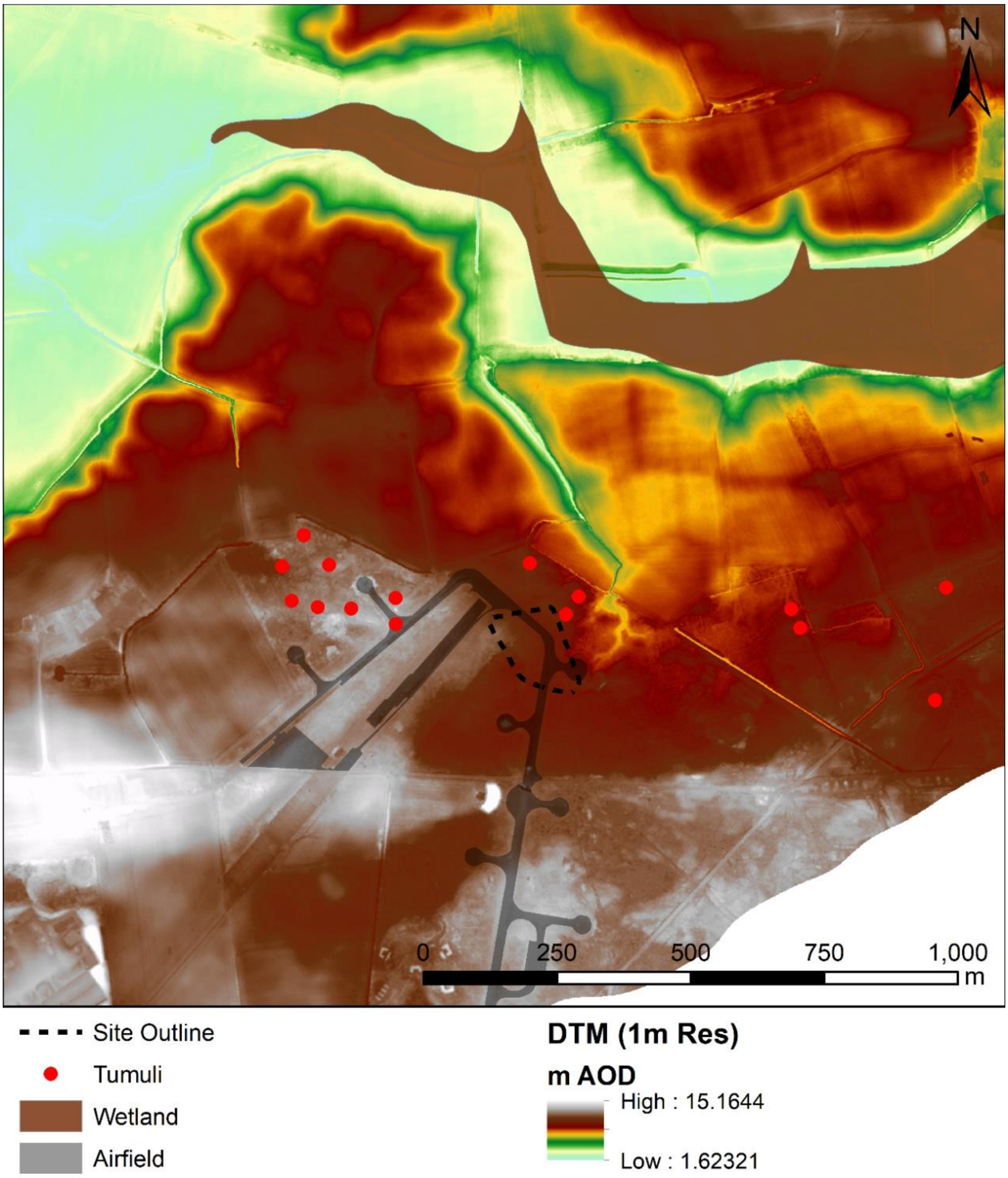


FIGURE 64. PLAN OF SKIPWITH.

The enclosure covers an area of 1.65ha. It is unknown how accurate Proctor's plan is, but it appears to depict at least one entrance through the south side of the enclosure. It is likely univallate. Without further information, however, little more can be determined. The features reported inside the enclosure may indicate occupation, but the evidence is inconclusive.

One clear feature that can be examined, however, is the proximity of the enclosure to a barrow cemetery. The barrows have been associated with the 'Arras culture' (Stead, 1979: 30). Van de Noort (2004: 104-105) has noted the particularly atypical association of this burial type and the wetland environment but suggests they are sufficiently high (at 9m AOD) to maintain the rule. This conclusion is subject to the interpretation of the prehistoric environment.

The destruction of the site undoubtedly complicates any interpretation, and further work is required to determine the state of preservation and assess any remains.

4.2.27 Stonea Camp

Stonea Camp is located 2.5km east of Wimblington, Cambridgeshire (NGR 544776 293090). The site is now protected and used as pasture for sheep, but it was previously destroyed by ploughing as recently as the 1960s. The extant earthworks are reconstructions created in 1991. The site has been categorised as a potential marsh-fort by both Fletcher (2007) and Lock and Ralston (2017), with the later also categorising it as a 'level terrain fort'.

The site is at the end of a south-west projected promontory on the fen-edge. This promontory forms the southern extent of Stonea Island (Malim, 1992: 4). BGS mapping shows the site overlies Oadby Member diamicton and Glaciofluvial sand and gravels. Clay and silt Tidal Flat Deposits and Peat encircle the site to the east, south and west, immediately abutting the south-west side of the site (see Figure 66). Environmental analysis suggests that this area was very wet in the Iron Age. Increased deposition around the island indicates extensive marine inundation of this area in the Iron Age (Malim, 2005: 44). Higher sea-levels would have resulted in the flooding of a nearby watercourse which passed to the west and south of the site (Malim, 1992: 4). This resulted in peat formation, recorded up to 1m deep and encroaching on the south-west of the enclosure (Malim, 2005: 44). It is unclear how this information was retrieved, however. More concrete evidence for wetland may be found in the primary deposits of the later phase ditches. These deposits included pollen evidence for fen carr and reed fen near the enclosure in a generally consistent wetland environment continuing from the Middle Bronze Age to the Middle Iron Age (Malim, 2005: 44). Field observations on 9th August 2021 confirmed that despite modern drainage of the fens, the land to the south of the site is still wet. The site is situated at 2m AOD, a little higher than the surrounding wetland, which ranges -1m to 1m AOD.

The earthworks represent four phases (Malim, 1992: 14; see Table 14, Figure 65).

TABLE 14. PHASES OF THE DEVELOPMENT OF THE EARTHWORKS AT STONEA CAMP.

Phase 1	comprises the outermost earthworks forming a univallate enclosure of 9.6ha.
Phase 2	marked an earlier D-shaped ditch within the enclosure, creating an internal division.
Phase 3	involved the creation of a sub-rectangular enclosure in the interior, replacing part of the south-west outer bank and Phase 2 internal earthworks.
Phase 4	transforms the site into the form represented in the reconstructed earthworks, with the construction of the double D-shaped enclosure demarking an internal area of 4ha.

It is unclear the extent to which the outer earthworks remain in use during Phase 3, with the ditch of the inner enclosure cutting the bank of the former (Malim, 1992: 14). It appears, however, that the outer earthworks are back in full use by Phase 4 with the inner earthworks respecting them and likely integrated into the overall design.

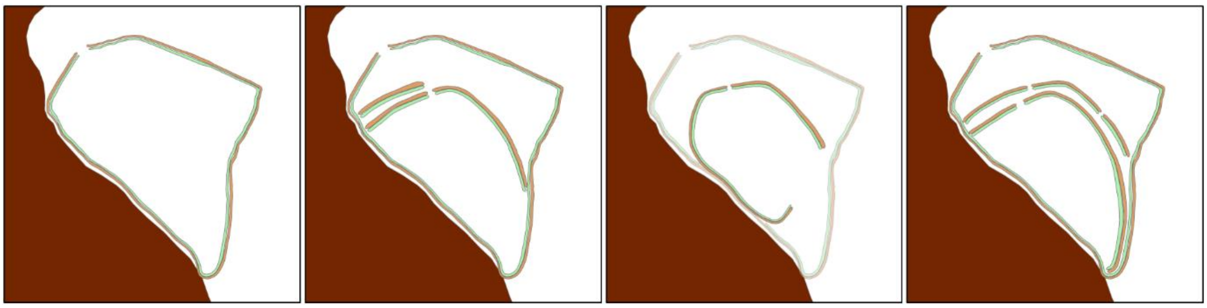


FIGURE 65. PHASES OF THE DEVELOPMENT OF THE EARTHWORKS AT STONEA CAMP.

It is also worth noting that there is some variation in the morphology of the earthworks, with the ditches on the south-west side not cut as deep into the underlying geology. The shallower profile may be due to the wetland creating a natural obstacle and reducing the work required. Malim (2005: 60) has, however, suggested this may be due to the material they cut, with those on the wetland edge cutting into peat growth which overlapped the edge of this site. This peat has since been lost, causing the appearance of shallower ditches.

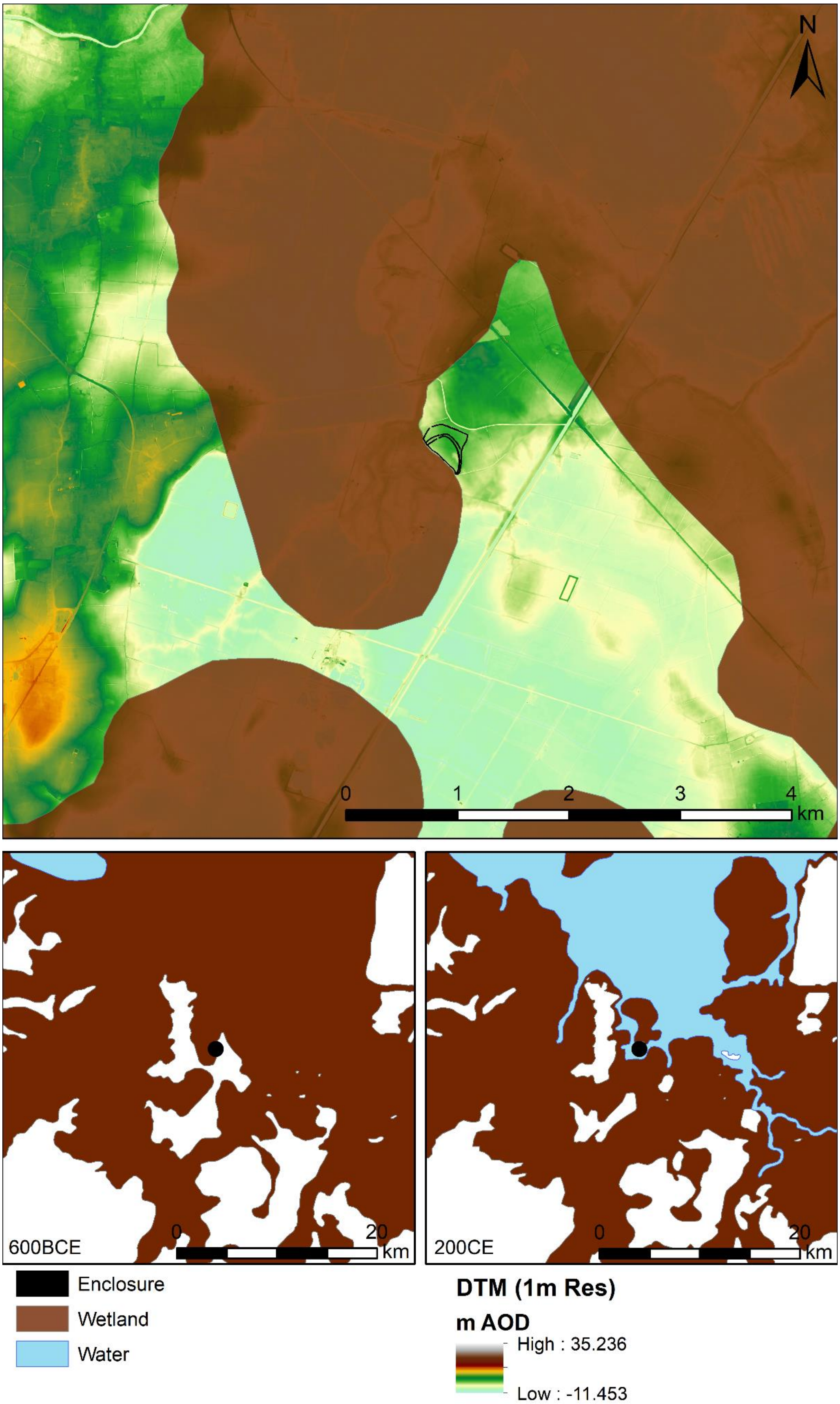


FIGURE 66. PLAN OF STONEA CAMP WIDER LANDSCAPE SETTING AND WETLAND DEVELOPMENT (BELOW, AFTER WALLER, 1994: FIGURES 5.21 & 5.22)

Lock and Ralston (2017) suggested that a break in the south-east corner of the site was an original entrance. Excavations by Malim (1992), however, showed that the ditch continued across this. There appears one clear entrance through the outermost defences, located to the north-west and comprising a simple gap through the earthworks (see Figure 65). Entrances through the inner earthworks varied by phase, culminating in a staggered entrance through the north-east inner double earthworks of Phase 4. One further Iron Age causeway was identified in this phase, midway across the outer of the north-east double inner earthworks. There is no clear evidence, though, for a corresponding entrance through the innermost set.

Excavations have not identified any clear evidence for activity on the site of the enclosure immediately pre-dating its construction. In contrast, excavations in the surrounding landscape, notably at Stonea Grange, north of the site, have identified the Stonea area as a significant centre of activity in the Neolithic and Bronze Age (Malim, 2005: 48-50). It establishes the origin of activity in the Neolithic (although there is some evidence for late Mesolithic activity also) and suggests a pattern of settlement, agriculture and ritual activity across all periods. Five Bronze Age burial monuments were identified near the Iron Age enclosure. They form part of a larger ceremonial/ ritual landscape on the island with other barrows, a Neolithic cursus and a possible causewayed enclosure. It is likely that some, if not the majority, of these monuments would have remained visible markers in the landscape during the Iron Age and may have facilitated a greater preservation of social memory. Dating evidence for the enclosure taken from artefacts and radiocarbon samples suggests the occupation dates from the Middle Iron Age into the early first century CE at the time of the Roman invasion (Malim, 2005). Around this time, focus shifted to the nearby Roman settlement of Stonea (Malim, 2005: 93, 98). This also corresponds with the growth of wetland modelled by Waller (1994).

Excavation of the west and south outer ditches uncovered several human remains, notably those of a four-year-old child, in deposits dated 209 cal BCE – 85 cal CE (Malim, 1992: 12; radiocarbon dates recalibrated, 87.8% probability, 351 cal BCE - 116 cal CE, 95.4% probability, OxA-3620, 2070±65 BP), with evidence for two sword cuts to the skull; and that of a 25-35 year old adult male in silty deposits with no apparent grave cut suggesting the remains were sunk into the wet ditch. Malim (1992: 17) has suggested that the trauma to the child's skeleton may indicate deliberate killing, ritual or otherwise, or evidence of a battle. One would suggest, however, that an isolated case is insufficient evidence to suggest a battle at the site, and the former interpretation is more likely.

Excavation of the site's interior has also identified a ring-ditch feature, but there is no clear evidence to suggest this was a roundhouse. As such, an alternative interpretation has been suggested of a late Neolithic/ Bronze Age palisaded ritual monument (Malim, 1992: 12). A Bronze Age barrow just 90m east of the site provides further and more conclusive evidence for pre-Iron Age activity at the site.

The final form of the enclosure indicates a distinct association with the wetland to the south-west. The contrast of univallate earthworks here with multivallation on the opposite sides suggests that the wetland was utilised as a natural boundary similar to the use of topography in traditional hillforts. It is unclear whether there was an original entrance allowing access to the wetlands; however, the site of the pond at the intersection of the south-west and western inner earthworks is a possibility. It seems clear that the primary access route into the enclosure would have been directed from the north-east along the dryland and through the entrances on this side.

Malim (1992: 4) has suggested that the land to the north and east of the site would have been dry and suitable for settlement and agriculture. This further highlights the deliberate nature of the decision to locate the site on this boundary. The low height difference would have likely made the ground more susceptible to saturation, as indicated by the context of the aforementioned adult burial. Such issues would likely have been clear to the Iron Age peoples who located the site here regardless.

4.2.28 Tattershall Thorpe

Tattershall Thorpe is situated at the northern edge of a village of the same name, located immediately north of Coningsby in Lincolnshire (NGR 522328 359808). The site is listed as a potential marsh-fort by Lock and Ralston (2017). It is partly destroyed by quarrying, with the surviving area under cultivation.

The site overlies sand and gravel River Terrace Deposits, just off the southern edge of an area of primarily Till (BGS mapping). Waller's (1994: Figures 5.21 and 5.22) fenland survey shows the wetland extent fairly consistent between 600 BCE and 200 CE (variation <1km). The survey depicts wetland to the south of the site, with the Wash approximately 15km closer than its current extent, and a tongue of wetland extending north-west, west of the site, along the River Witham valley. BGS mapping provides additional detail. A channel of River Terrace Deposits and Alluvium runs broadly north-south approximately 500m east of the site, along the line of the River Bain and Horncastle Canal. Mapping of the Fens by Simmons (1980) places Iron Age silt fens at just over 3km from Tattershall Thorpe. This placement broadly corresponds to the rise in ground level visible in the DTM. Taken in conjunction with the DTM, it appears that the site is located at the mouth of a previously larger river, opening up into the wetland to the south, what appears to be the old River Witham estuary (see Figure 67). An estuary environment conforms with the silt fen deposits identified by Simmons. Waller's survey and the BGS data suggest the site was set back from the wetland; however, shallow wetland development closer to the site may have been destroyed by agricultural activity in the subsequent centuries. The naming of Tattershall Thorpe Carr and Tattershall Carr, both located 500m south-west of the enclosure, hints that the wetland may have encroached a lot closer to the site than previous investigations have suggested. A series of pools located north of the site represent disused gravel quarry pits.

Palaeoenvironmental analysis of pollen and beetle remains indicate that the enclosure ditch would have been flooded (Chowne et al., 1986: 167). The wetland plant remains identified indicate marshy ground adjoining the ditch (Chowne et al., 1986: 166-167). The underlying sand and gravel deposits, however, provided free drainage for dry areas nearby, suggesting only partial and possibly seasonal wetland in the immediate vicinity of the enclosure. This picture is consistent with estuarine flooding.

The enclosure earthworks are partially destroyed by quarrying, and the surviving sections only survive as cropmarks. They are bivallate and form a sub-rectangular ovoid enclosure orientated north-west - south-east on its longer axis. It encloses an area of 1.7ha. Excavation of the now destroyed section revealed the ditches to survive approximately 0.90m (inner ditch) - 1.45m (outer ditch) below the ploughsoil (Chowne et al., 1986: 162). The outer ditch measured 5m wide, with a rounded base. The inner ditch, however, was shallower and slightly wider, averaging 5.75m wide and featuring a flat base. While any bank material has since been lost to ploughing, there is a substantial gap between the ditches to suggest the former presence of one.

Aerial photography shows a single simple gap entrance directly through both sets of earthworks in the north corner of the site. A second entrance was identified through excavation through the south-east side of the enclosure (Seager Smith, 1998). When interpreted in the context of the wider landscape, this entrance appears to face towards the river; however, it is approximately 250m to where LiDAR shows the ground level dropping from 11m to 8m AOD, and 850m to the current line of the River Bain. As such, it is difficult to assert a direct relationship between this entrance and access to water/ wetland.

Chowne et al. (1986: 184) have suggested palaeoenvironmental evidence provides clear evidence for animal grazing around the enclosure, suggesting the site is a centre for local animal husbandry, possibly a seasonal site for keeping animals that would otherwise roam the surrounding wetland. Beyond the evidence for woodland clearance and grasslands, however, there is little evidence to support this, largely due to poor preservation caused by acidic soils. Access to the good grazing pastures around the edge of the wetland could, however, provide one possible explanation for the south-west entrance.

To date, excavations at the site have been limited to the enclosure ditches. No internal features have been identified through excavation or other means. Excavations have, however, recovered an assemblage of artefacts that may hint at the activities taking place within the enclosure. These include a small iron 'chisel-like' object, a loom weight, a beehive quern, the base of a pedestal urn, degraded fragments of leather, and pottery (Chowne et al., 1986; Seager Smith, 1998). Some slight discrepancies exist between the radiocarbon dates and the pottery from each of the two excavations. These likely result from residual material from earlier activity making its way into ditch deposits (e.g., Chowne et al., 1986: 162). Despite the discrepancies, however, there is a general consensus on a Middle to Late Iron Age date (third century BCE to early first century CE) (Lock and Ralston, 2017).

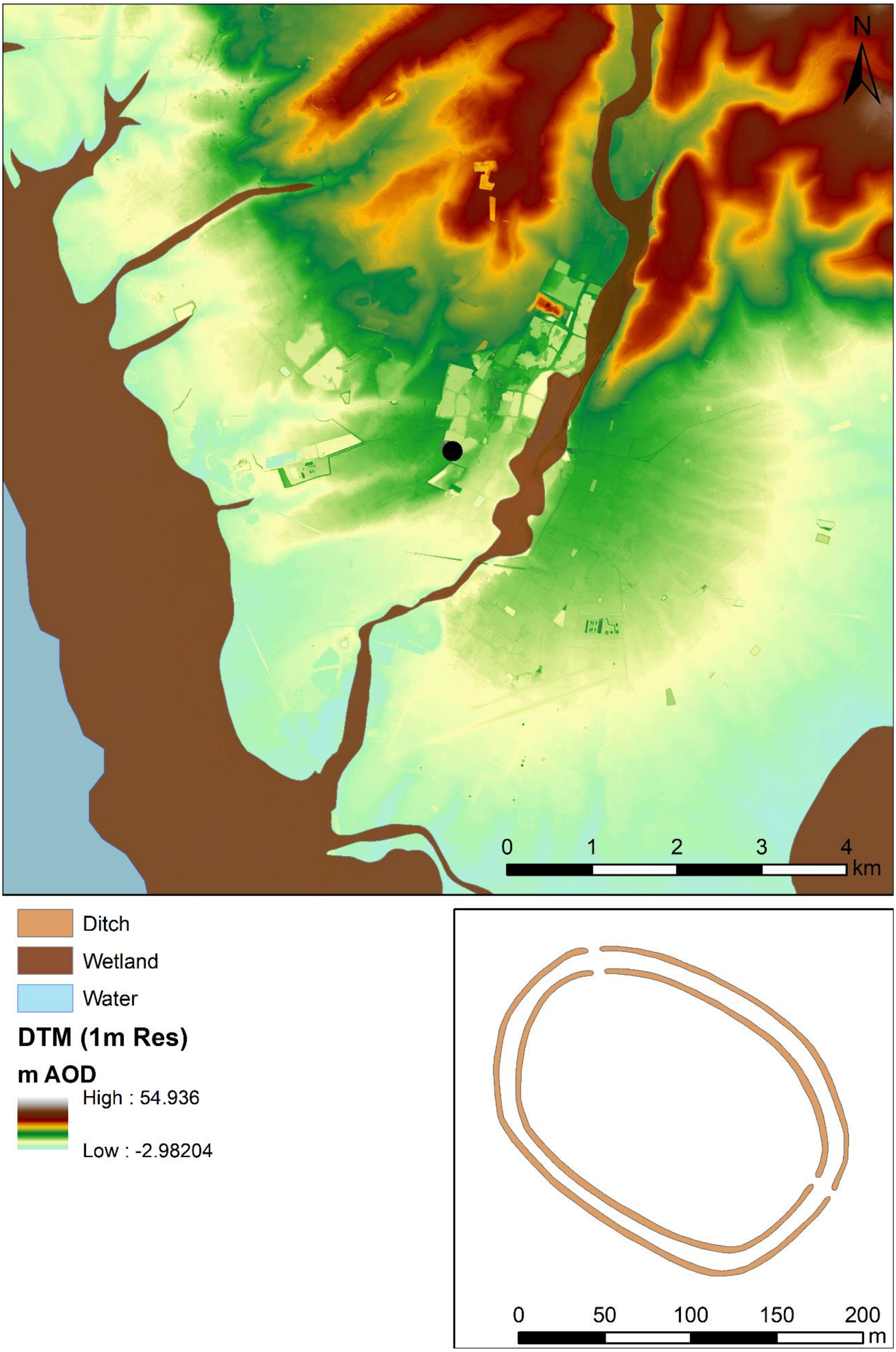


FIGURE 67. PLAN OF TATTERSHALL THORPE EARTHWORKS ARCHITECTURE AND LANDSCAPE SETTING (WETLAND AND MARINE WATER EXTENT, AFTER WALLER 1994: FIG 5.21)

Both Chowne et al. (1986) and Seager Smith (1998) strongly support the suggestion of animal grazing in the vicinity and the implication that the enclosure was a central place to protect stock in the winter months as well as organise the processing and distribution of resources related to such activity. Such an interpretation is undoubtedly plausible, but there is limited evidence. That is not to say it is incorrect, but that other alternative interpretations may be made as to the function of Tattershall Thorpe. It is not exclusive. The earthworks could also have a potential defensive function. Alternatively, considering the relationship with its landscape, the site is ideally located to make use of the natural resources afforded by the wetland and rivers to the east, south and west. At the same time, its slightly higher ground may have offered better protection from flooding. The evidence for water logging in the ditches indicates this may have been an issue. It is unclear whether its location afforded access to more extensive water-borne trade routes. The size and nature of the few artefacts recovered appear more indicative of a small-scale settlement. That said, further investigation of the interior is needed.

4.2.29 Tharston

Tharston is yet another example that is considerably lacking in previous investigation. The site is located in the Redwings Horse Sanctuary, near Low Tharston, and approximately 900m west-north-west of Tasburgh, in Norfolk (NGR 619157 296288). The site is categorised as a marsh-fort by the Atlas of Hillforts (Lock and Ralston, 2017).

BGS mapping shows the site occupies a geological promontory, with alluvium deposits to the north, east, and south of the site corresponding to the wetland. The site itself is located on Happisburgh Glacigenic Formation and Lowestoft Formation sand and gravels. A DTM produced from LiDAR data tells a similar story, with five valleys corresponding to the extent of alluvium on the geological mapping, all appearing to culminate immediately east of the site (see Figure 68). On a localised level, the site occupies the extent of a small hillock, peaking at 23m AOD, approximately 6m above the areas of alluvium. Extensive drainage ditches cutting the base of the valleys suggest a wet environment. This wetland can be attributed to flooding and the movement of channels of the River Tas and its many tributary streams.

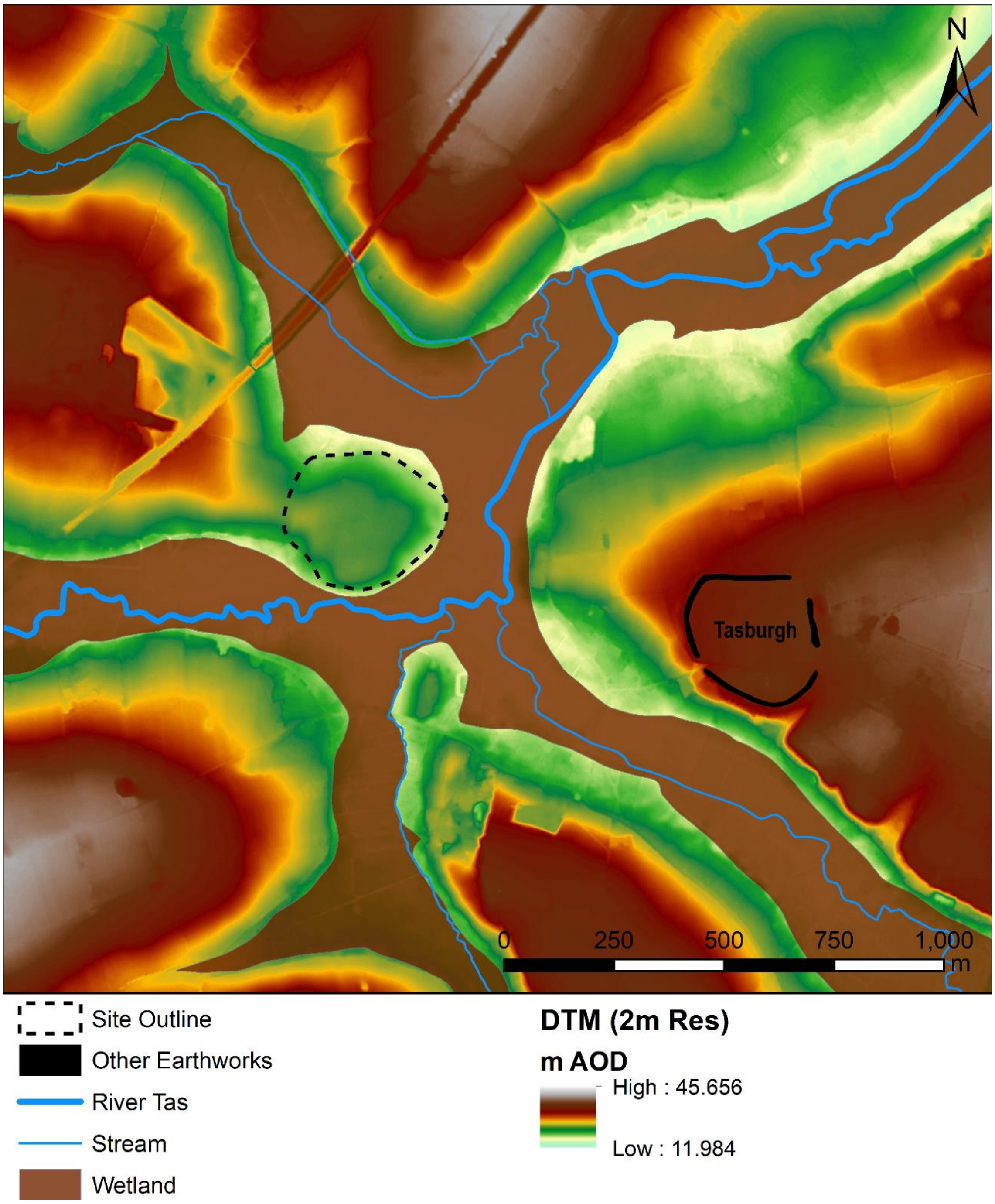


FIGURE 68. PLAN OF THARSTON.

The site was initially identified in aerial photography, with a single bank and ditch only partially surviving (HER Norfolk 9989). Lock and Ralston (2017) have suggested that the remains of levelled banks are partially present under modern tracks and hedges. An examination of the site through a LiDAR-derived DTM revealed no trace of these earthworks, and they are presumed to be destroyed. Due to access restrictions surrounding the sensitive use of the land, it was not possible to verify the condition of any potential remains through a site visit. The site encloses approximately 8.7ha and is broadly circular.

No apparent features have been identified from aerial or satellite photography; however, given the apparent degree of landscape transformation, it appears unlikely that many archaeological remains will survive. Metal detection at the site has previously led to the recovery of 85 Roman coins (HER Norfolk 9989); however, out of context, these offer little to our understanding of the site.

The site is located just 1km west of Tasburgh fort, on the opposite side of the River Tas; a univallate hillfort suggested to be of Iron Age date (Lock and Ralston, 2017; although it has also been posited as an Anglo-Saxon burgh - HER Norfolk 2258). Whilst the proximity and similarity in form certainly warrant investigation, without more information about Tharston, it is impossible to determine any relationship between the two sites, whether they are contemporary or the implications of the possible dates of Tasburgh fort on this site. The categorisation and description of Tasburgh by the Atlas of Hillforts and its contrast with Tharston highlights the inconsistency with which the term 'marsh-fort' has been applied. Tasburgh is categorised as a hilltop, partial contour fort, described as 'overlooking the valley of the River Tas and its confluence with a tributary stream' (Lock and Ralston, 2017). While Tasburgh sits slightly higher than Tharston, both have a topographic advantage and neighbour the wetland base of the valleys (see Figure 68). Interrogation of both records within the Atlas of Hillforts offers no satisfactory explanation for this divergence in classificatory style.

Absent considerably more fieldwork, it is difficult to come to any satisfactory conclusion about this potential site. It seems likely that the base of the valleys may have featured wetland conditions due to the river and tributaries which pass through. Whilst this could provide the basis for a 'marsh-fort' classification, it seems more likely that the River Tas formed the dominant landscape feature.

4.2.30 The Berth

The Berth consists of two enclosures: a larger one situated on a gravel hill island surrounded by peat wetland, opposite a smaller enclosure on the other side of the wetland (Figure 69). The site is located between the villages of Baschurch, Weston Lullingfield and Marton in Shropshire (NGR 343042 323643), at

85m AOD. It has been listed as a potential marsh-fort in both the Sutton Common monograph (Fletcher, 2007) and the Atlas of Hillforts (Lock and Ralston, 2017). The consensus for categorising The Berth as a marsh-fort is due to its considerable morphological similarity to Sutton Common.

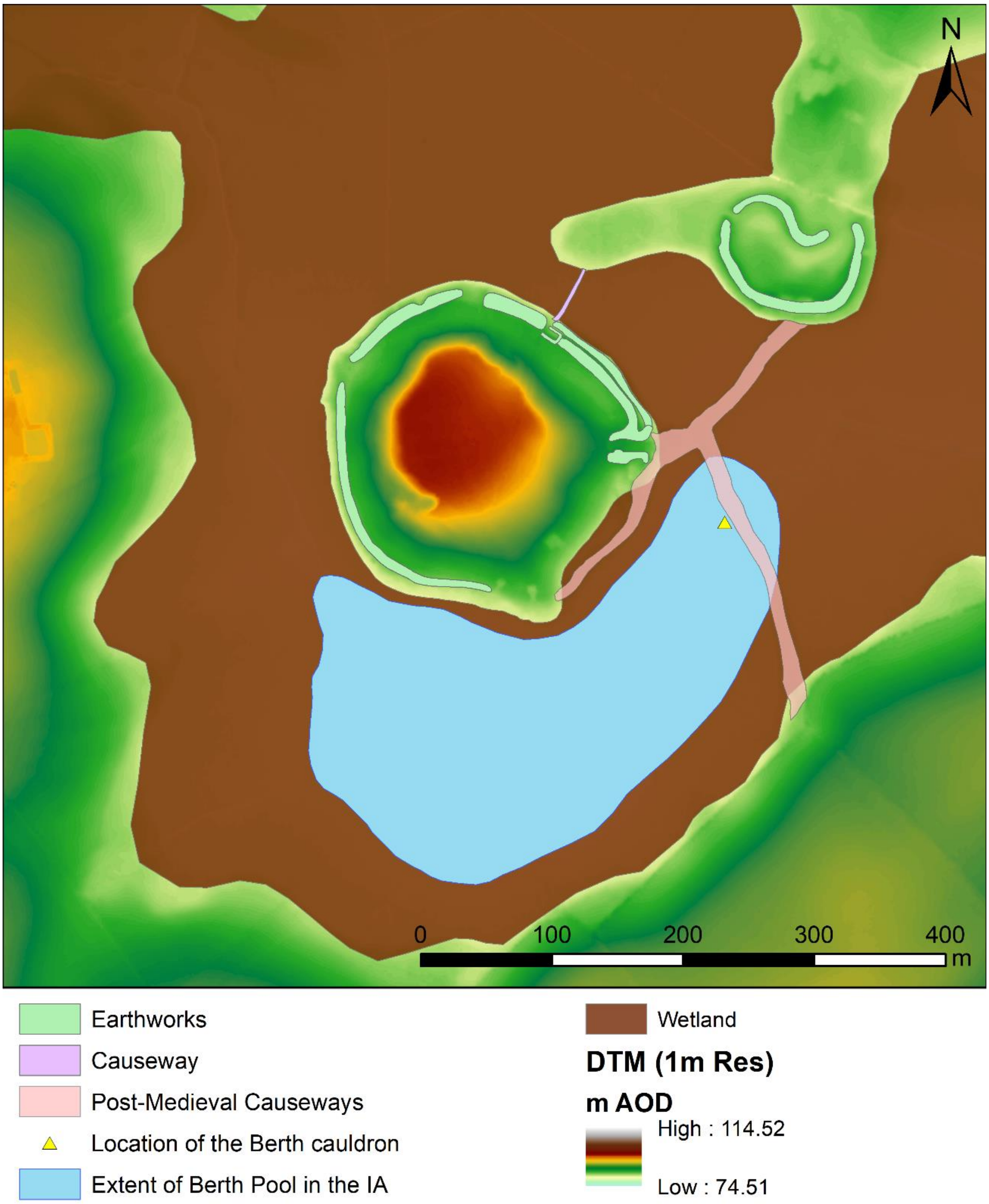


FIGURE 69. PLAN OF THE BERTH.

Hand auger surveys of the wetland around The Berth have revealed deep peat deposits. A subsequent palaeoenvironmental examination of preserved floral and faunal remains has suggested a wetland landscape of alder carr woodland with slow-moving water and reed-bed interspersed with pasture (Norton, 2021: 128-146). This assessment is complemented by samples taken below the Iron Age causeway, which show evidence of nearby grazing (pers. comm. Smith, 2024). Norton has also suggested evidence for woodland clearance, representing a carefully managed landscape, preventing the recovery of denser woodland seen at other Mid-Shopshire meres (Norton, 2021: 147).

Entrance to the site is from the north, through the small enclosure on a doglegged route, which emerges through a west-facing gap in the earthworks, leading to a causeway identified during recent excavations (Chapman and Smith, 2024). The large enclosure, situated around Berth hill, has two entrances: one north-facing linking to the causeway, and another facing east linked to the post-medieval causeways but which in the Iron Age appears to have opened out onto the wetland with no discernible access routes to or from it (ibid.). Other breaks in the earthworks appear more likely to be related to post-medieval quarrying around the southern half of Berth hill.

Excavations to date have primarily focused on the north-facing earthworks of the large enclosure, which appear to consist of two banks cut into the natural hillslope. A third bank located at the north-facing entrance may form part of a guard chamber. Aside from that, the entrance appears relatively simple: a gap through the earthworks leading up from the causeway. The eastern-facing entrance, however, raises a few more questions. Excavation of this entrance is needed to determine its true nature; however, a full investigation has thus far been restricted as the entrance provides the primary modern access to the hill. Furthermore, archaeological remains are likely to have been impacted by later transformations relating to quarry access. Using GIS and field observations, surface analysis suggests it is a substantial inturned entrance. The entrance is located at the northern boundary of the Berth Pool, at its Iron Age extent (Norton, 2021: 126; Figure 69). This juncture between the water and the wetland is where The Berth cauldron was recovered in 1906.

The cauldron, made of bronze and measuring 45cm in diameter and 30cm tall, features two iron attachments and a neat circular perforation, approximately 5mm wide, in the centre of its base. The perforation led to its initial interpretation as a water clock (Smith, 1907: 324-334); however, it was later attributed to a method of production using a lathe (Hawkes, 1951: 184). Hawkes (ibid.) suggested that this perforation would have been covered by a plug, which had since been lost. One alternative hypothesis, however, is that the plug was intentionally removed. This action would have allowed the vessel to sink, indicating a deliberate act of deposition. The uniformity of the hole contradicts any view that the cauldron was deliberately punctured to 'kill' the object or aid in its sinking. The 'killing' of objects prior to deposition is not unheard of in later prehistory (see Brück, 2011: 396). The cause of the plug's loss is, however, unknown. Regardless, its deposition in the wetland speaks to a potential ritualistic intent. Wetlands, particularly in prehistory, were seen as magical places, allowing objects to disappear from the material world (Bradley, 1998). The deposition of the cauldron removed it from the material world, transferring it to another plain and becoming unrecoverable. Similar treatment of other bronze vessels is a common characteristic of the Late Iron Age (Wait, 1985: 47).

Recent unpublished excavations have identified several furnaces as well as slag and crucibles. These are all indicative of smelting and metalworking. Some of this activity has been confirmed as pre-dating the enclosure. Iron Age people were likely drawn to this location for metalworking due to the availability of resources. Multiple works have previously attested to the ready availability of bog ore in Northern European peatland and its use by Iron Age communities (Thelemann et al., 2017; Meyer, 2017; Bebermeier et al., 2016; see also Van de Noort, 2004: 70). The managed woodland may have also produced wood as a fuel source for the process. Similar use of wetlands for such activity has been identified elsewhere (e.g. the Holme-on-Spalding settlement, in Van de Noort, 2004: 69). Whilst careful management of the bog ore and woodland resources would have been necessary to ensure sustainable use, if achieved, the bog would have provided a regenerating resource (for regeneration of bog ore, see Tylecote, 1986: 125). To a prehistoric society, this may have added to the magical perception of the wetland. Considering this, the deposition of The Berth cauldron may be interpreted as an exchange with the wetland (or the spirits therein), through which the Iron Age peoples hoped to ensure the continued regeneration of this resource. In Celtic oral tradition, the Four Branches of the Mabinogi, a cauldron is directly associated with regeneration and the everlasting prosperity of the land (Aldhouse-Green, 2015: 182).

The evidence for metalworking and its association with the surrounding wetland seems a likely factor in the formation of this site. Given the ritualised nature of metalworking in prehistoric society (Dolan, 2016; Haaland, 2008) and the importance of the resource, this serves as a likely motivation for the construction of the enclosure. Enclosure would have served two key functions in this regard. Firstly, from an economic perspective, constructing a potentially defensive structure may have acted to protect this resource. The enclosure need not have acted as an active military installation. Instead, the formation of a boundary defining the area as belonging to a distinct group would have established a socially enforced barrier. Secondly, the enclosure may represent a materialisation of the ritual activity of metalworking. The creation of an entrance into the wetland may have acted as a gateway to access this resource, monumentalising the process. The ritualised extraction of resources may further be linked to concepts regarding the exchange of finished goods for raw materials with an 'other' world, embodied by the deposition of The Berth cauldron at this transitional location.

Other finds within the interior of The Berth point towards small-scale domestic activity. Evidence for structures is limited to a few post-holes identified within trenches by Gelling. These were interpreted as the remains of two rectilinear buildings: one dating to the Iron Age, the other to the fourth century CE (Gelling, 1964). Possible metalling seen near a post-hole in a photo from Gelling's excavations may indicate a floor surface (Figure 70); however, it is difficult to determine the extent or nature of the structural remains within the scope of the trench, and so the interpretation appears presumptive. More recent excavations have not produced any definitive evidence for roundhouses (Chapman and Smith, 2024). Pottery from the site suggested a main phase of occupation in the Middle to Late Iron Age (Morris and Gelling, 1991). Analysis of the assemblage has also revealed their non-local origins, indicating connections across western and central Britain (ibid.). A substantial collection of Very Coarse Pottery (VCP) has been associated with the drying and preservation of salt (Morris and Gelling, 1991; Morris, 1985). This pottery may indicate a domestic activity at the site. Beyond this, there is no evidence of pottery production at The Berth or grain storage, another key indicator of settlement, beyond a dubiously associated photograph of some charred grain (Norton, 2019b: 18).

FIGURE 70. PHOTOGRAPH OF, PROBABLY, GELLING'S TRENCH B FACING SOUTH, SHOWING REMAINS OF A POSSIBLE POST-HOLE AND METALLED SURFACE. (GELLING COLLECTION, SHROPSHIRE HER).

The Berth is a particularly distinct example of a marsh-fort. The east-facing entrance of the large enclosure with no apparent access linkage is of particular note, particularly given the implications of the potential ritual deposition of The Berth cauldron. Without a clear functional purpose, it suggests a ceremonial or ritualistic interaction between the users of the enclosure and the wetland. That said, the site appears to have been multi-functional. Evidence from the interior suggests the site was a focus for metalworking and possibly a source of materials for iron production. While definitive structural evidence for domestic activity has not been found, the pottery assemblage from the site speaks to the potential.

4.2.31 Wall Camp

Wall Camp, located near the village of Kynnersley, Shropshire (NGR 368074 317803), is a multivallate enclosure occupying a geological island surrounded by wetland in the Weald Moors, accessed via a causeway (Figure 71). The site is listed in both the Sutton Common monograph and Atlas of Hillforts as marsh-fort (Fletcher, 2007; Lock and Ralston, 2017).

The enclosure encompasses an island of Devensian Till, with underlying Chester Formation sandstone and conglomerate forming a slight knoll within its western half. It is surrounded by peat deposits on all sides and connected to Glaciolacustrine deposits to the south via a causeway. Extensive soil augering has corroborated BGS mapping and identified poor preservation caused by peat wastage (Leah et al., 1998: 74-75). The site occupies the smaller of two islands within the peat basin, with the larger to the west located where the village of Kynnersley now sits on its south-eastern edge. The interior height of the island ranges from 55m to 61m AOD at the top of the knoll. While mostly relatively flat, the topography corresponds with the geological data; peat deposits are located in lower areas, with the islands sitting slightly proud.

The road joining Kynnersley to the B5062 cuts through the north-west half of the earthworks and has likely significantly impacted the remains. Moreover, the interior is currently the site of Wall Farm, which appears on historical mapping as early as 1752 (Rocque, 1752). South-west of the farmhouse, the interior has also been quarried for stone, which was used in an aqueduct on the Shropshire Union Canal (Whitehead, 1927: 31). These, along with agricultural activities are likely to have had an impact on the survival of both extant and buried archaeological features, particularly prior to it gaining listed status in 1929 (SAM 1020282).

The earthworks that form Wall Camp are multivallate, with Bond (1991: 98-101) recording as many as five sets of banks on the north and east sides. Only three appear on the south side, however. Many of these earthworks have unfortunately been damaged by modern agricultural activity. Pagett's excavation through a section of the ramparts also revealed seven phases of construction, elaboration and at least two of abandonment (Malim and Malim, 2010: 91-94). It has also been noted that the excavations revealed no indication that the earthworks were palisaded (Malim and Malim, 2010). Norton (2013: 83) has suggested this may have related to a desire for 'invisibility' in the landscape for either ritual or defensive purposes;

however, given the scale of the monument and the labour and resources invested in its construction, this seems unlikely. It is also worth noting that excavations have been limited to a few trenches. As a result, there is the potential for more ephemeral structures to be identified, and the assumed absence of palisades has yet to be fully confirmed.

The enclosure has two entrances, one facing south and the other north-east (see Figure 71). The former appears to be a simple gap entrance with a causeway. Norton's (2013: 80) analysis of the wetlands surrounding Wall Camp has indicated that dry-access would have been available through the south entrance throughout the year. In contrast, the entrance to the north-east comprises a causeway that runs level with the tops of the banks. Norton (2013: 80) suggested this may have functioned as a water-gate when the surrounding wetland flooded. There is insufficient evidence, however, to suggest there was frequent or substantial flooding to justify its construction, and it is unclear whether it would have connected to a navigable body of water. The difference in style between the two causeways may indicate the north-eastern one is a more modern construction. This would make sense as an access route from the farm, however, the variation may also be explained as respective to the local natural topography.

Despite the limited extent of excavations within the interior, there is substantial evidence of Iron Age activity. A trench north-east of the farm revealed evidence of two possible roundhouses, two or three four-post structures, several other post-holes, and small pits (Bond, 1991). The presence of four-post structures and pits represent varying practices for storage. As such, it may indicate changing practices between different phases or differing approaches to storing different foodstuffs/ materials. It is possible that the pits also have other functions. Overall, though, the features may be interpreted as evidence for occupation. Radiocarbon dating from the ring-ditch around one of the possible roundhouses produced a date of 383 cal BCE – 75 cal CE (Malim and Malim, 2010: 94; radiocarbon dates recalibrated, 95.4% probability, Har-6392, 2110±90 BP) placing it in the Middle to Late Iron Age. The application of this dating to the overall chronology of the site must, however, acknowledge that different architectural styles between the two roundhouses may represent multiple phases (Norton, 2013: 84). Further fieldwork is required to determine whether there are additional structures in the interior and their functions.

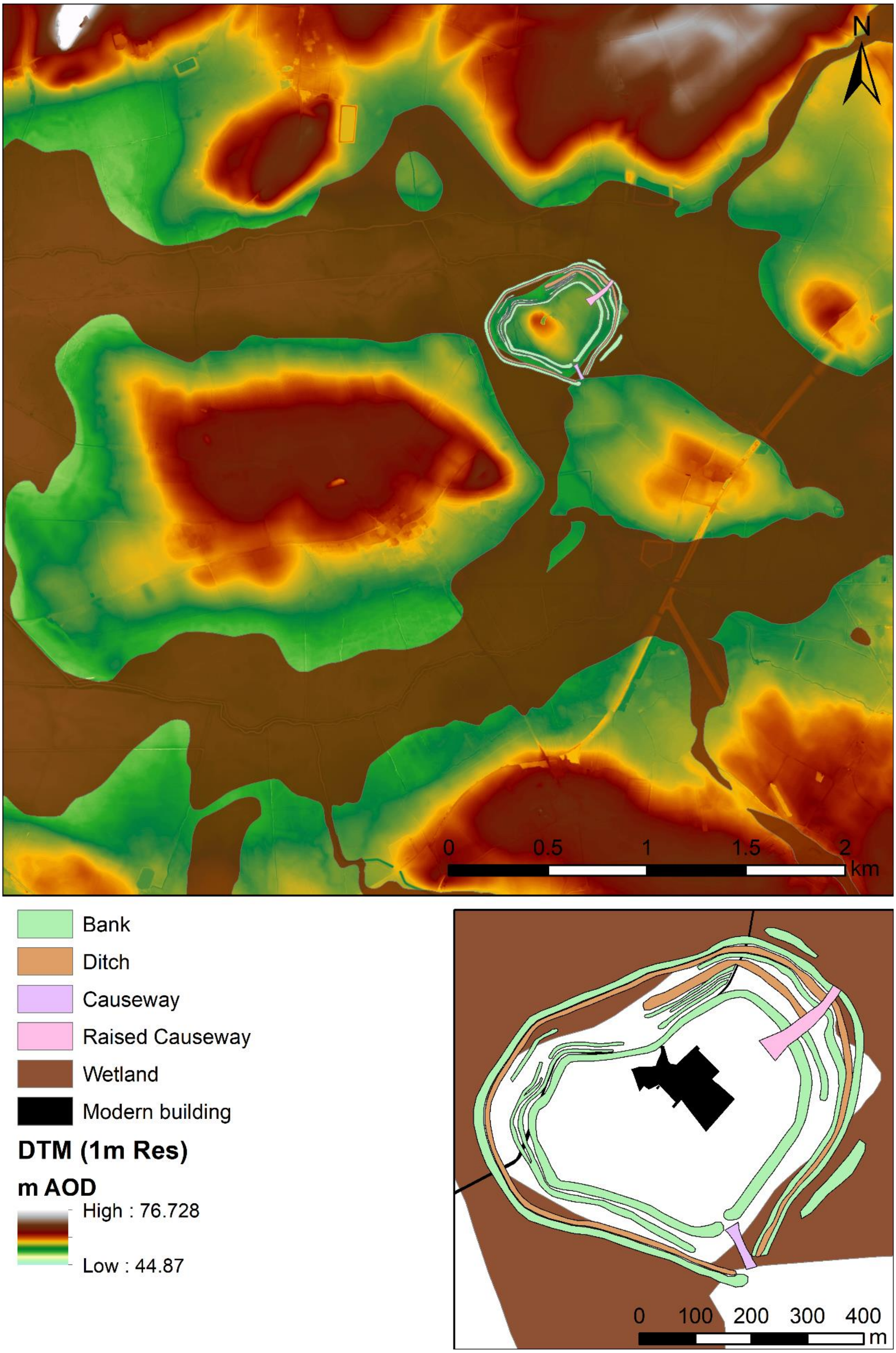


FIGURE 71. PLAN OF WALL CAMP EARTHWORKS ARCHITECTURE AND LANDSCAPE SETTING.

Pottery assemblages from the site are comprised chiefly of VCP, associated with salt transportation (Morris, 1991). Other sherds offer little additional information about activity at the site but are consistent with the radiocarbon date of the Middle to Late Iron Age.

The site has been interpreted as a possible farm by Norton (2013: 95-96), citing the four-post structures as possible evidence for grain storage and the VCP for the use of salt in meat preservation. Palaeoentomological analysis has not identified any evidence of livestock grazing near the site. That said, it is still plausible that the site may have acted as a central place for the processing and storage of food, although questions over the implications of being so close to wetland ought to be factored.

Wall Camp provides an interesting and informative case study to this discussion, particularly in light of the recent work carried out there by Norton (2013). Natural geology affords an alternative obstacle to approach in contrast to the manner in which hillforts use topography. While modern landscape transformations have undoubtedly impacted their survival, there appears to be a bias in the number of earthworks in favour of the north and east sides of the enclosure. This appears counter-intuitive, given the assumed approach from the south of the site. With at least three banks, the southern approach is by no means unimpressive; however, the extra affordance on the opposing side raises questions as to the purpose. The north-east causeway further adds to this conundrum, creating a monumental access point to the wetland. Given the issues with interpreting it as a water-gate, it is possible that the association with the wetland was deliberate, and we can infer a significance afforded to these surroundings.

4.2.32 Wardy Hill

Wardy Hill has been proposed as a potential marsh-fort by both Fletcher (2007) and the Atlas of Hillfort (Lock and Ralston, 2017), although the former has simultaneously classified it as a partial contour fort. The site is located on agricultural land between the villages of Wardy Hill and Coveney, approximately 5km west of Ely, in Cambridgeshire (NGR 547810 282026). Lock and Ralston (2017) locate the site 450m further west, but this is incorrect.

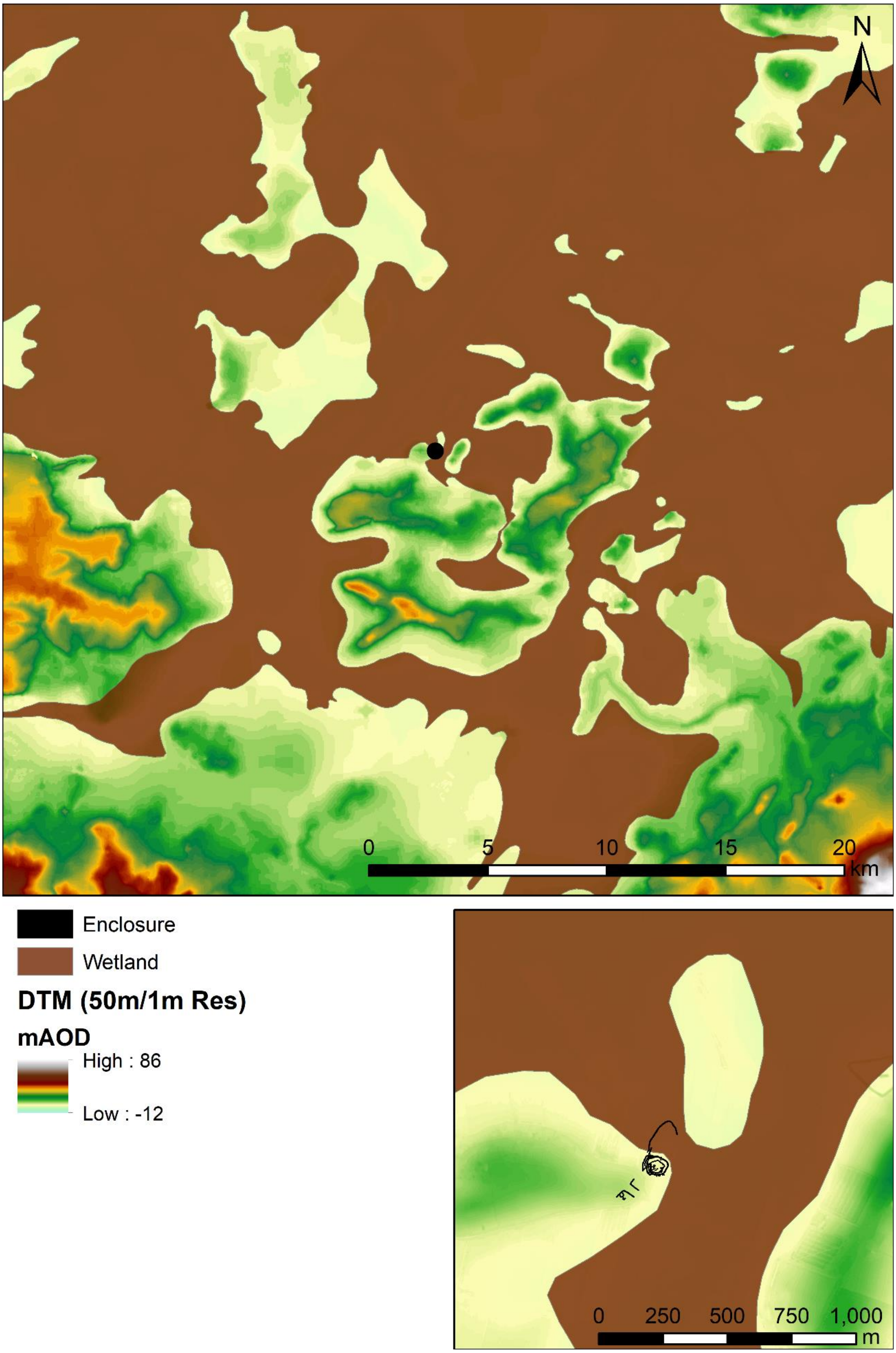


FIGURE 72. PLAN OF WARDY HILL WIDER LANDSCAPE SETTING (AFTER HALL, 1996: FIGURE 88).

The site is described as occupying a prominent spur overlooking a former marsh embayment on the north side of the Isle of Ely (Lock and Ralston, 2017; see Figure 72). Geological mapping of the area shows that the site overlies Ampthill Clay Formation mudstone deposits. Peat deposits curve around the site's eastern side, from the north to the south. Sand and gravel River Terrace Deposits hook back slightly south-west of the site. A borehole survey was conducted by Ellis (published in Evans, 2003: 10-15) comprising eight transects with a total of seventy boreholes. Of these, though, only two of the transects are reported in the publication. It is unknown whether the original records for the remainder of the work still exist and, if so, where they may be located. The two reported transects are located to the east of the enclosure. There is no record for the results of coring to the north. The results of Ellis's survey identified an undulating buried layer of peat overlying Ampthill clay with shallow depressions interpreted as palaeochannels (Evans, 2003: 13). This fits the model of rising wetlands on the fen-edge in the Bronze/ Iron Ages (Evans, 2003: 15). It is during this time that there is the emergence of a marshy landscape with islands such as Ely. At the time of the enclosure's construction and use, it would have been situated on the edge of this marshland.

A DTM produced from LiDAR data shows the site at the eastern-most extent of a small hill. The site sits at approximately 2.7m AOD, slightly higher than the neighbouring wetland at 0.5-1m AOD. This subtle topography was confirmed by the 3-dimensional borehole transect plotting using GPS, which identified the site as located on a low peninsular spur (Evans, 2003: 13). It is overlooked by Wardy Hill, which peaks at 10m AOD. Given the more topographically advantaged position offered to the west, there appears to be an intentional decision to situate the enclosure directly on the edge of the wetland. BGS mapping shows a small island north-east of the enclosure, midway between Wardy Hill and Coveney (see Figure 72). This is not apparent in other surveys of the fen (e.g. Hall, 1996: Figure 88; Waller, 1994: Figure 5.21). Within the wider wetland landscape, it sits at the entrance to The Cove, an area of wetland enclosed by areas of higher ground which form the Isle of Ely (Evans, 2003: 1).

Due to extensive ploughing, there are no extant remains of any earthworks. Excavation, geophysics and aerial photography have, however, provided a clearer picture of the site morphology. The site is multivallate, representing multiple phases of occupation and enclosure construction. Excavation of the site identified five key phases (Evans, 2003: 57-63; see Table 15, Figure 73):

Table 15. Phases of the development of the earthworks at Wardy Hill.

Phase 1	Open settlement predating the enclosure and comprising two north-north-east – south-south-west ditches to the north-west of the site. Comparison of their location with geological data indicates they may have flanked a causeway across the wetland to a 'dryland' island to the north-east (see Figure 72). The features have been dated to the Late Bronze Age/ Early Iron Age (Evans, 2003: 252). Other features appear to indicate an early field system on the site. The alignment of the field system corresponds with the two inturned ditches south-west of the main enclosure, suggesting they date to this phase or earlier. The orientation of this suggests it may be connected to a causeway to Coveney, located to the east (Evans, 2003: 266, Figure 142).
Phase 2	The second phase represents the creation of a defended settlement. A rectilinear ditch system with two ditches on the south and west sides, likely separated by a bank, encloses a small group of roundhouses. A single entrance in the south-west faces towards Wardy Hill. The outer earthworks appear to align with the eastern ditch of Phase 1. There is no evidence for northern and eastern boundaries; however, the wetland would have likely provided a natural boundary in this direction.
Phase 3	This phase marks the creation of a complete circuit stemming from the inner banks. This creates a pentagonal enclosure of approximately 0.2ha.
Phase 4	Following this, Phase 4 has been described as marking the change from a 'domestic-type' site to a 'fort' (Evans, 2003: 62). This involved the establishment of an outer circuit which formally enclosed the site, increasing the area inside the outermost earthworks to 0.4ha. It also included reworking the western earthworks to create an additional entrance midway along the western side. The presence of two entrances, relatively close together on the western side of the enclosure, suggests they were separated. This suggests the enclosure

	ditch was connected to the south-west inturned feature at this time. An entrance was also created through the outer earthworks facing north-east, labelled by Evans (2003) as a 'Watergate'. This entrance appears to access land enclosed by a curvilinear earthwork extending north of the site, following the line of the earlier double ditch feature in Phase 1. The enclosed area totals approximately 0.9ha (referred to as the North Field Circuit). If this is an annexe, it would contradict the current interpretation that this was wetland (cf. Hall, 1996; BGS). There does not appear to be any corresponding entrance across the north-east inner earthworks, and it has been suggested that access would have been gained by traversing a 'corridor' between the earthworks to either the western or south-west entrance. During this phase, the western side of the inner enclosure was also shifted slightly westwards.
Phase 5	This final phase features the closure of the western central entrance, followed by the addition of two additional sets of earthworks in the north-west quadrant. These new earthworks align with the two earlier ditches of Phase 1. A new entrance from Wardy Hill was located towards the south end of the western earthworks, between the western central entrance and the earlier south-west one. An additional smaller enclosure was built off of the inner earthworks in the north-west corner of the central enclosure, defining a small area with a diameter of approximately 11m within the main enclosure. While this was later associated with a structure (IV), Evans (2003: 63) states this was not its original intent. The final form of the enclosure has an area of 0.5ha within its outermost earthworks; however, the main enclosed space in the centre remains broadly the same as in phases 3/4.

Radiocarbon dating suggests Phase 2/3 dates to the fifth century BCE, with the Phase 4 'fort' established in the fourth century BCE (Bayliss et al., 2003; Evans, 2003: 242-243). Ceramics associated with Structure IV date from the end of Phase 5 to the last first century CE; however, Evans asserts that this does not imply the enclosure was out of use for the intermediary three to four centuries (2003: 243). It suggests that the enclosure developed in the Middle to Late Iron Age.

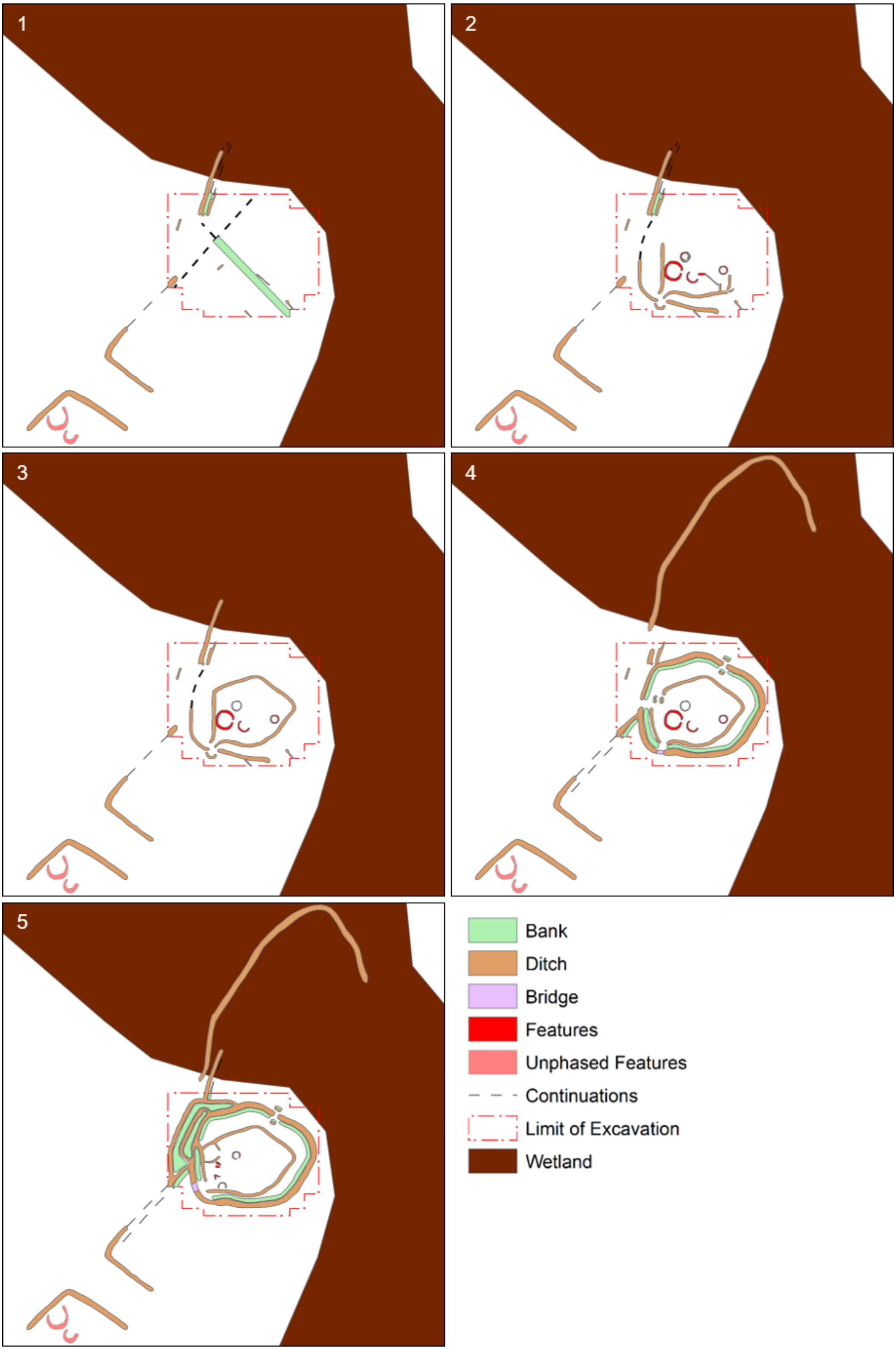


FIGURE 73. PLANS OF FIVE PHASES AT WARDY HILL (AFTER EVANS, 2003: 57-64, FIGURES 44-46 & 117).

The site featured evidence of six roundhouses, a range of artefacts and cereal processing, indicating a domestic/ agricultural function (Evans, 2003). It has also been suggested that the site may have controlled the causeway to the island of Coveney to the east (Evans, 2003: 263) or the island to the north-east on BGS mapping but which does not appear elsewhere (e.g. Hall, 1996: Figure 88; Waller, 1994: Figure 5.21). In its wider landscape context, the site 'guards' the entrance to the Cove which had substantial Iron Age activity around its margin (Hall, 1996).

Further investigation of the geology within the North Field Circuit is required to determine the function of this earthwork and, more specifically, the so-called 'Watergate'. Current mapping by the BGS and Fenland Survey suggests that the entrance opened directly onto the wetland. It is unclear whether there would have been navigable water here. There are no indications of ancient waterways on OS mapping or in the DTM. The excavation also did not identify any remains of a trackway here. As such, it may have been primarily to access the wetland. Alternatively, if the land within the North Field Circuit is dry, it may represent access to a de facto 'annexe' incorporating earlier earthworks. Nonetheless, the eastern side of this circuit would likely have been open to wetland, allowing for similar activity and engagement. The decision to locate the site here rather than in a more topographically advantaged location on Wardy Hill represents a deliberate decision to be close to the wetland. If the south-west inturned earthworks date to the earliest phase and represent a lost connection to Coveney, then this represents a probable cause for the founding of a settlement at this location. It is unclear whether its later development into a fort represents an attempt at controlling access or a consolidation of the existing settlement. The enclosure was embellished with additional earthworks on the landward side, acknowledging the natural obstacle provided by the wetland on the eastern side. It serves to focus its monumentality towards the route of access, giving the site an intentional directionality. This may tie into notions of defence and control of access but equally represents the most efficient use of resources.

4.2.33 Warham Camp

Warham Fort or Camp is a multivallate circular enclosure located just 700m south of the village of Warham, in north Norfolk (NGR 594360 340880). While the Atlas of Hillforts describes the site as a 'hillslope fort' (Lock and Ralston, 2017), the site has been proposed as a possible marsh-fort by Fletcher (2007).

The enclosure sits on a south-west facing hillslope overlooking the River Stiffkey which curves around the west of the site and cuts through the south-west earthworks. The height of the interior ranges from 10 - 16.6m AOD representing the hillslope. BGS mapping shows that the site overlies undifferentiated Chalk bedrock geology. To the west of the site, a band of peat deposits follow the route of the River Stiffkey. Historical maps of the site show the river further to the west and a complete circuit of earthworks, indicating the river was redirected between 1712 and 1783. The movement and straightening of the river have been attributed to a landscaping project in the eighteenth century (Rickett, 1991: 60). Interestingly, of the two excavations carried out at the site, neither report mentions any reference to the wetland (Gray, 1933; Gregory, 1986). Field observations on 12th August 2021, however, clearly show the landscape reflects the wetland conditions (Figure 75).

The earthworks at Warham Camp are bivallate, forming a circular enclosure with an internal area of 1.4ha (Figure 74). Both the banks and ditches survive substantially except for the south-west section destroyed in the redirection of the river. The banks and ditches survive up to 3m high and deep. The continuation of the outer earthworks in the south-west area has been confirmed in a trench across them (Gregory, 1986: 25). Excavations have also revealed that the ditches may have been an additional 2m deeper in places, and a wooden platform and palisade may have topped banks, adding to their already imposing form (Gray, 1933; Gregory, 1986). The size and steepness of the earthworks make them a significant obstacle and may support a defensive interpretation (Figure 76).

There are three breaks through the surviving earthworks that may represent entrances: to the north, south, and east (Figure 74). These have all been previously dismissed as modern. Excavations of the north and south causeways suggested they were not part of the original morphology but instead more likely associated with the nineteenth-century plantation in the interior of the enclosure (Gray, 1933: 402, 405-

407; Gregory, 1986: 22). The eastern entrance is very narrow and follows the rises and falls of the earthworks more than the other breaks which are clearly cut through (Figure 76). As such, it seems more likely to be a modern pathway than an original entrance. Due to the destruction of the earthworks in the south-west section of the circuit, Lock and Ralston (2017) have suggested it may have been the location of the original entrance.

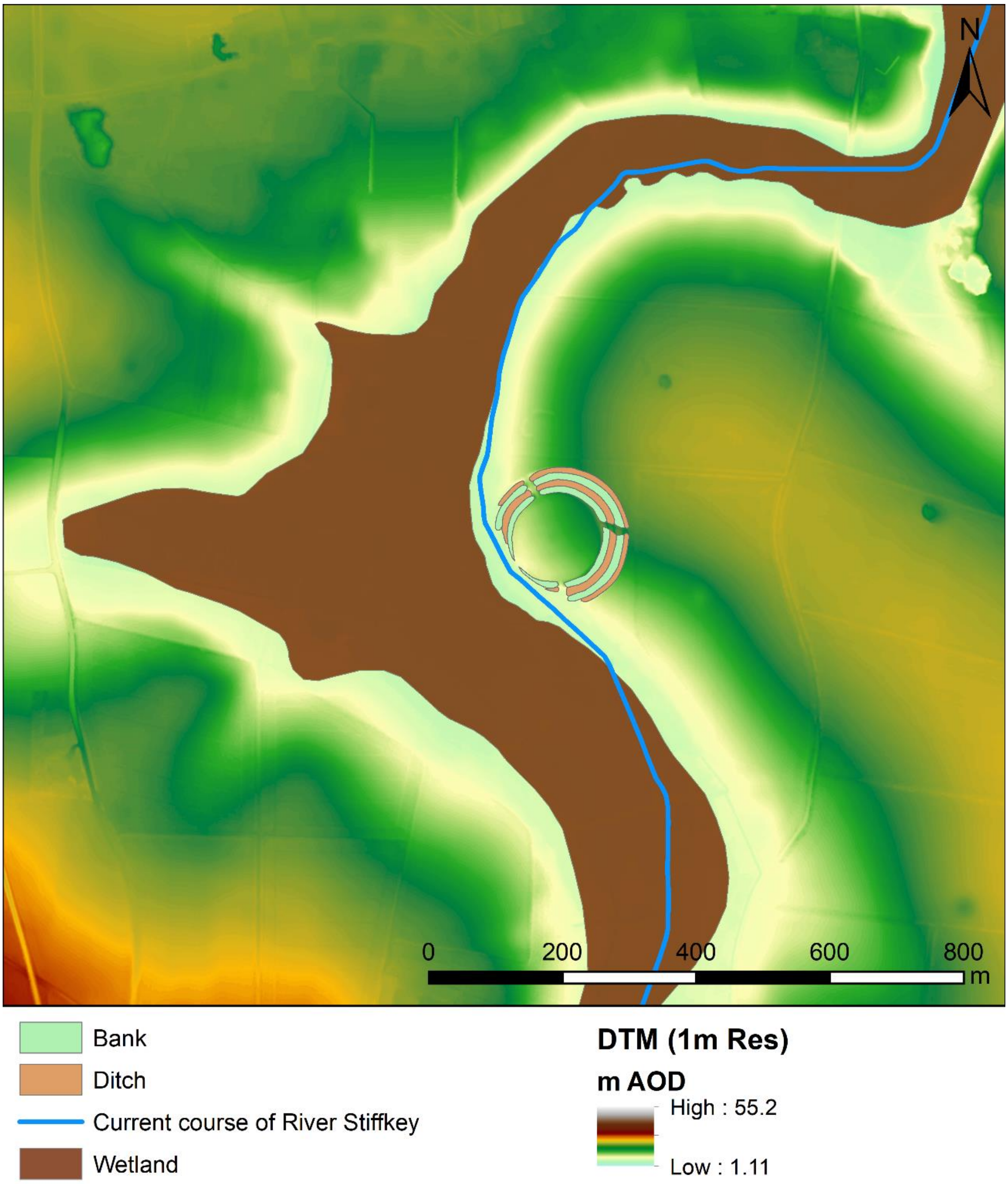


FIGURE 74. PLAN OF WARHAM CAMP.

FIGURE 75. WETLAND WEST OF WARHAM CAMP, SEEN FROM THE INNER BANK CUT BY THE RIVER STIFFKEY ALONG THE HEDGELINE IN THE MIDGROUND OF THE PHOTO. FACING SOUTH-SOUTH-WEST (AUTHOR'S).

FIGURE 76. EASTERN EARTHWORKS AND EASTERN ENTRANCE AT WARHAM CAMP, FACING NORTH-WEST (AUTHOR'S).

The few excavations at the site have not produced many finds. The few pottery sherds recovered suggest a date of 200 BCE – CE 100 (Gray, 1933: 410-412; Rickett, 1991: 60). There is evidence of later reuse of the site in the Roman period. Building materials, including roof and flue tiles in the topsoil, may indicate the presence of a Roman building in the interior; however, no structures have been identified at the site in any of the excavations or through other means dating to either prehistoric or Roman periods. Ploughing of the interior is likely to have had an impact on any preservation, but further work is required to determine the extent.

The enclosure at Warham is one of the most impressive case studies examined in this paper in terms of the surviving scale of its earthworks. They provide a clear argument for a defensive interpretation of the site; however, other features are presented, which raise questions about its potential uses. It seems likely that the original entrance would have been located in the now missing south-west section. This position would have opened it directly onto the River Stiffkey and the surrounding wetland. The nineteenth-century transformation of the landscape has complicated the interpretation of the site; further work is required to determine how close the entrance would have been to the river/wetland edge. The impact of this on access is key. It seems likely that the site was located to exploit the river's natural resources, but was it crossable or navigable? Would people accessing the site be forced to circumnavigate its circuit to gain access, or was there a more direct route from the south-west? The topography of the site, amplified by the earthworks, already provided a substantial barrier between the enclosed space and its landscape. The topographical advantage overlooking the river valley made it an imposing feature viewed from afar. These points already feature many of the key characteristics associated with hillforts. However, the obstacle created by the river and wetland cannot be dismissed as Gray and Gregory appear to have done. While the river undoubtedly provides a valuable resource, the exact nature of the relationship between enclosure and water/wetland remains an enigma.

4.2.34 Y Werthyr

Y Werthyr is the westernmost identified marsh-fort in Britain. The name translates as 'earthworks' and is used for multiple sites in Wales. This one is located 2.1km east-north-east of Bryngwran on the Isle of Anglesey (NGR 237450 378200). The site is currently used for cattle grazing. Its western side is bisected by the B5112. During a site visit on 29th July 2021, the landowner reported that the council levelled up the ground level by dumping material when realigning the road in the early 1970s, thus altering the appearance of the landscape (pers. comm. Tecwyn, 2021; cf. Ordnance Survey, 1971, 1974). The site is recorded as a possible marsh-fort by the Atlas of Hillforts (Lock and Ralston, 2017).

BGS mapping shows the site located on Till deposits overlaying granite bedrock. Alluvium deposits encircle the site to the west, north and east, around Afon Caradog. OS mapping and field observations (Figure 77), however, suggest the marshland to be wider than the extent of alluvium shown in the BGS data. The landowner reports that prior to the dumping of material as part of the aforementioned road works, the wetland extended as far as the house to the north-west of the site (pers. comm. Tecwyn, 2021). The site occupies a slight knoll above these wetlands (see Figure 78). Rocky outcrops are prominent in the local landscape. A DTM, produced from LiDAR data, shows the site at the northern end of a promontory at 47m AOD, with the neighbouring wetland at an average height of 36m AOD.

FIGURE 77. LAND IMMEDIATELY SOUTH-EAST OF Y WERTHYR SHOWING WETLAND VEGETATION (AUTHOR'S).

The earthworks of the enclosure have been damaged considerably by past ploughing, and any extant remains are shallow and fragmentary. Geophysics have confirmed that the earthworks enclosing this site were predominantly bivallate, though there is evidence for a third inner line, possibly a box rampart on the north-east and east sides (Smith and Hopewell, 2007: 20-23). The concentric earthworks form an oval enclosure with an internal area of approximately 1.5ha. On the western side of the road, the earthworks were obscured by dense vegetation; however, a scarp was observed on this side, tapering out where its south-east end meets the road. The interior of the enclosure is uneven but generally slopes up to a peak in the centre of the enclosure, just east of the road, which cuts approximately 1m deep through it.

Lock and Ralston (2017) record a single possible north-west entrance where the terrace curves towards the road. A tithe map from 1845 shows a road bisecting the enclosure prior to the B5112. The earthworks are not recorded on any Tithe or OS map, historic or modern. As such, there is no record of the earthworks before this damage. Field observations noted a slight gap between the bank and road where the northern earthworks meet the eastern side of the B5112; however, the earthworks were so heavily damaged by ploughing in this area that it could not be determined to be an entrance with any certainty. The only noticeable gap on the surface is through the north-east earthworks. However, this is cut by the ditch in geophysics and interpreted as a modern access point. A possible alternative to the original entrance may lie facing south-west, where the road cuts the defences. Such an entrance would have formed the path of least resistance for the initial construction of the road but would likely mean that any trace of the entrance has been destroyed.

Little is known of any potential for activity within the enclosure. A bronze terret chariot fitting, believed to be Romano-British, is the only artefactual evidence produced from the site (Livens, 1976). There are no records of any finds recovered during the roadworks at the site, and the geophysical survey offers no clear indication of any internal activity (Smith and Hopewell, 2007: 21). Some increased noise in the magnetic response focused around the inside of the defences has been interpreted as a potential indication of occupation (ibid.) but this is as yet unconfirmed.

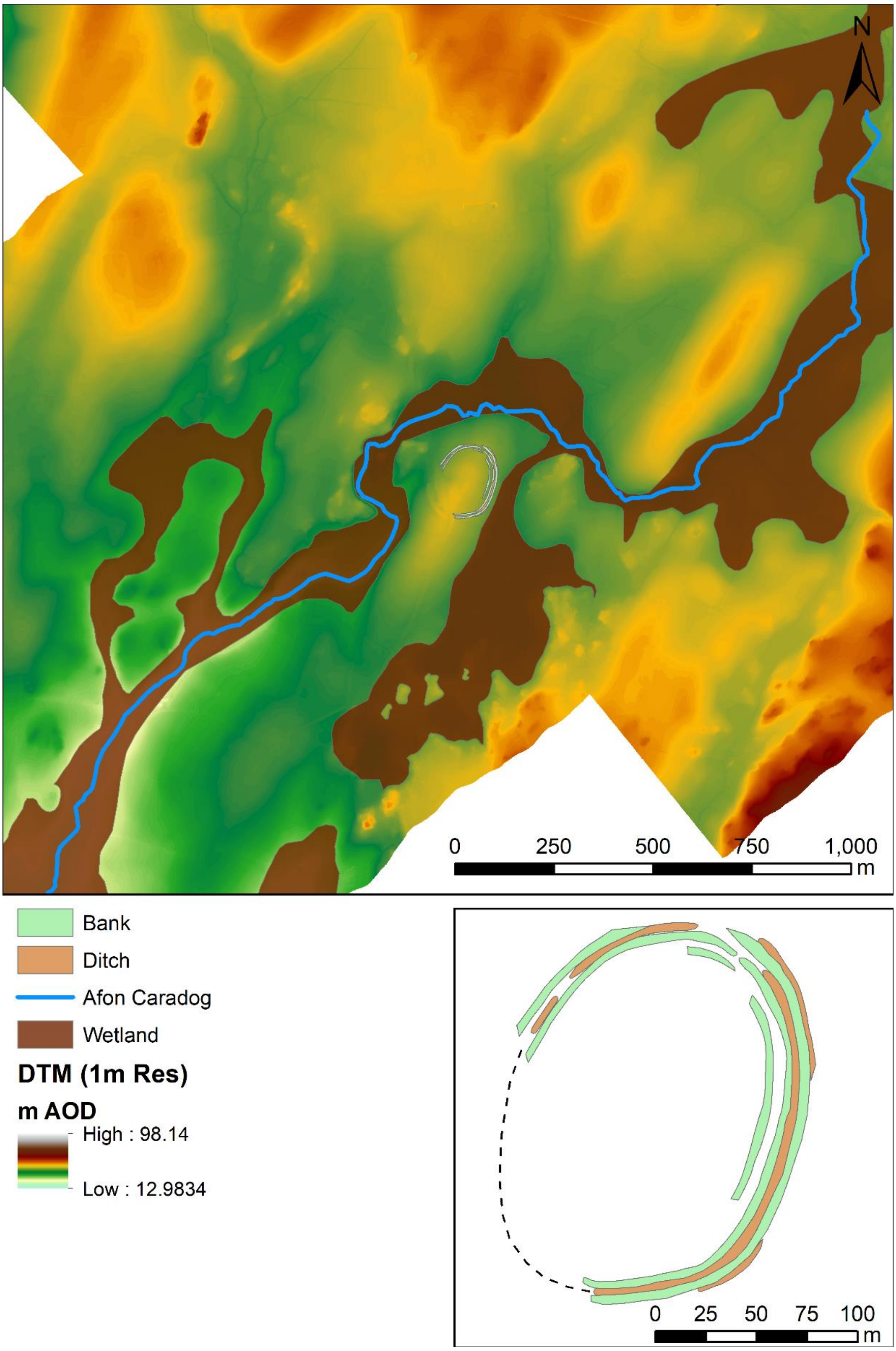


FIGURE 78. PLAN OF Y WERTHYR EARTHWORKS ARCHITECTURE AND WIDER LANDSCAPE SETTING.

The proposal of a north-west facing entrance is particularly interesting. The oral account regarding the wetland prior to the 1970s roadworks suggests that the marshy ground would have come close to this entrance. With the enclosure occupying the width of the promontory, there does not appear to be sufficient room to suggest that people would have traversed around the enclosure to gain access. Such an entrance would, therefore, appear to be inaccessible, allowing only access to the wetland. The proposal of a southern entrance would make more sense; however, the roadworks have likely destroyed any archaeological remains. The positioning of the site affords it an additional natural boundary on three sides. Despite the partial destruction of the site, it appears that the earthworks would have originally followed the same architectural design on all sides. This symmetry may tend away from considerations of the wetland replacing defences but does not negate the role of the river and wetland altogether.

4.3 Discussion and the need for additional data

This chapter has compiled a detailed gazetteer of sites currently classified as 'marsh-forts'. Considering these sites with a broader focus, unblinkered by a pre-established criterion, it has been possible to identify a range of factors from each site. The re-examination of existing data and the creation of GIS models illustrating the architecture and landscape of each site serve to highlight the range of relationships held. They begin to showcase the vast variety of sites currently allocated to this classification and explore the nuances of each case. A casual glance highlights that many of these sites are not comparable. Rather, the current grouping reflects the culmination of many sites through an over-simplified 'tick-box' approach to classification. A refined approach is required. The results of this will be discussed in Chapter 6.

The relationship between architecture and the environment is a cornerstone in the investigation of 'marsh-forts'. The desk-based assessments in this chapter have integrated various datasets for modelling wetland. This includes the national British Geological Survey, regional studies such as Waller's Fenland Survey (1994), and previous site-specific palaeoenvironmental studies (e.g. Norton, 2021 for The Berth). These datasets increase in resolution and value for research from the former to the latter. Studies such as Waller's introduce additional information, tracing wetland development over time. Site-specific surveys have the scope to take this further, examining vegetation and other environmental factors and producing high-resolution mapping that enables a more precise analysis of the relationship between the environment and site architecture. Localised environmental surveys provide increased value in studying individual sites;

however, as we move down the spectrum from macro to micro, they also increase in rarity. Few of the sites studied have the necessary resolution and accuracy to facilitate accurate analysis. As such, many of the desk-based assessments above have raised as many questions as they have begun to answer. They demand further work to address these.

5. Results from Borehole Surveys

5.1 Introduction

The preceding chapter has provided a background of existing literature and updated observations from GIS analysis and site visits. As with any archaeological investigation, however, this work has raised as many questions as have been addressed. As outlined in the methodology chapter (Section 3.3, see Appendix 2 for selection rationale), a series of small-scale borehole surveys were conducted at thirteen sites to complement the research in Chapter 4. These were intended to answer a series of questions relevant to each site. These objectives focused on determining the nature, extent, date and condition of any wetland. This chapter outlines the specific intentions of the survey at each site, presents and analyses the results of the fieldwork, and ties it into our overall understanding of these sites. The targeted approach of these surveys has produced results with significant implications for the interpretation and categorisation of the enclosures built within these different landscapes.

5.2 Case Studies

5.2.1 Athelney

Introduction

The wetlands around Athelney are well evidenced in modern observations of the landscape and medieval accounts dating to the time of King Alfred. It was unclear, however, whether this environment dated back to the construction of the Iron Age enclosure at the site. Coring the wetland offered an opportunity to understand the nature of the wetland and its potential for future palaeoenvironmental analysis, as well as to collect samples for potential radiocarbon dating to determine the age of the wetland deposits.

Methodology

A total of four boreholes were undertaken in a short transect south of the enclosure and of Cuts Road on 27th February 2023 to address the questions surrounding the age of the wetlands (Figure 79). The first of these four, BH1, was undertaken using a gauge auger but was not completed as it was blocked by an unidentified intrusion. BH2 was undertaken 0.30m west of BH1 using a soil auger to get deeper, but BH1 was still recorded due to the clean sequence and the unique deposit identified in its sequence (AHBS_01006). BH3 and BH4 were taken at approximately 50m intervals south of BH2 in numerical order. Unfortunately, due to restricted access, it was not possible to continue the transect north of Cuts Road to the edge of Athelney Hill and determine the extent and full profile of the wetland.

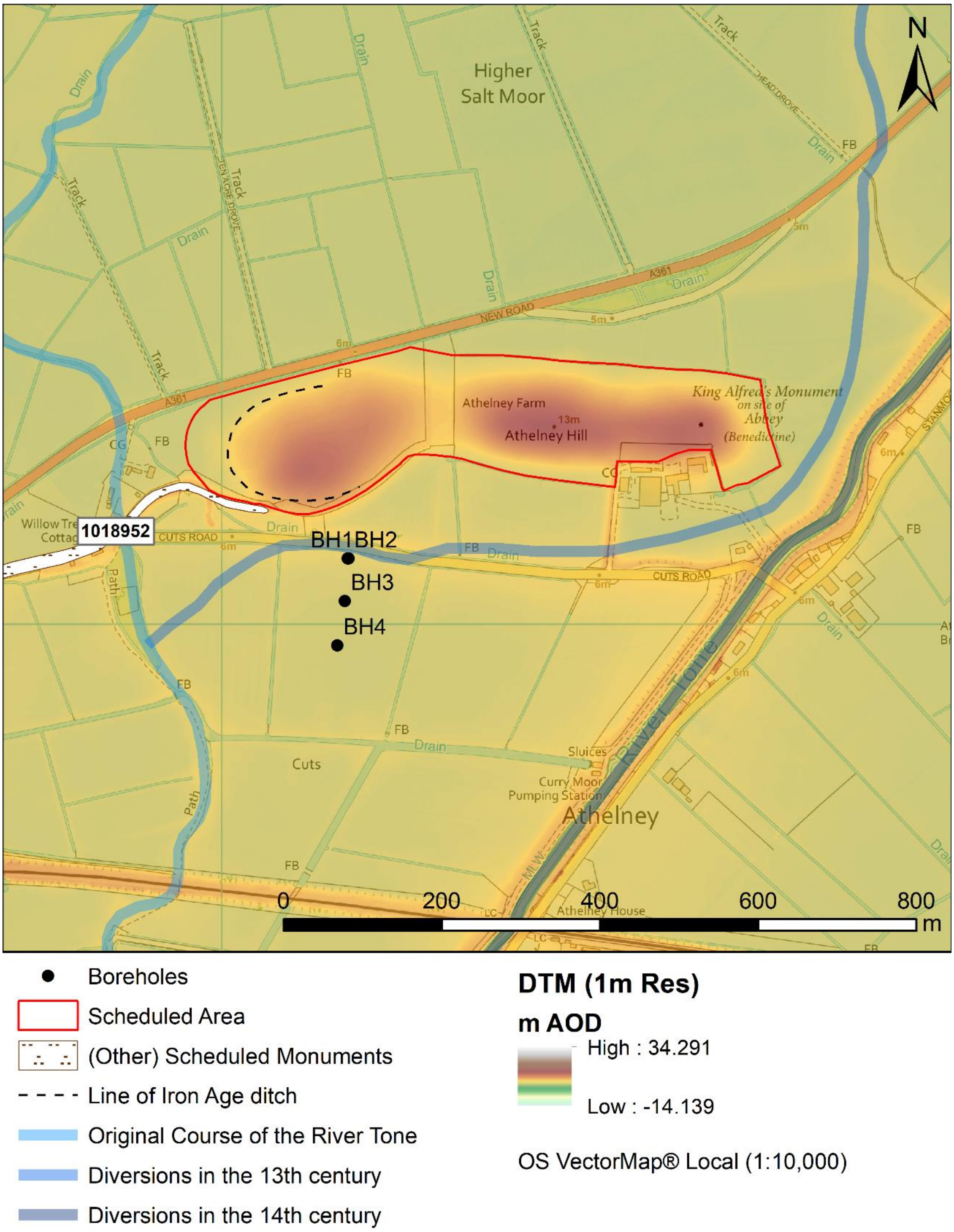


FIGURE 79. LOCATION OF BOREHOLES AT ATHELNEY HILL.

Due to technical issues with the GPS, the location of these boreholes was recorded using Google Maps and printed plans of the site, with later rectification in GIS. The accuracy here was aided by narrow drainage channels across the field, which could be seen clearly on the ground and in aerial photography and served as reference points from which to measure borehole locations.

Results

The boreholes feature a broadly consistent topsoil composed of silt and clay, where the former is the dominant material in BH1 and BH2, and the latter is the dominant material in BH3 and BH4, further to the south. This differing description may, however, result from field recording as the ground to the south where BH3 and BH4 were located was significantly wetter. Beyond this, the lithology for all of the deposits is largely consistent. All feature a predominantly clay-based subsoil below the topsoil, below which is up to two layers of fibrous peat separated by and on top of clay or blue-grey clay, interpreted as estuarine.

A thin, 0.02m thick layer of black organic material was observed in BH1 (AHBS_01006); however, this was not repeated in BH2 (see Figures 80 and 82).

FIGURE 80. GAUGE AUGER (1M LONG) WITH PROFILE FROM ATHELNEY BH1, 0.75-1.47M BGL (AUTHOR'S).

The immaculate preservation of organic material, including wood, was observed in all boreholes, most notably in BH2 (Figure 81). While this project did not have scope for palaeoenvironmental analysis, the recovery of ligneous material may hint at a wooded wetland landscape.

FIGURE 81. PRESERVED WOOD FROM ATHELNEY BH2, PEAT LAYER AHBS_02007. (AUTHOR'S).

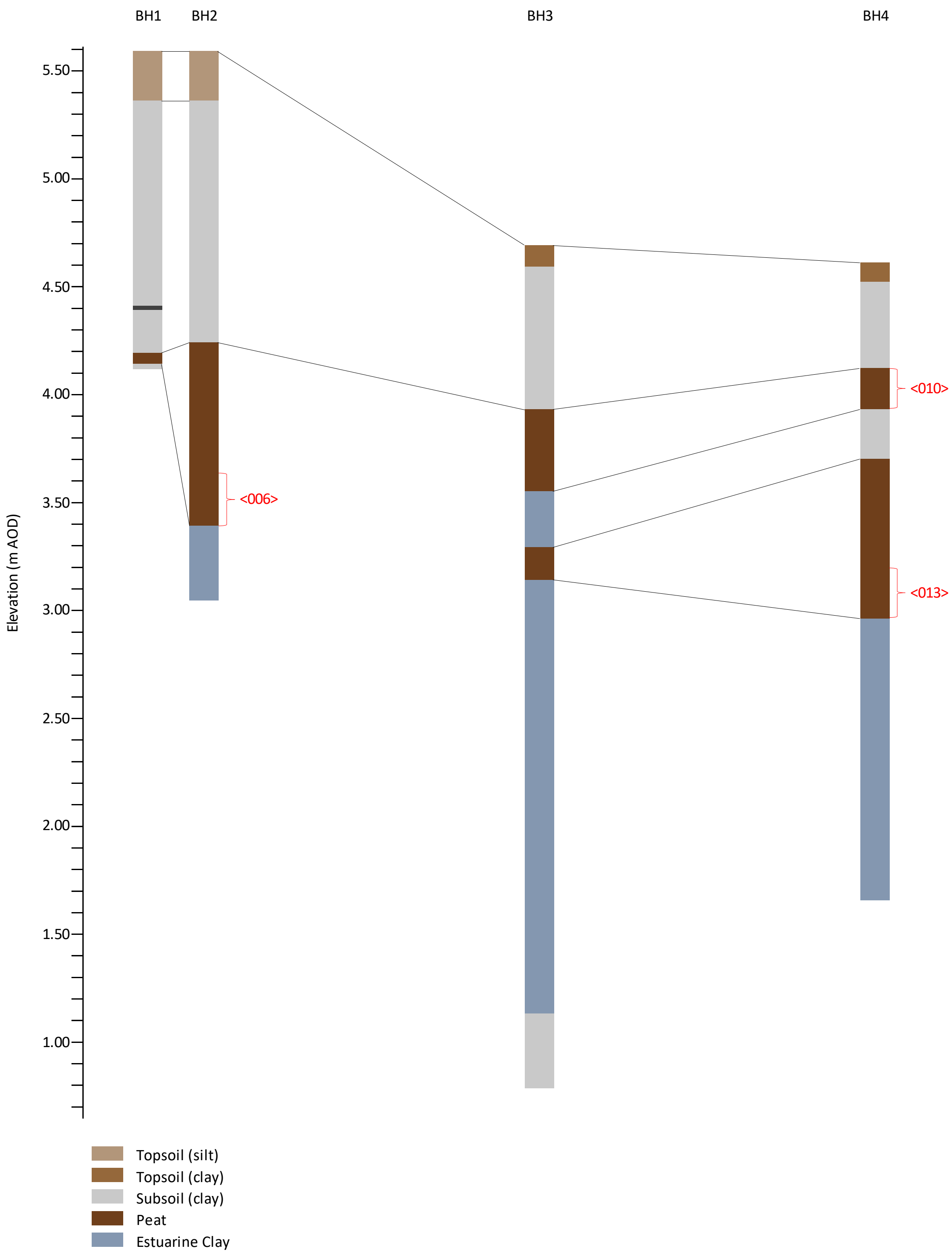


FIGURE 82. ATHELNEY BOREHOLE STRATIGRAPHY.

Radiocarbon dating

The preservation and extent of the peat deposits at Athelney were conducive to a large number of viable samples from all four boreholes for radiocarbon dating.

Samples 006 (base of AHBS_02007), 010 (AHBS_04003) and 013 (base of AHBS_04005) were selected for radiocarbon dating. Samples 010 and 013 were selected to provide dates for the formation of the two layers of peat formation identified in BH4. Sample 013 was taken from the base of the lower peat deposit (AHBS_04005). As such, it represents the beginning of its formation. While it may have been prudent to also date a sample from the top of this deposit, given its considerable thickness, this was not necessary as sample 010 provides a sufficient terminus ante quem. Sample 006 was taken from the base of the peat deposits in BH2 and selected to provide a date for the start of peat formation. This deposit was selected due to the incredible organic preservation observed in the deposit. In addition, although potentially confirmed by deeper coring, dating of this deposit also aids in confirming whether it is contemporary with the upper or lower peat layers identified in BH3 and BH4, thereby helping to model the extent of the wetland in different periods.

The results of the radiocarbon dating are as follows:

TABLE 16. RADIOCARBON DATES FROM BOREHOLE SAMPLES AT ATHELNEY.

Sample Number	Context description	Lab Code	Radiocarbon Age (BP)	Calibrated date (95.4% probability)
006	Base of peat in BH2	SUERC-111361	3396±24	1746-1619 cal BCE
010	Upper layer of peat in BH4	SUERC-111362	1592±21	425-541 cal CE
013	Base of lower layer of peat in BH4	SUERC-111363	3610±24	2031-1894 cal BCE

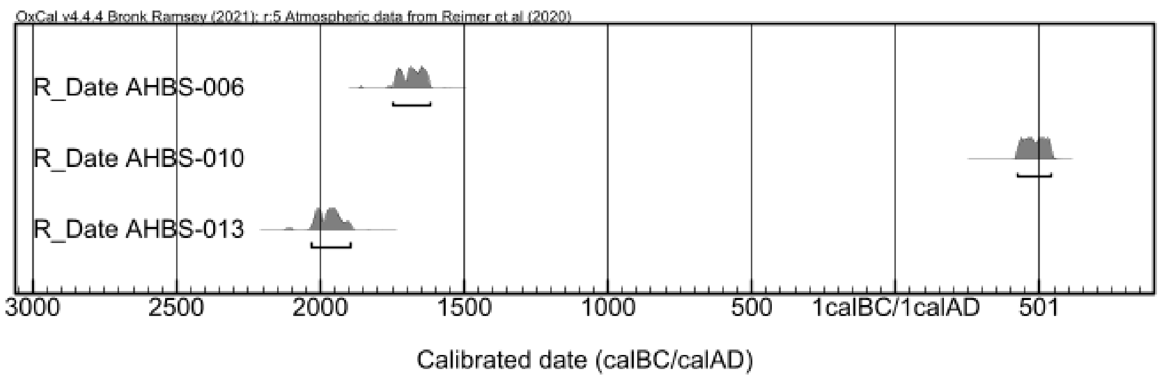


FIGURE 83. GRAPH OF RADIOCARBON DATES FROM BOREHOLE SAMPLES AT ATHELNEY.

The results suggest that samples 006 and 013 are broadly contemporary and represent the start of peat formation. This indicates a uniform depth of peat formation, with the lenses of clay identified in BH3 and BH4 as intrusive, potentially localised deposits. The radiocarbon dating results suggest peat formation from 2031-1894 cal BCE. The slightly later date of sample 006, approximately two centuries later, may represent the growth of peat encroaching closer to Athelney Hill. However, it is worth noting that both samples were taken from 0.25m bulk samples due to the sampling process and, therefore, cannot be said to be taken precisely from the absolute earliest strata of the deposit. As sample 006 is closer in date to sample 013 than sample 010, it is unclear whether the two layers of peat in BH3 and BH4 represent an interruption in peat formation or a potentially short-lasting localised intrusion of clay. This clay deposit may relate to marine transgression in the third and fourth centuries CE (Rippon, 2000: 138). The date of sample 010, 425-541 cal CE, does not necessarily represent a distinctly separate phase of peat formation but the most recent surviving peat deposits. The date of the sample also fits with the interpretation of the clay as related to the marine transgression. The radiocarbon dating suggests that overall peat formation continued until the sixth century. However, historical accounts and the need for drainage in later centuries have shown that the area continued to be wet after this date. That said, it is difficult to assess the damage that subsequent agriculture has had on the upper deposits and how much of the palaeoenvironmental record has been lost. A more extensive borehole survey would be required to determine the nature of the intermediate clay deposits in BH3 and BH4, whether they are localised and what they mean in terms of the wider landscape history.

Discussion

The land is prone to frequent flooding despite the many drainage channels to enable agricultural activity. This was partly the incentive for its recent sale to the Somerset Rewilding project. While it does serve as an interesting anecdote about the resilience of wetlands to human transformation and control, it also gives us an insight into the factors that have allowed the preservation of such immaculate peat deposits in this area. This, in turn, underlines the substantial potential for further work reconstructing the palaeoenvironment.

The flooding also explains the thin topsoil and its diffuse boundary into the underlying deposit. Satellite imagery from August 2016 provides the clearest evidence for the agricultural use of the coring area, showing hay bales. Given the wetness, it seems likely that grass is the only viable agricultural use of the land.

The clay subsoil has probably built up due to repeated flooding. Below this, the peat is observed in various thicknesses. This variation is likely due to localised variations in the ground level. Two layers of peat development were identified in BH3 and BH4; however, dating has suggested that peat formation may have been less interrupted than this may imply. The results of radiocarbon dating of sediment samples recovered during coring indicate that peat formation likely began c. 2000 BCE, the early Bronze Age, and would have continued until at least the early Medieval period, although wet conditions persist to the current day. We can determine that the landscape around Athelney Hill would have been wet in the Iron Age, with continued peat formation throughout this period.

The preservation of organic material, notably in BH2 (Figure 81), is of high quality and, along with the proven success of radiocarbon dating, offers considerable potential for further environmental studies. A complete palaeoenvironmental analysis of the deposits would enable confirmation of the wooded landscape and enable discussions about the area's natural resources and the landscape's aesthetic, with implications for visibility and access.

Conclusion

The borehole survey carried out to the south of Athelney Hill confirmed the presence of historic peatland deposits. Radiocarbon dating of the oldest and most recent ends of the surviving peat strata has confirmed continued formation through the Iron Age. As such, we can envisage the environment as wetland – possibly fen carr, although the layer of clay identified intervening in the stratigraphy of some of the boreholes may represent marine transgression in the third and fourth centuries CE.

5.2.2 Belsar's Hill

Introduction

Belsar's Hill was identified as a site for coring due to the uncertainty surrounding its distance from and relationship with the wetland to the north of the site. BGS mapping showed alluvium and peat deposits approximately 600m to the north. This differs from traditional views about the use of the site and interpretations drawn from LiDAR data suggesting that the wetland may have extended much closer, enabling the site to directly control access across it to the Isle of Ely (see Section 4.2.4).

Methodology

Coring was undertaken across land north of Belsar's Hill on 16th December 2022. A transect was carried out from the southern edge of the field immediately adjacent to the scheduled area in a northerly direction towards where the BGS and Waller (1994) have identified peat deposits. This transect was to establish the proximity of the wetland to the edge of the enclosure and thereby determine the impact it may have had on factors such as access. A transect of six boreholes, BH1 to BH6, was taken at 55-60m intervals running north-south (Figure 85). Due to time constraints and logistical issues, it was not possible to continue the transect further north to reach and assess the extent of the peat deposits previously recorded by Waller and the BGS.

Stiff clay deposits necessitated that coring was carried out using a soil auger (Figure 84).

FIGURE 84. SOIL AUGER WITH STIFF BLUE CLAY AND INCLUSIONS (AUTHOR'S).

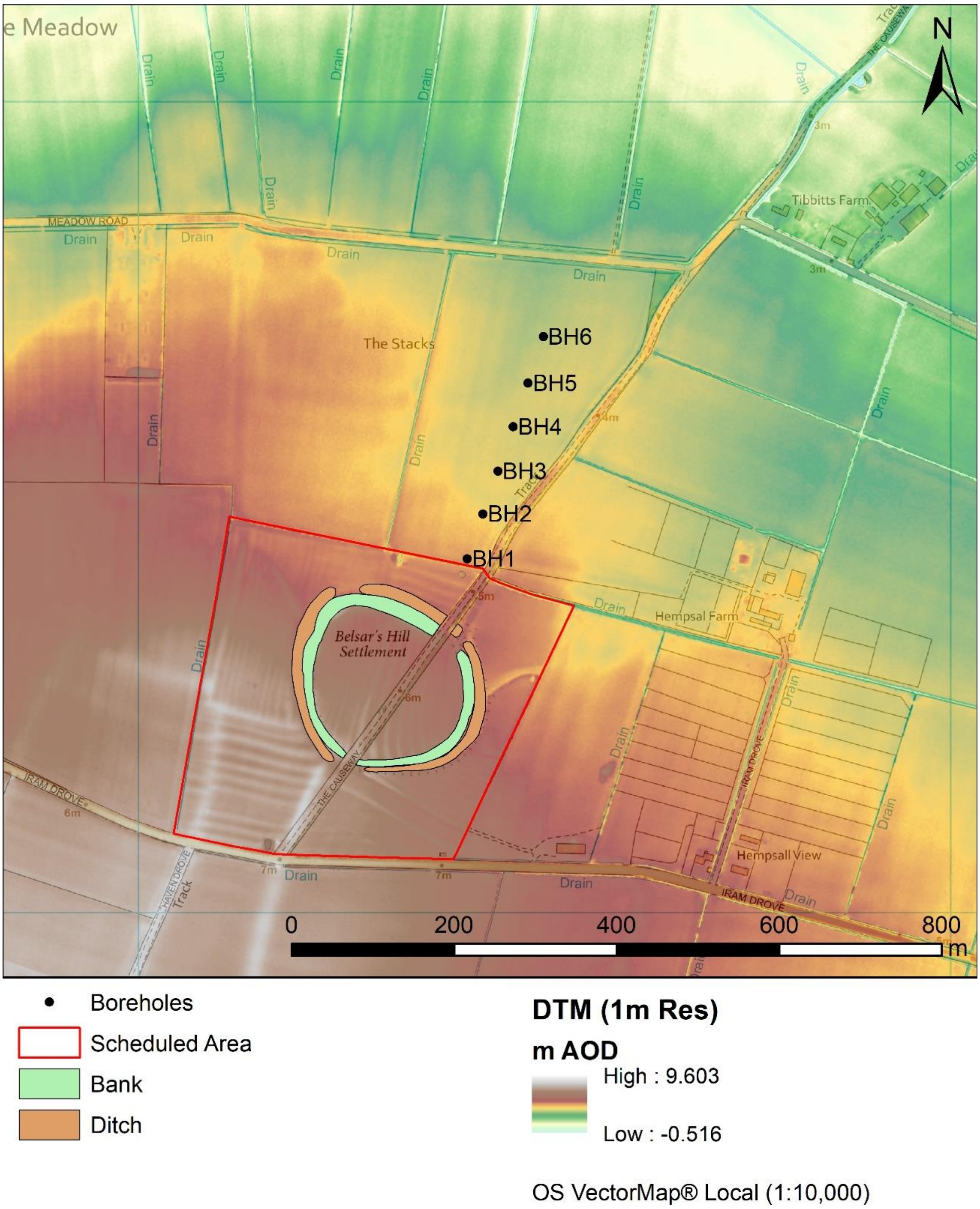


FIGURE 85. LOCATION OF BOREHOLES AT BELSAR'S HILL.

Results

Stratigraphy across all six boreholes in the transect was consistent. It comprised 0.29-0.41m topsoil. The topsoil and underlying deposits were all predominantly clay-based. Marl and marl inclusions became more frequent within deeper deposits.

BH4 was continued to a depth of 2.38m BGL in an attempt to reach the base of the clay. However, it was not possible to go any deeper either because the clay was too stiff to core by hand or the small sandstone inclusions identified towards the base of the deposit were becoming more frequent and preventing the auger from turning.

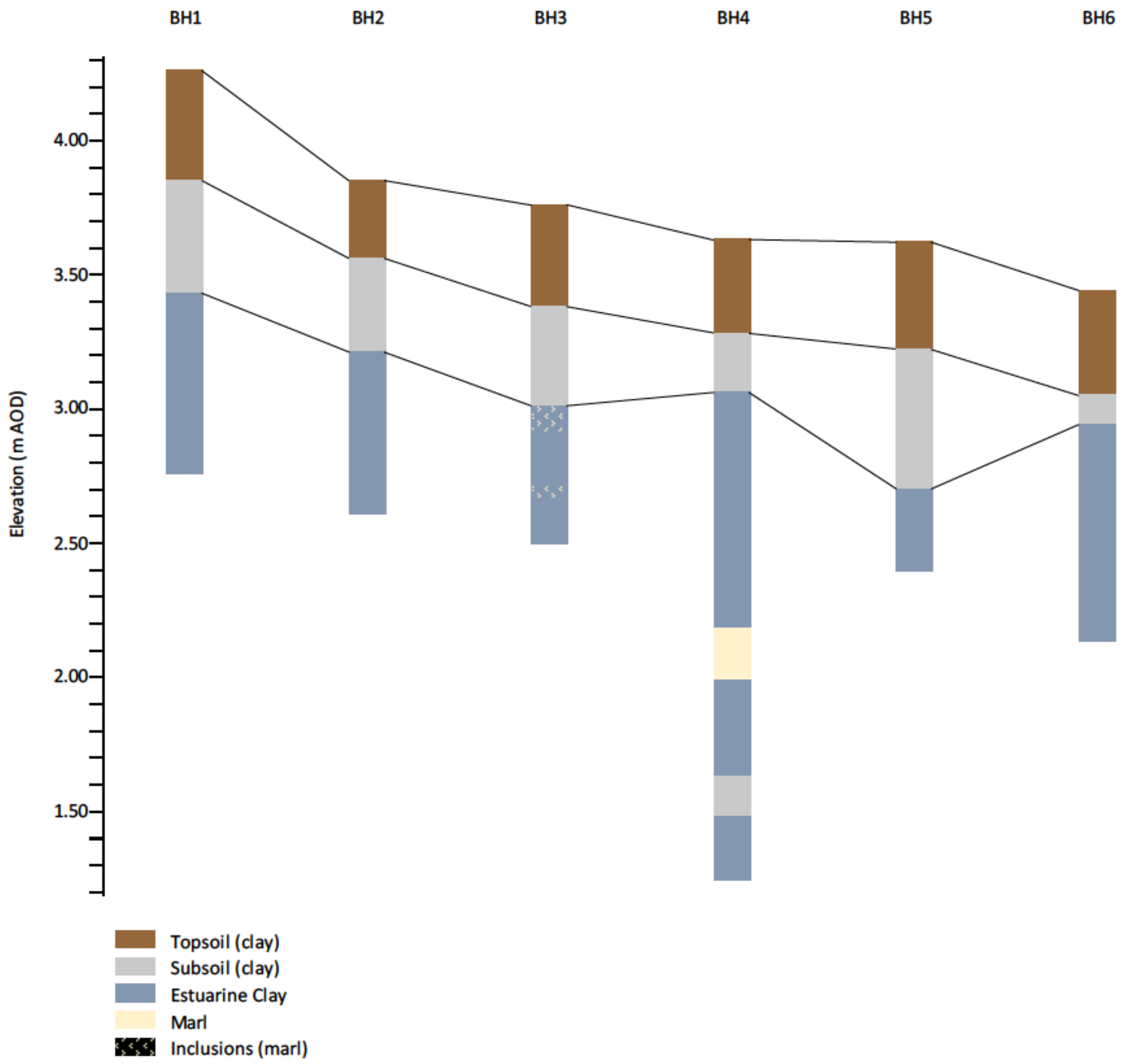


FIGURE 86. BELSAR'S HILL BOREHOLE STRATIGRAPHY.

Discussion

The depth of the topsoil is established by ploughing. This is confirmed by observations of land use at the time of the fieldwork. Below the subsoil, the blueish grey clay, interpreted as estuarine, provides the only evidence for a former wetland. Unfortunately, as this was devoid of any organic remains, it was not possible to collect samples that may have dated the deposition of this material. This, therefore, makes any direct association with the design and use of the enclosure difficult to establish.

Previous boreholes carried out in May 1977, approximately 1.9km to the north of the enclosure, have recorded peat deposits (GeoIndex: TL47SW12 and TL47SW14) between 1.0 and 2.0m BGL with blueish grey clay laminae defined as Barroway Drove Beds deposits. The BGS defines the Barroway Drove Beds as "compris[ing] soft grey clays and silty clays which were deposited in salt marshes and shallow water brackish lagoons cut by a complex network of tidal channels and creeks" and dates the deposits within the Holocene (BGS, 2024b).

Given the issues with dating the peat deposits in the field to the north of the enclosure, within 700m of the earthworks, we cannot determine the exact extent of the wetland relative to the site in the Iron Age. Modelling of the extent of the Fens by Waller (1994) shows the accumulation of freshwater sediments (peat and marl) getting closer to the enclosure over time, with its closest proximity post-1800 BP (see Figure 14). A simple comparison of these maps suggests the wetland here most likely dates from between 3400 BP to post-1800 BP and the medieval period (1400 BCE – 200 CE onwards). From this timeframe, it is possible to infer that the landscape to the north of the enclosure would have likely been wet around the time of the enclosure's original construction and use. Local tradition suggests the site was used to control access across the Fens to the Isle of Ely in the later eleventh century CE (see Section 4.2.4). While the evidence for this remains scarce, absent any excavation of the site, should the tradition hold true, the wetland would need to extend relatively close to the site in order for it to control it effectively.

Conclusion

Unfortunately, the findings of this fieldwork have not provided any definitive proof of wetland near to the enclosure. The main issue stems from a lack of dating evidence for the deposits. As such, it is not possible to determine the extent of the wetland at the time of the enclosure's construction and use. Despite this, its status as a "marsh-fort" of some form still appears highly plausible. In terms of the wider landscape, the decision to locate the enclosure at the edge of the Fens suggests an intentional and active relationship between the site and the environment.

5.2.3 Boney's Island

Introduction

The prehistoric origin of the wetlands to the north of Beccles is well attested, with previous work identifying a trackway dating to the Late Iron Age (Gearey et al., 2016: 79-138). BGS mapping, however, shows the enclosure situated across the neck of a spit of land with peat deposits continuing to the east and south of the site. The reasons for coring were three-fold. Firstly, it aims to confirm the presence of the peat wetland correlated with the BGS map. Secondly, given the minimal change in height as shown on the LiDAR-derived DTM, it aims to assess whether the wetland would have originally been closer to the enclosure, allowing for a better understanding of the environment and restrictions to access. Thirdly, it aims to obtain samples for dating, which would help to determine whether the wetland deposits were present in the Iron Age or have developed since the enclosure's presumed prehistoric construction.

Figure 87. Aerial photo of the location of Boney's Island boreholes 1 to 5 transect, looking west (Author's).

Methodology

In order to address the questions raised from the desk-based assessment and field observation of this site, coring was undertaken at the site on 26th – 27th January 2023. This comprised a total of six boreholes (Figure 88). Five boreholes, BH1 to BH5, were located in a transect running south from the edge of the enclosure towards and across the peat deposits identified by the BGS. An additional single borehole, BH6, was located 200m east of the enclosure to identify any variation in the deposits on this side and to determine if there was any evidence that the wetland extended closer to the eastern side than was plotted on BGS mapping. Additional coring on this side was restricted due to health and safety, as the land to this side of the enclosure is an active golf course.

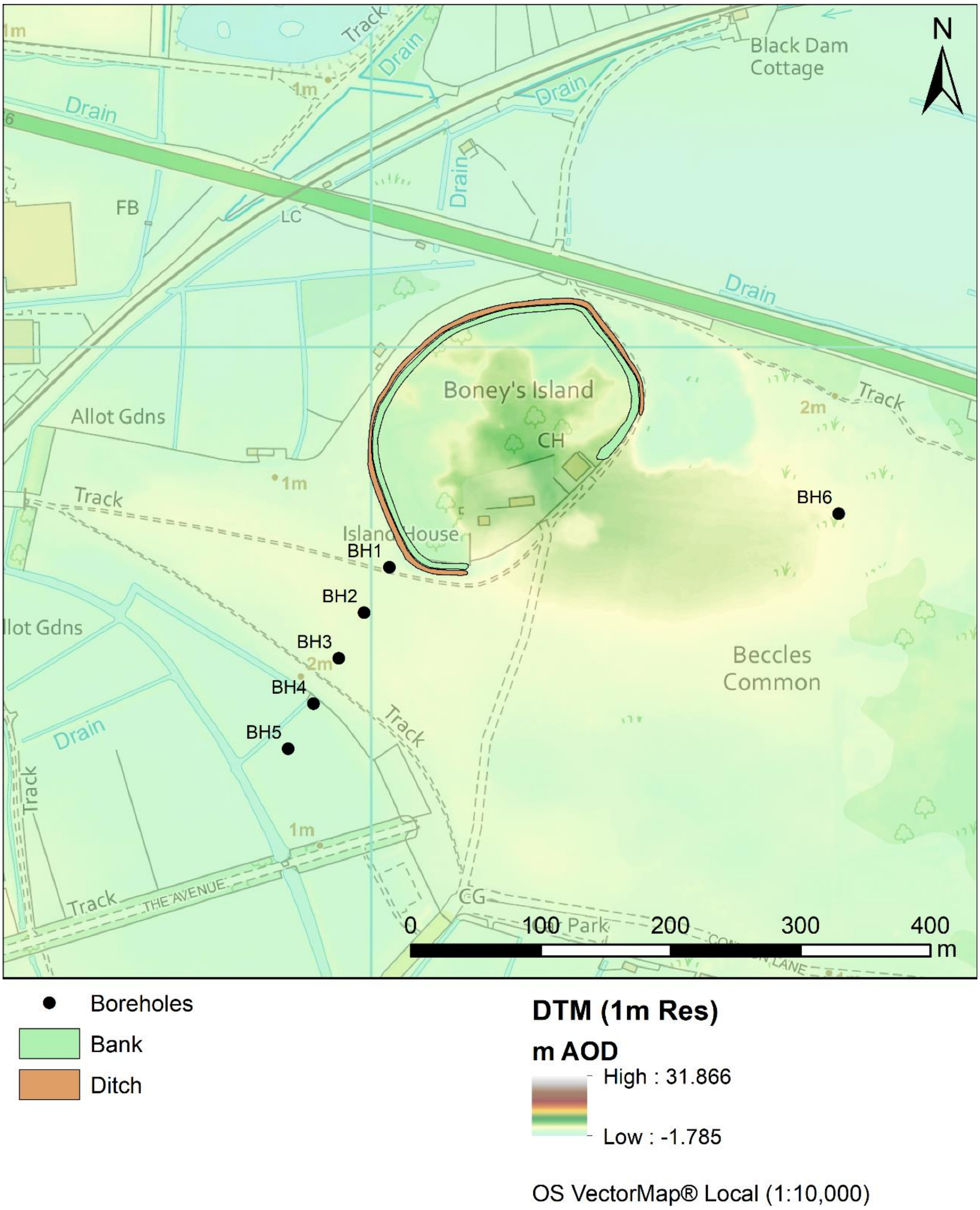


FIGURE 88. LOCATION OF BOREHOLES AT BONEY'S ISLAND.

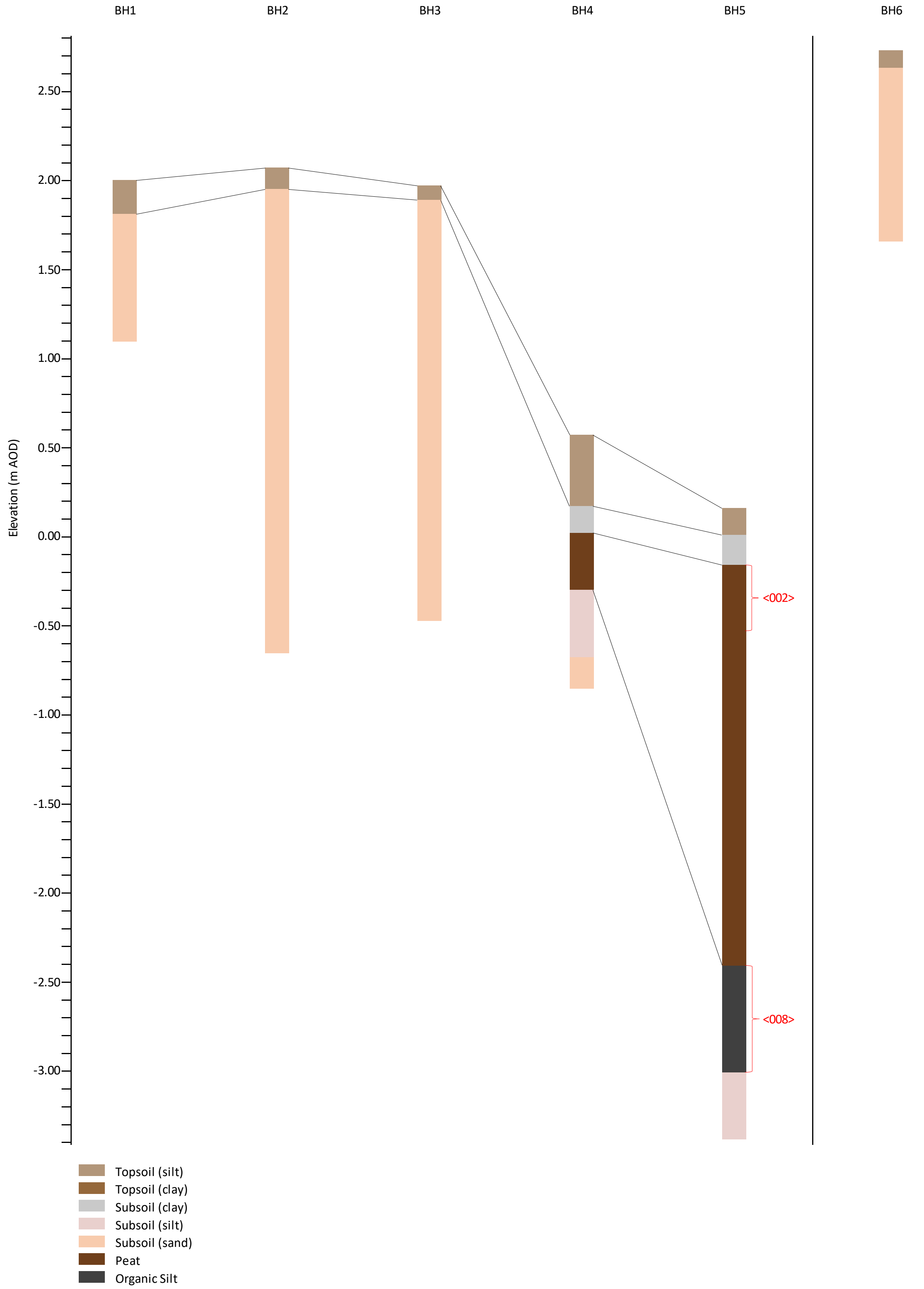


FIGURE 89. BONEY'S ISLAND BOREHOLE STRATIGRAPHY.

Results

The results of the coring show a clear distinction between the areas where wetland was recorded and those where it was not. This distinction was observable on the ground surface. BH1 to BH3 and BH6, which were located within the main expanse of Beccles Common, were under short grass and firm, well-draining ground. They all comprised a similar sequence of deposits of 0.08-0.19m of sandy silt topsoil overlying a substantial depth of sand recorded to over 2.72m in BH2.

BH4 and BH5 were located in a small paddock, left to wild with uneven ground and often surface water along the margin of the large land drain. This area corresponds with a drop in ground level visible in the stratigraphic profile (Figure 89) and on the DTM (Figure 88). The high water level in the drain is a further testament to the enduring wetland. In these two boreholes, the sandy silt topsoil continues, overlying a predominantly greyish clay, below which were peat deposits atop a silty deposit followed by coarse sand, which is consistent with that of the higher elevation dryland boreholes and has been interpreted as the "natural" geology.

Radiocarbon dating

Two samples, 002 (BBCS_05003) and 008 (BBCS_05005), were selected for radiocarbon dating. These were taken from the top and the base of the peat deposits in BH5. Deposits from BH5 were selected due to the deep sequence of deposits and their secure location within the wetland. Top and base samples were selected for dating to provide a start and end date for the formation of the peat deposits. This has allowed us to determine the nature of the environment in the Iron Age.

The results of the radiocarbon dating are as follows:

Table 17. Radiocarbon dates from borehole samples at Boney's Island.

Sample Number	Context description	Lab Code	Radiocarbon Age (BP)	Calibrated date (95.4% probability)
002	Top of peat in BH5	SUERC-111364	2468±21	759-426 cal BCE
008	Base of peat in BH5	SUERC-111365	6060±21	5037-4852 cal BCE

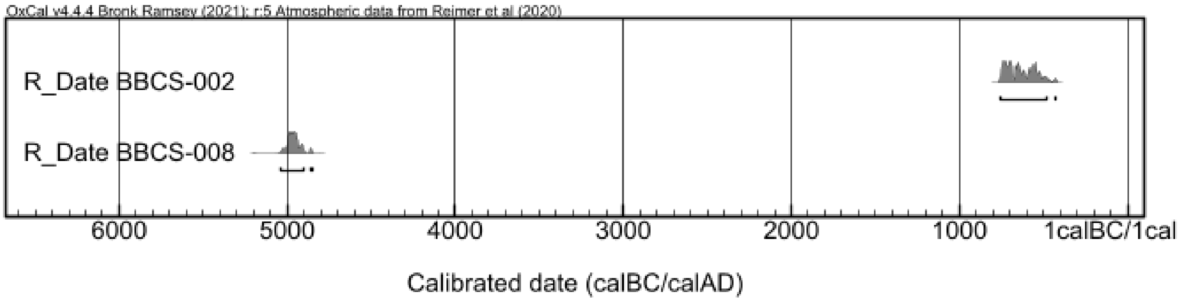


FIGURE 90. GRAPH OF RADIOCARBON DATES FROM BOREHOLE SAMPLES AT BONEY'S ISLAND.

The dating of samples 002 and 008, in the deeper section of the peat, indicates peat formation beginning 5037-4852 cal BCE and continuing, seemingly uninterrupted, until 759-426 cal BCE. The deposits represent over 4000 years of peat formation, continuing until at least the Early Iron Age. As indicated by current ground conditions, the wetland conditions would also likely have continued after this period. It suggests a relatively stable climate.

Discussion

The transect BH1 to BH5 provides a clear profile of the stratigraphy south of the enclosure. Though limited to only two boreholes containing peat, and while undoubtedly there is justification for further work to confirm this profile, the transect does give us a greater understanding of the full extent of the wetland on this side. Using the location of the boreholes where peat was identified and extrapolations based on the interpretation of the LiDAR DTM, it was possible to rectify the BGS extent of the wetland to the south of Boney's Island. While this does represent a slight expansion in the mapping of the wetland, it is by no means substantial enough to impact any interpretation of the impact of the wetland on access to the site.

While two boreholes cannot be used to form a definite interpretation, it would seem logical to suggest that the variation in thickness of the peat deposits represents the true depth and profile of the basin in which the deposit has formed. From this, it is possible to suggest that while narrow and possible to be bridged, as indeed it is now, this band of wetland would have created a significant obstacle to movement in this direction. The obstacle these deposits would have formed is highlighted by the substantial depth of the peat and the current surface conditions with the continued drainage. Such an interpretation, therefore, has implications for controlling access to the site.

Just as interesting, though, is the stratigraphy of BH1 to BH3 and BH6. Earlier analysis of the wetland using existing data in the desk-based assessment stage of this research raised the question of whether any wetland may have extended as far as the island. In short, was it cut off? The apparent absence of wetland deposits in these boreholes appears to dismiss this hypothesis.

The radiocarbon dates and the borehole stratigraphy indicate continual peat growth from the Mesolithic through to the Early Iron Age. The EIA material at the top of the peat in BH5 does not necessarily reflect the end of peat formation but rather the most recent surviving material. It is difficult to determine whether the subsequent clay and silt layers seen in the stratigraphy (Figure 89) represent a change in groundwater conditions, with flooding causing the material to cover the peat, likely followed by more recent decay of vegetation; or whether it is the result of anthropogenic activity, related to draining of the land and its subsequent usage. The dating does, nonetheless, confirm that the peat to the south of the site pre-date the Iron Age, and this area would have been wet in the Iron Age.

Conclusion

The coring results undoubtedly support the presence of peatland to the south of the site in the Iron Age, in the area consistent with BGS mapping. The gradual diminishing of the peat deposits closer to the enclosure (BH1-3) and to the east (BH6) and the presence of sandy geology, however, suggests that the enclosure was not cut off on a small island as had been tentatively suggested in Section 4.2.7. Rather, it seems to have occupied the neck of a dryland headland surrounded by wetland on three sides. One of the main issues with interpreting this site remains in confirming the Iron Age origin of the enclosure itself. While the trackway to the north in the Beccles Marshes provides compelling evidence for Iron Age activity in the wider area, there remains no evidence of dated activity in the enclosure or on the headland it guards to the east. If the enclosure is Iron Age, it is unclear why the site was located here. It does not dominate any skyline or command any identifiable route. LiDAR does suggest higher ground on the western side of the town. Was it connected to the trackway, then? Its location at the southern edge of the main Marshes, particularly with the spit to the south, places it in a prominent position towards the 'heart' of the wetland environment, even if it does not extend to the edge of the enclosure. Such narratives give us subtle hints about the role of the enclosure within the wider landscape.

5.2.4 Borough Fen

Introduction

Previous investigation of Borough Fen identified a single east-facing entrance. With the wetland on this side of the enclosure, it is important to understand its full extent and nature to assess its impact on access to the site. Current BGS mapping shows the presence of peat deposits c. 250m to the south-east. Alluvium, which covers the enclosure and the area between it and the peat, has been dated to the Roman period during excavations (Malim and McKenna, 1993: 55). As such, these deposits may have protected the buried remains of the site from post-Roman ploughing and provides significant potential for preservation of not only archaeological features but also further wetland deposits.

Methodology

A total of ten boreholes were excavated across the area to the south-east of the enclosure on 23rd – 24th January 2023 (Figure 91). This survey stemmed from a primary transect running east from the edge of the enclosure with a grid pattern further south towards the wetland deposits identified from BGS mapping. The irregular spacing of the grid was due to obstacles on the ground and, notably, the avoidance of an underground gas line. This pattern of boreholes was nonetheless arranged to discover the extent of the wetland and whether it continued below the Roman alluvium. The survey also aimed to obtain dating evidence confirming the localised presence of wetland contemporary with the construction and use of Borough Fen.

Results

The borehole stratigraphies reveal a typically consistent depth of topsoil across the site, ranging between 0.25 to 0.36m BGL. There are two outliers to this: BH4 and BH6, which have topsoil thicknesses of 0.52m and 0.44m, respectively. The increased thickness at BH6 may be explained by its location in a field margin between a land drainage ditch and the ploughed area of the field. It seems likely that the excavation of the former and ploughing of the latter may have resulted in an accumulation of topsoil. BH4, however, was located relatively centrally within its respective field. A diffuse boundary between the topsoil and peat identified in the neighbouring BH5 may indicate that the upper portion of the peat has since been degraded and may have been interpreted as topsoil in BH4, explaining this greater thickness.

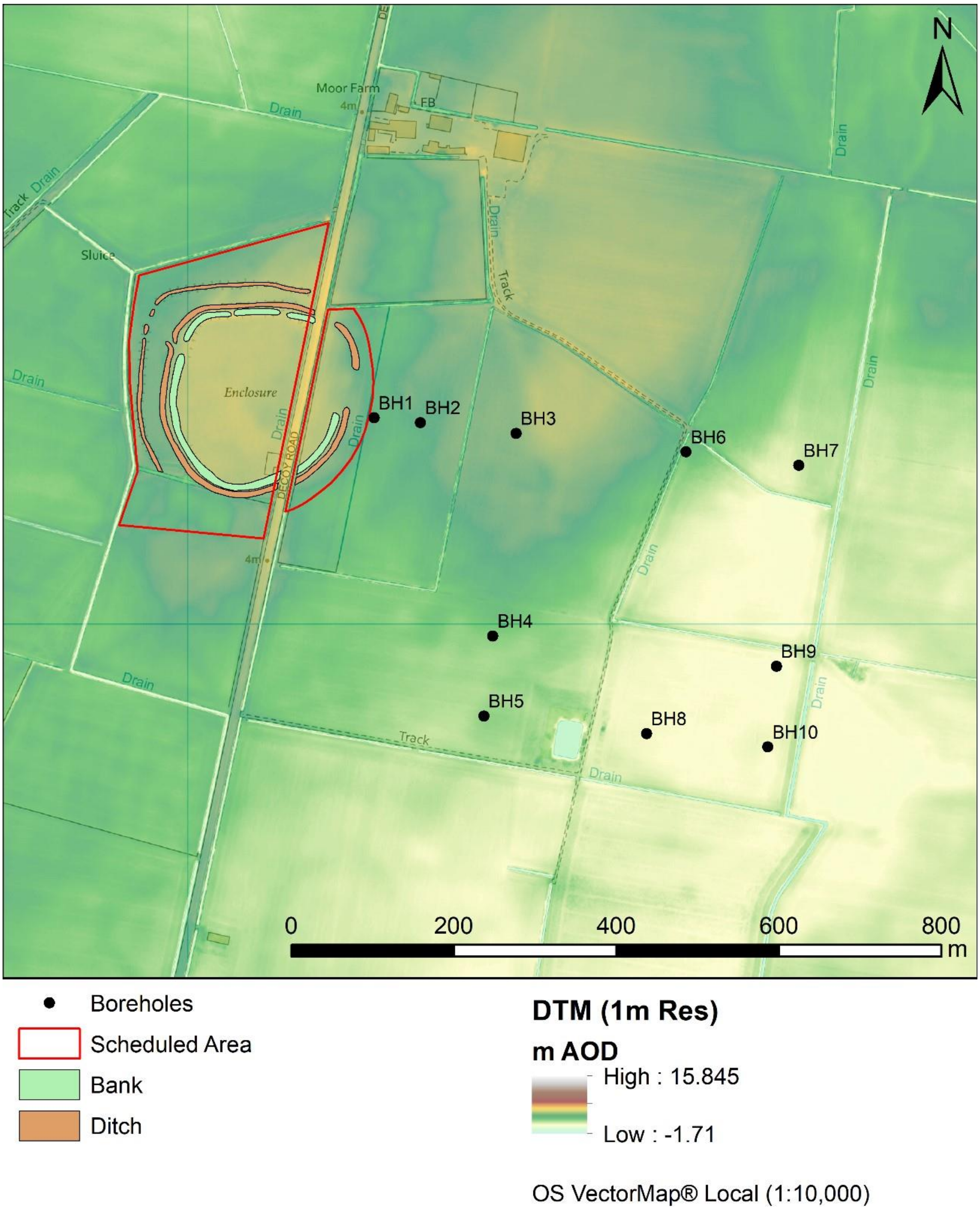


FIGURE 91. LOCATION OF BOREHOLES AT BOROUGH FEN.

Below the topsoil, peat deposits were identified in boreholes 4, 5, 7 and 10. This distribution is generally consistent with the edge of the Fens as plotted by the BGS and Waller (1994). These deposits range from

0.17-0.25m thick. Curiously, no peat was identified in BH8 or BH9. Given the relatively shallow thickness and depth of the peat below the topsoil, it is possible that peat may have originally been located here but has since been degraded or destroyed by later ploughing.

BH1 and BH2 also feature banded blueish grey and orange grey clays. The former may represent estuarine clays and relate to the River Welland. This river currently runs north of the enclosure (Figure 23). Surveys of the fenland landscape in the Iron Age place its confluence with the sea much closer than it is today (Waller, 1994; Figure 92). The surface ground level drops off markedly from the west, and at Borough Fen corresponds with Waller's projection of the Iron Age coastline. It suggests a gradual gradient for the River Welland, leading to regular flooding and the creation of expansive wetland. The stratigraphic depth of these deposits, however, suggests they are likely older, pre-dating the enclosure and reflecting a long history of landscape change in the area.

These peatland and estuarine deposits consistently overlay clay and, ultimately, sand and gravel.

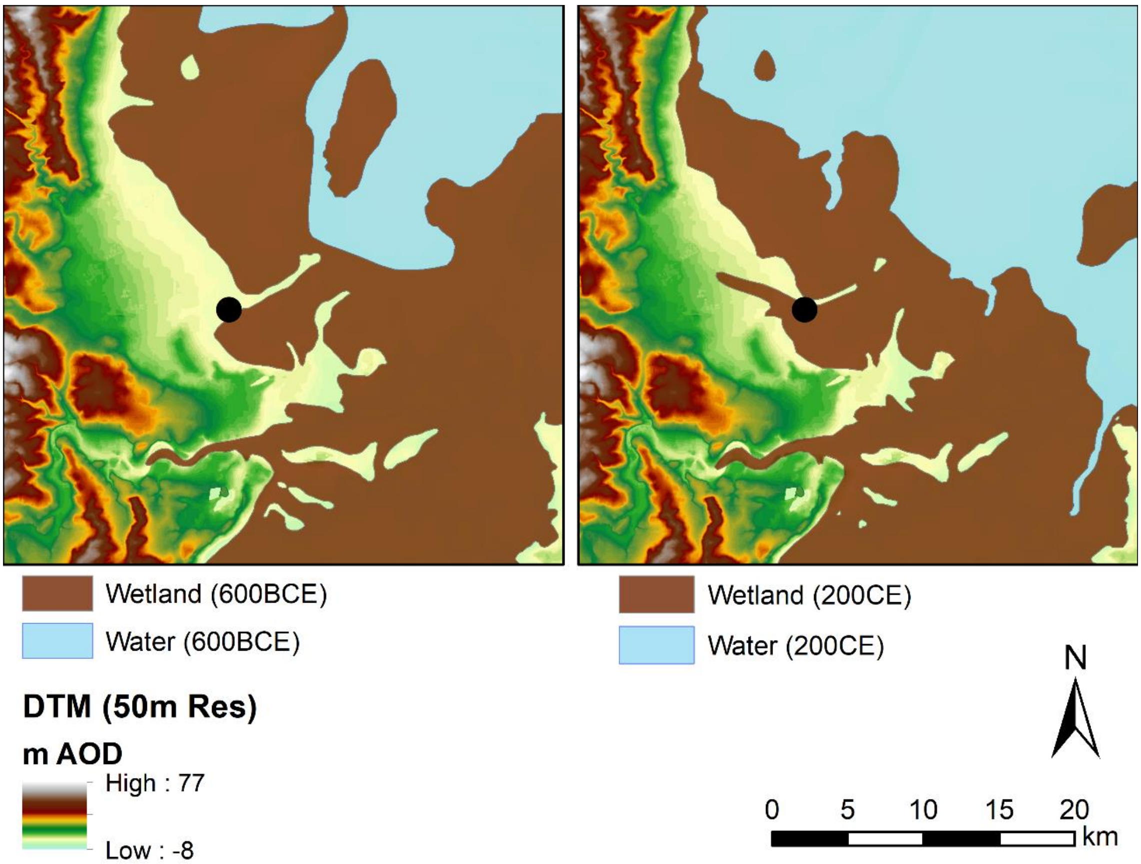


FIGURE 92. MAPS SHOWING THE LOCATION OF BOROUGH FEN IN RELATION TO THE FENLAND EXTANT C. 2600BP AND 1800BP (AFTER WALLER, 1994: FIGURES 5.21 & 5.22).

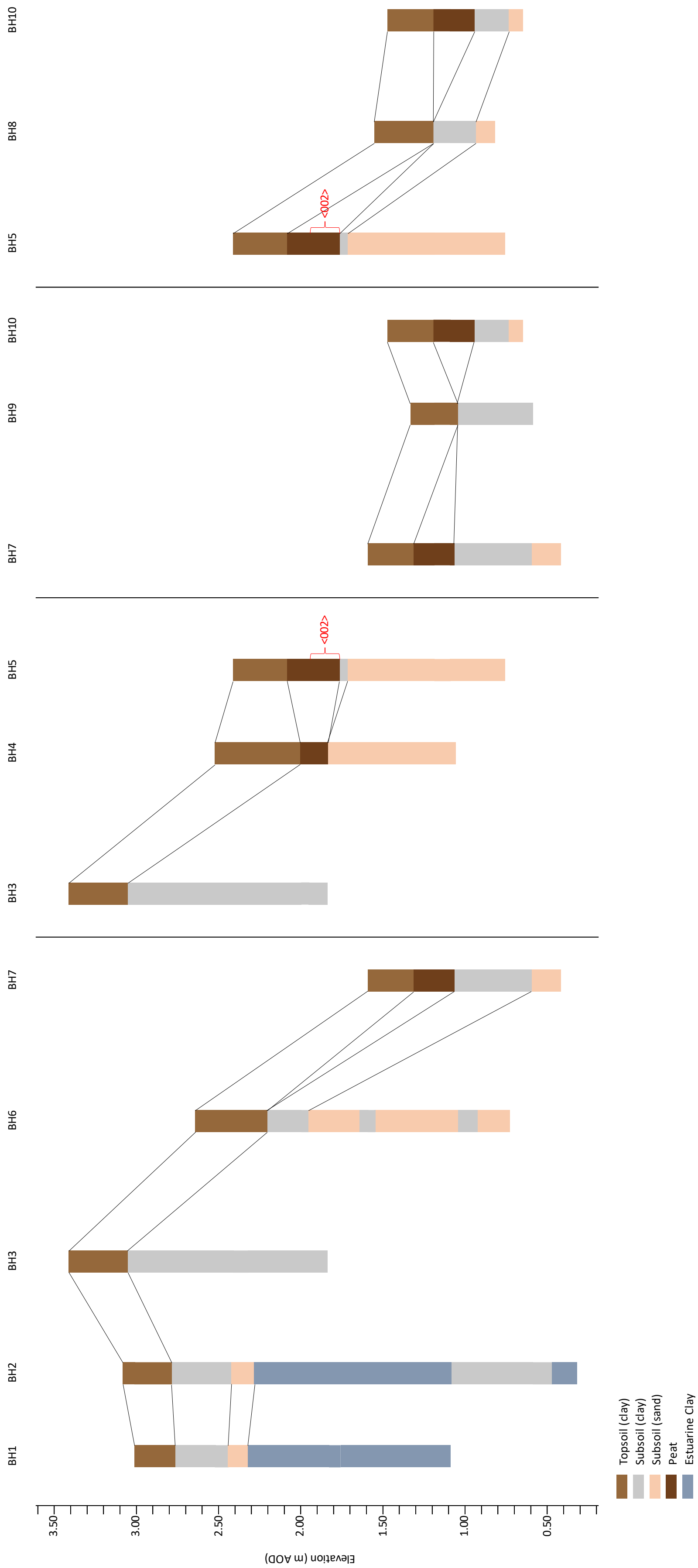


FIGURE 93. BOROUGH FEN BOREHOLE STRATIGRAPHY.

Radiocarbon dating

Of the samples taken at Borough Fen, one, 002 (BFPC_05003), was selected for radiocarbon dating. This was taken from 0.47-0.65m BGL, at the base of the peat material identified in BH5. This sample was selected to date the beginning of peat formation at this point and thereby monitor the encroachment of the Fens wetland on the location of Borough Fen.

The results show the following:

TABLE 18. RADIOCARBON DATE FROM THE BOREHOLE SAMPLES AT BOROUGH FEN.

Sample Number	Context description	Lab Code	Radiocarbon Age (BP)	Calibrated date (95.4% probability)
002	Base of peat in BH5	SUERC-111366	2522±24	759-426 cal BCE

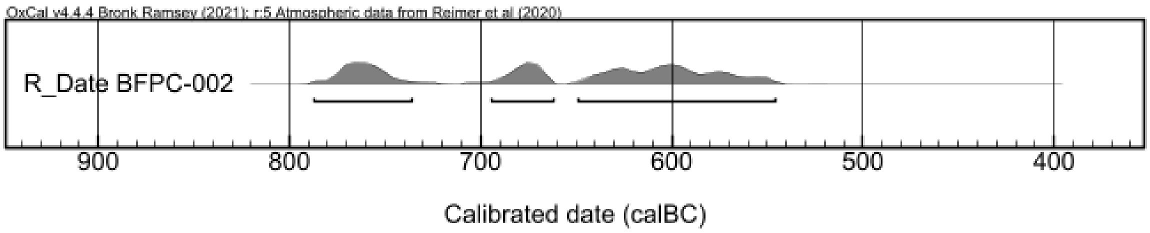


FIGURE 94. GRAPH OF THE RADIOCARBON DATE FROM THE BOREHOLE SAMPLES AT BOROUGH FEN.

The dating places peat formation at this point beginning in the Early Iron Age. Given the Middle to Late Iron Age dates of activity and material within the enclosure (Section 4.2.8), we can determine that the peatland margin of the Fens had reached this close to the site prior to the enclosure's construction. In conjunction with Waller's (1994) mapping, it is possible to model a gradual encroachment of the peat upon this site culminating at this point (see Figure 92).

Discussion

The gradual encroachment of the peatland is an interesting factor when considering the environment of the Borough Fen enclosure. While previous investigations have identified Neolithic and Bronze Age activity at or near the site, this does not indicate continuous settlement or suggest that these were the same groups of peoples. The encroachment is also consistent with Waller's maps of the Fenland through time (Figure 92), although it is worth noting that the 1800BP map shows Fenland expansion over the location of the site where there was no peat identified in the boreholes taken. This discrepancy may be associated with the alluvium layer across the site, recorded in previous literature, indicating a change in conditions resulting in alluvial deposition replacing peat growth but continuing Fenland expansion.

While painting an interesting picture of this gradual encroachment, we cannot determine whether the people building the enclosure, likely in the Middle Iron Age, would have been aware of the grand narrative of landscape evolution. From our position, we might suggest that the construction of a potentially defensive structure was a response to environmental change, but how real would this have been to the people who built it? Whether the site had a continued significance throughout prehistory and this act of enclosure was the final monumentalisation of it, we cannot say without substantially more work and a higher resolution of the site's continuous chronology. Focusing on the time of the enclosure's creation, however, its location at the edge of the Fens peatland should be regarded as potentially key to our interpretation of both the decision to construct an enclosure there and the activity that took place there subsequently.

Conclusion

The enclosure at Borough Fen offers a compelling case for a marsh-fort of some type, fitting both the preliminary criteria of chronology and environment. The location of the site at the edge of the peatland indicates a clear relationship between the site, its construction and subsequent related activity, and the wetland environment, whether this was for the resources it offered or other symbolic meaning. The extent of the wetland, its shape, and the relatively distant proximity of the enclosure do not seem to suggest that the wetland played a defensive function as a natural obstacle. Nor does it suggest that the enclosure was built to restrict access to the wetland or any known route across it. In the wider sense, it could be viewed that the site was located on the boundary of the more familiar dryland world and the mysterious wetland world, as will be discussed in Chapter 6. Evidence from previous investigations indicates a domestic function of the site. If the site was settled, it seems likely that howsoever it was used – likely multifaceted – the wetland would have played a significant role in the day-to-day activities of the occupants and users of Borough Fen.

5.2.5 Bullsdown Camp

Introduction

The desk-based assessment of Bullsdown Camp suggests that the alluvium deposits shown in the BGS mapping and interpreted as the reason for its current marsh-fort designation are too far from the enclosure to be considered relevant. It is also unclear whether these deposits can justifiably be referred to as wetland or simply reflect the historical extent of Bow Brook, which flows through the centre. In order to address this and thereby reassess the classification of this site, it was deemed necessary to conduct additional investigation through small-scale coring. This fieldwork was targeted to assess the nature and extent of any perceived wetland and to, if possible, obtain dating evidence that might attest to the nature of the environment in the Iron Age.

Methodology

Coring at this site was carried out on 28th February 2023. It consisted of four boreholes in total (Figure 95). Three, BH1 to BH3, were taken in transect to the east of the enclosure, in the order BH2-BH1-BH3, from west to east. The non-consecutive numbering was due to initial access restrictions, which were later resolved. BH3, the easternmost, was located within the adjacent field, in the alluvium marked on the BGS mapping, with the other two boreholes located westwards, up the slope towards the enclosure. It was initially intended to continue this transect further towards the enclosure, but this was deemed unnecessary based on the results of the first three cores. BH4 was situated further south and was a spot sample to confirm whether a similar sequence of deposits continued further around the site.

As a result of issues with the GPS, it could not be used to record the locations of boreholes. With few landmarks, particularly for BH2 and BH4, situated well within a large field, the locations were recorded using Google Maps and transferred later to GIS, with height data extrapolated from a LiDAR point cloud.

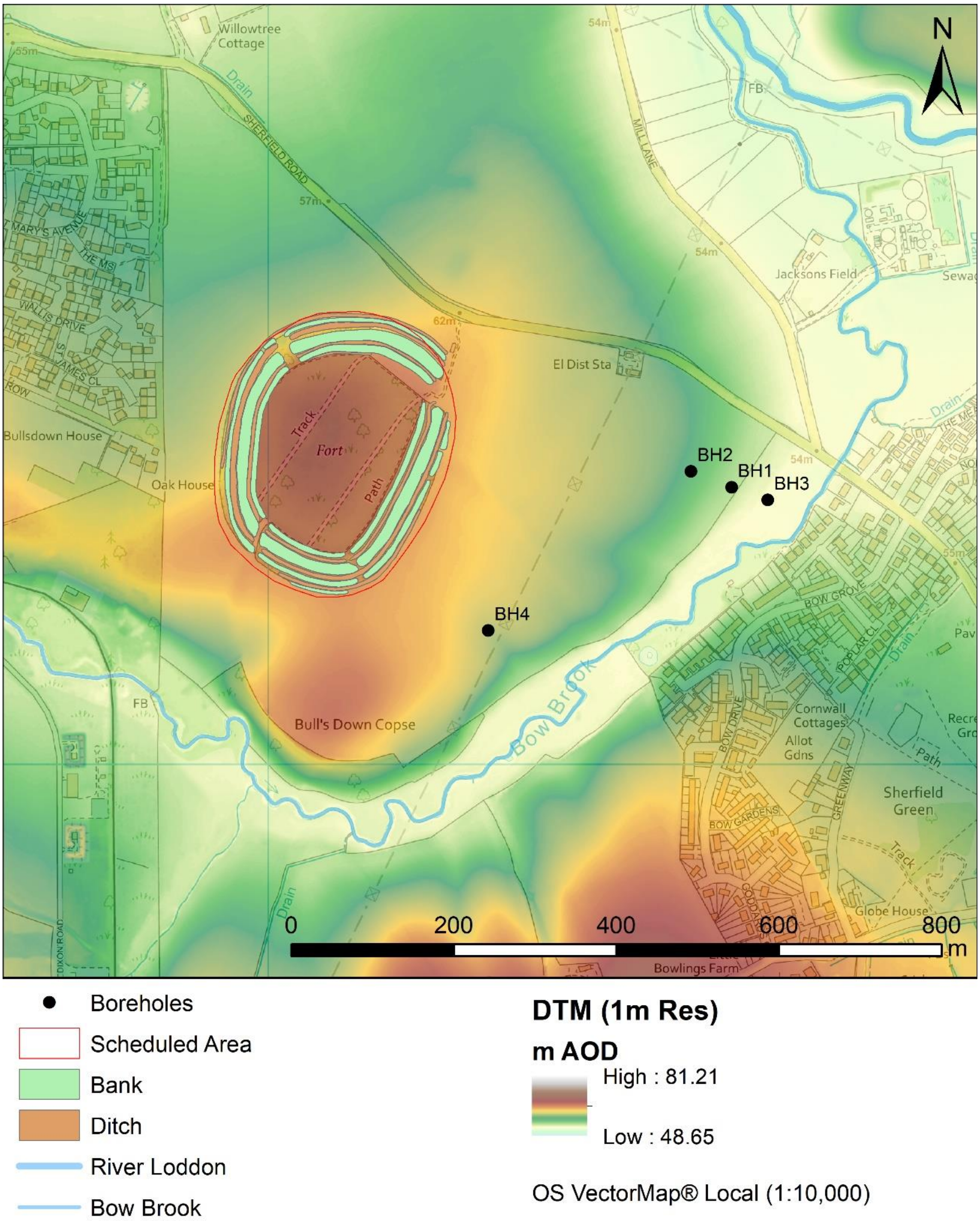


FIGURE 95. LOCATION OF BOREHOLES AT BULLSDOWN CAMP.

Results

Boreholes 1, 2 and 4 all feature broadly similar depths of topsoil, between 0.23 to 0.32m BGL. This may be attributed to modern plough depths consistent with the field's current use. BH1 and BH2 may indicate a slight deepening of deposits closer to the field boundary, which may be attributed to colluvial action (Figure 96). The transect BH2-BH1-BH3 does not show a continuation of this topsoil depth into the lower field, closest to the brook. BH3 has a topsoil depth of 0.08m. This may be continued colluvium or natural decomposition deposits of plants in the field, which appears to have been left wild as it is too wet to farm successfully.

Below the topsoil, BH1, BH2 and BH4 revealed sandy clay deposits with no indication of wetland. BH3 again differs, with 0.40m of clay, including some blueish grey tints, which may indicate water-borne deposition. Given the location of the borehole in relation to a wider depression seen in the DTM (Figure 95), following the line of Bow Brook, it seems likely that this represents a historically wider river which has since silted up and narrowed to the extent of the current watercourse. Below the clay lay sandy clay deposits consistent with the other boreholes, which have been interpreted as the underlying 'natural'.

No organic material was recovered from the boreholes, and no deposits were sampled for dating.

Discussion

The differing deposits identified between BH3 and the other boreholes, interpreted in combination with the DTM, suggest that any potential wetland was confined to the margins of Bow Brook. The clay deposits in BH3 suggest this may have once been larger, possibly a river. The extent of the valley measures 70m wide. It was not possible within the scope of this investigation to date the narrowing of the river. It seems conceivable, however, that the enclosure was sited to make use of this watercourse, and if it were larger in the Iron Age, it would provide a greater justification.

Conclusion

The results of the borehole survey, combined with the earlier desk-based assessment and GIS modelling, suggest the site does not meet a more nuanced criteria for wetland. While it seems likely that there was boggy ground, similar to that along the edge of Bow Brook today, this would be better described as river margin than wetland. While the riverine processes in action here would have created a form of wetland, it seems more likely that the watercourse played more of a significant role in the decision to construct the enclosure here. The watercourse may have played a multi-faceted role, including but not exclusive to providing a water source for people using the site and possibly, when larger, acting as a transport route connecting to the River Loddon.

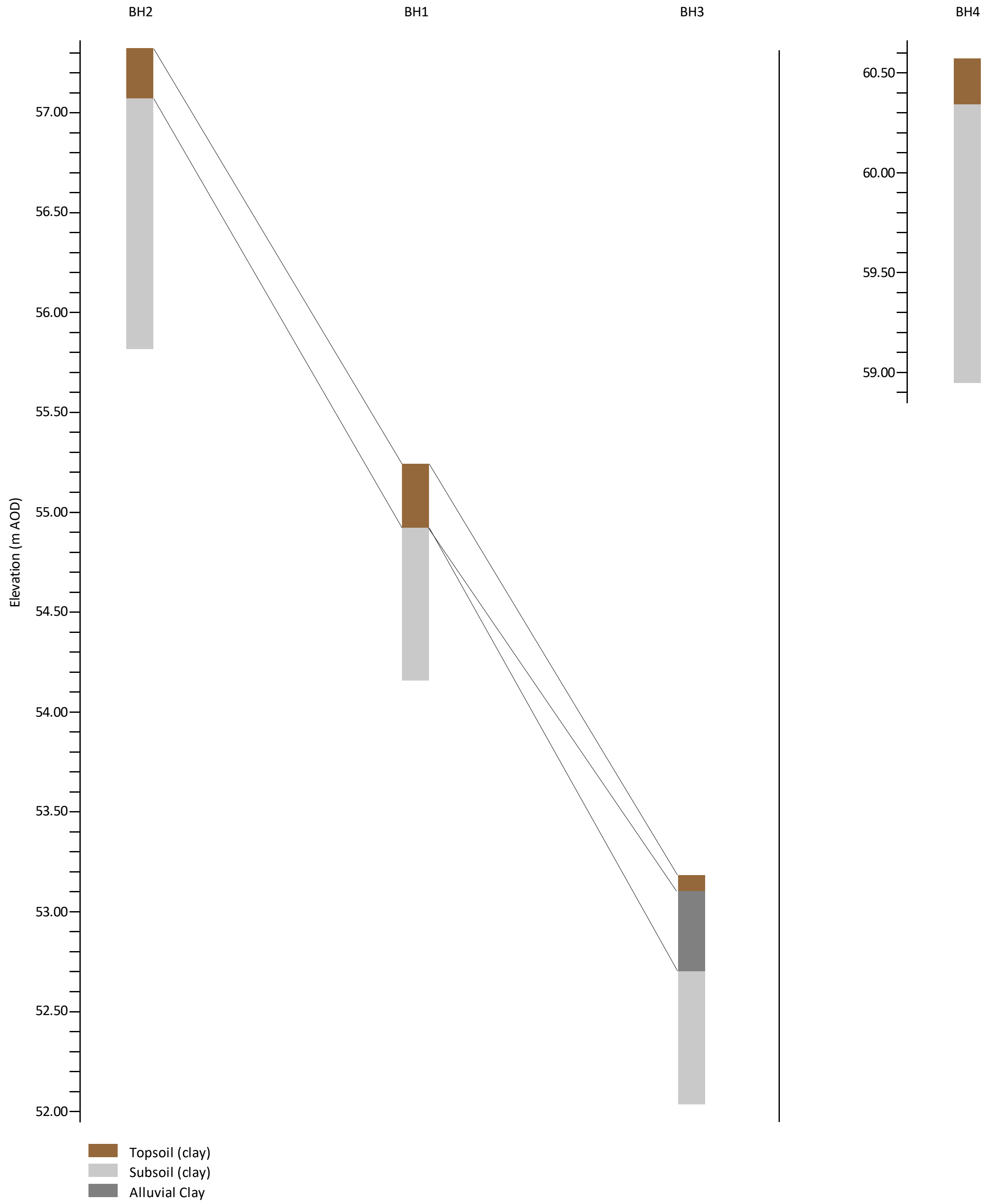


Figure 96. Bullsdown Camp Borehole Stratigraphy.

5.2.6 Cherbury Camp

Introduction

Cherbury Camp was one of the sites selected for additional fieldwork based on the initial assessment. Examination of geological and LiDAR data and previous literature raised questions about the most likely access route into the site, dramatically impacting the interpretation of the site-landscape relationship (see Section 4.2.14). In order to address this, coring was undertaken to establish the impact the wetland had on access and as a natural form of defence.

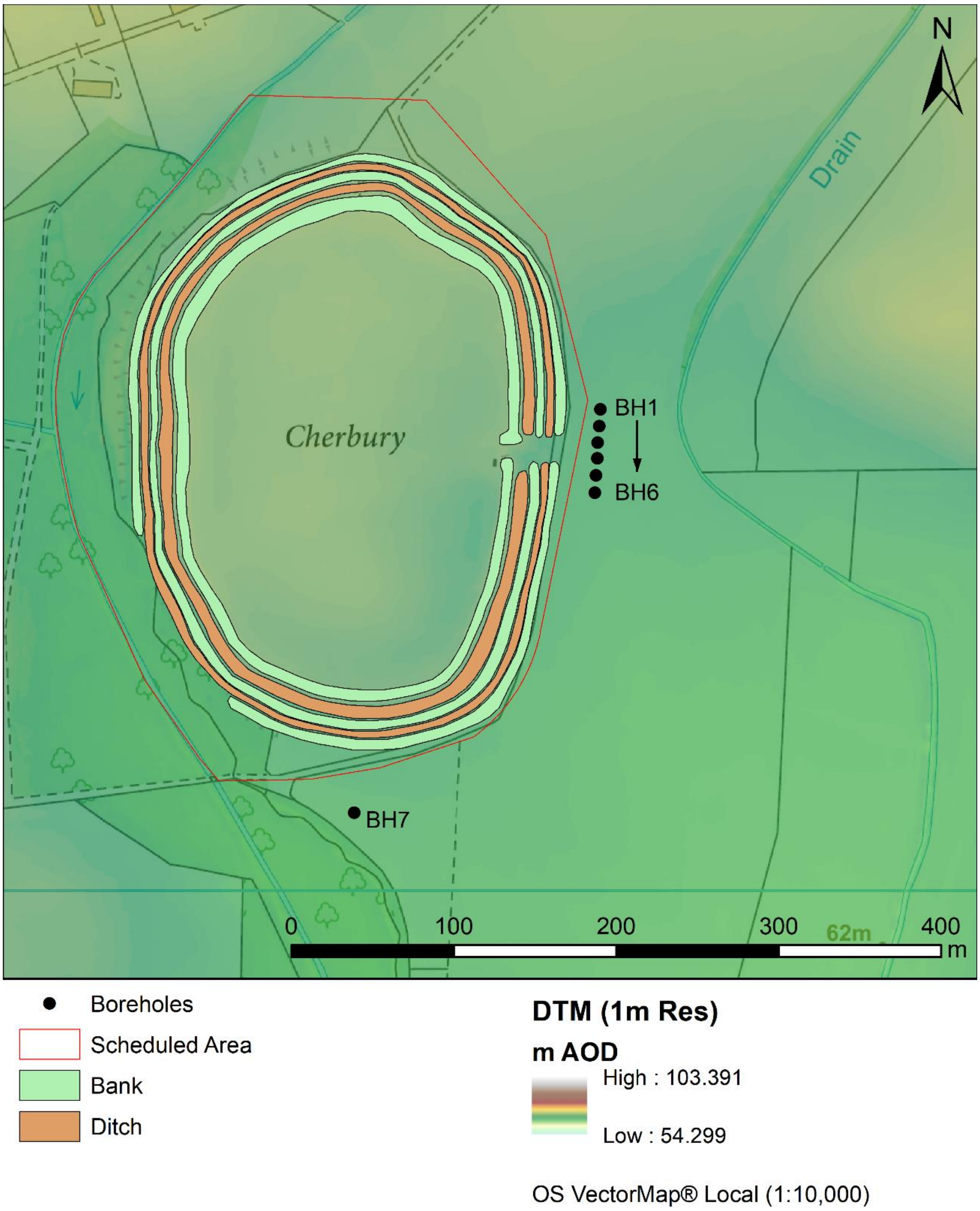


FIGURE 97. LOCATION OF BOREHOLES AT CHERBURY CAMP.

Methodology

Coring was undertaken at the site on 25th October 2022. The intention was to core along transects primarily to the north and east of the site and so establish a 3-dimensional model of the wetlands to address the research questions. An initial transect of six boreholes, BH1 to BH6, was taken at 10m intervals running north-south, immediately east of the original eastern entrance, and outside of the scheduled area (Figure 97). Following the results discussed below, it was decided that coring to the north of the site would not be required. A single additional borehole, BH7, was taken to the south of the enclosure to test for any variation and confirm the absence of wetland around a fuller extent of the site.

Results

The north-south transect, BH1 to BH6, reveals a relatively consistent pattern of dark brown silty sand, overlying a coarse sand natural. The two are separated by a sharp interface. A nearby trench, open for agricultural pipe laying, featured occasional patches of sandy clay similar to the natural between the interface of these two deposits. This was, however, not identified in any of the coring and may either be a local deposit or patchy across the site.

Borehole BH7 to the south of the site revealed a similar pattern of stratigraphy.

Overall, the depth of the silty sand soil was generally consistent, ranging from 0.21 to 0.27m below ground level across the site.

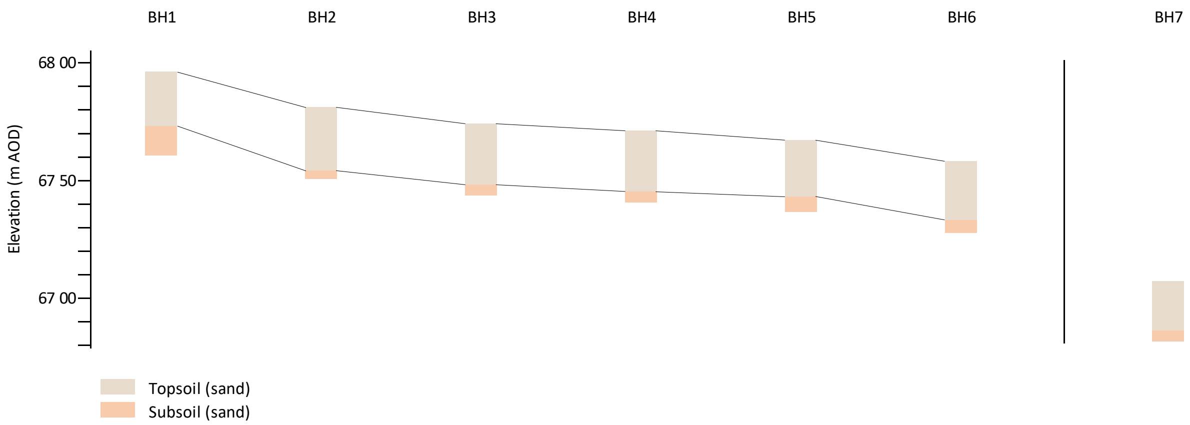


FIGURE 98. CHERBURY CAMP BOREHOLE STRATIGRAPHY.

Discussion

The consistency of the soil depth and the abrupt interface reflects the continuous ploughing of the land around Cherbury Camp. There was, however, no indication of any of the alluvium depicted in the BGS mapping. Instead, it seems likely that any alluvium is concentrated in the immediate margins of the streams near the site, particularly along its western edge. There does not appear to be any wetland 'basin' that had been alluded to in the initial desk-based assessment of the site (Section 4.2.14), nor does there appear to be any other area which could conceivably indicate wetland in the immediate surroundings.

Arkell's (1939) assessment of the environment was based on the identification of marshland snails on the recently ploughed topsoil. Such material was not observed on the surface or in any of the boreholes undertaken. There are a few points to consider which may explain this discrepancy.

1. The molluscan ecofacts may have been destroyed. Arkell mentions that the site was recently ploughed at the time of writing, having been grassland within living memory until that point (1939). Sir Laurence Dudley Stamp's *The Land Utilisation Survey of Britain*, produced in 1931-1938, confirms that this land was not arable at the time. It is possible that while visible at the time, after over eighty years of ploughing, the molluscs have since been degraded to the point of total absence.
2. The substantial alluviation alluded to by Arkell's account would expect the creation of a considerable depth of stratigraphy. This was not identified. Following the interpretation of land-use, we might consider that upper layers of soil have since been eroded through ploughing. This seems unlikely, however. Had the soil originally been deeper, it would follow that the height of the wetland AOD was originally higher. Given the flat topography of the region, this would have been level with the interior of the enclosure. As such, the site would have been prone to flooding, and it would have likely dissuaded the creation of the enclosure. Furthermore, there is no evidence for such deposits within the interior that have been less affected by ploughing but for which the earthworks would constrain any soil displacement.

3. The boreholes only indicated a single layer of material above the natural geology. The depth of the material is broadly consistent with modern plough depths. This may suggest that the land was relatively undisturbed, corresponding with the history of land use mentioned in point 1 above. The shallow depth is inconsistent with accumulation through alluviation and other geological or ecological processes, particularly of multiple phases of landscape evolution.
4. Arkell's discussion of the location of the molluscan samples is rather vague. It mentions the field to the east of the site but does not mention whether they were concentrated towards the edge of the stream. Without accurate spatial distribution data, it is difficult to compare with the results of the analysis carried out within this current survey.
5. Lastly, Arkell mentions the surface 'almost white with snail shells'. It is worth consideration whether this represents imported material for marling. This may account for the significant abundance, particularly in relation to the common land snails also identified (ratio of 50:1). Given that the land snails were associated with the most recent environmental conditions and assuming reduced survival over time, it seems less likely that the allegedly older marsh assemblage should so substantially outnumber the land snail assemblage.

The contradiction is impossible to resolve completely. The potential for destructive processes means that it is not possible to confirm or deny Arkell's original interpretations. In light of the other elements discussed, however, notably the shallow depth of soil and the discrepancy between the two ecological assemblages, it seems plausible to assume that the wetland was constrained to the margins of the existing streams.

Conclusion

The results of this fieldwork significantly contradict the previous environmental analysis of the site (cf. Arkell, 1939). They bring into question the marshy landscape described in previous literature. In doing so, it questions the legitimacy of Cherbury Camp's designation of 'marsh-fort'. Removing Cherbury Camp from this category, however, raises additional questions. If not a marsh-fort, what other classification does the site belong to? The architecture of the site and evidence from previous investigations is typical of hillforts, but it does not appear to incorporate either topography or geology to accentuate its earthworks. It, therefore, does not appear to fit within the classification of either hillfort or marsh-fort.

5.2.7 Dinas Dinlle

Introduction

The desk-based assessment of the landscape around Dinas Dinlle prompted several questions about the nature of the prehistoric environment. Much of the land around the western half of the site has already been lost to coastal erosion, and modern coastal defences and agriculture have transformed the land to the east. BGS mapping suggests the presence of peat deposits to the south-east, although the absence of borehole data from this area raises questions about the validity of this information. Given the significant changes that are likely to have altered the landscape over the last two millennia, coring was undertaken to determine where wetland deposits may have existed at the time of the enclosure's construction and use and how this may have related to the arrangement of its earthworks and known entrance.

Methodology

In order to address the aforementioned questions, a borehole survey was carried out in the south-east quadrant of the site's immediate surroundings on 8th-9th November 2022. Seven boreholes were recorded, although an additional seven were attempted and unfinished as it was not possible to penetrate beneath the topsoil. These were undertaken across five fields south of the site and of the modern road leading to it from the south-east (see Figure 99). The locations were targeted to identify the peat deposits recorded on BGS mapping and to determine their extent. A transect of boreholes was planned through the centre of the mapped deposit, following the line of the field boundary in Figure 99 (BH1-3). Failed attempts to penetrate the stony ground or locate peat meant these were spread further apart to prioritise identifying its presence over mapping the profile of deposits. BH4 was located further to the south in the approximate centre of the area of mapped peat, where current wetland conditions were visible on the surface. BH5 and BH6 were located further westward, similarly at the edge of an area of current wetland neighbouring a discrete patch of water (Figure 101). This location was between the sea and the area of mapped peat, at the foot of where the ground rose to what may have been a hill but is now cut by erosion to form a cliff.

BH7 was located near BH1 on the other side of the field boundary. The methodology for the location of boreholes was largely reactive to the results. In an attempt to mitigate the effects of agriculture, locations were selected in a range of places, from the centre of fields to field boundaries and current wetland margins.

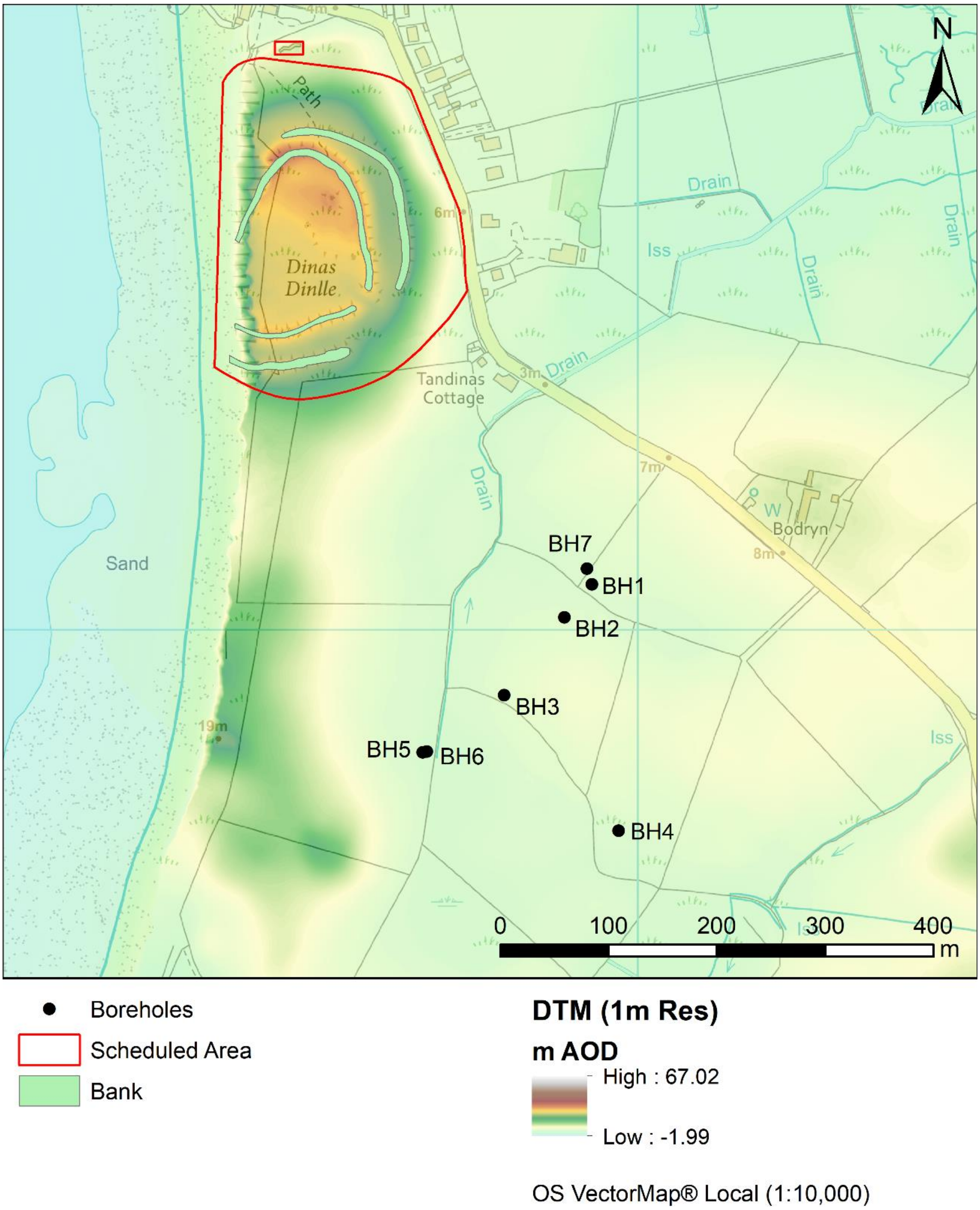


FIGURE 99. LOCATION OF BOREHOLES AT DINAS DINLLE.

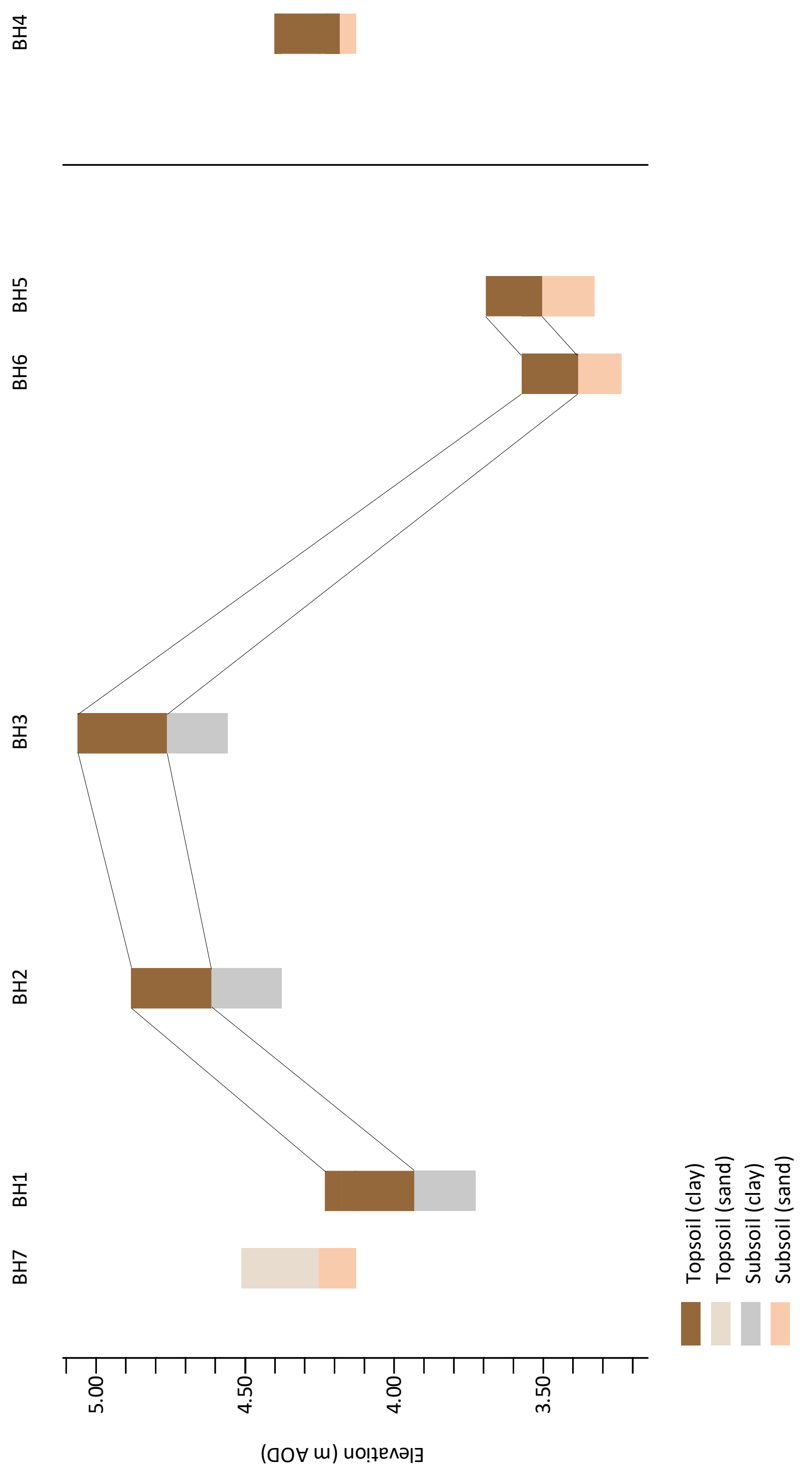


FIGURE 100. DINAS DINLLE BOREHOLE STRATIGRAPHY.

FIGURE 101. LOCATION OF BOREHOLES 5 & 6 AT DINAS DINLLE (AUTHOR'S).

Results

Deposits varied slightly across each borehole. Colour variations, however, may be accounted for by dramatically fluctuating weather and lighting conditions throughout the period of fieldwork. Ultimately, the boreholes were broadly consistent. Topsoil depth was 0.26-0.30m in the ploughed areas and 0.19-0.22m at the current wetland margins. Topsoil directly overlaid a stony deposit that prevented deeper coring. Both the topsoil and underlying deposits were primarily composed of sand and clay.

Discussion

The stratigraphy identified through coring featured no definitive evidence of historical wetland; however, fieldwork was hampered by the stony geology. That said, there was considerable evidence of surface water in the landscape, which should not be ignored (Figure 101).

Recent coring has also been undertaken to understand the palaeoenvironment around the site as part of the CHERISH project. This work included three cores: two taken 600m east of the site and one immediately west at the foot of the cliff (Robson and Davies, 2023). These interventions recorded organic deposits, which indicate a historical wetland environment around the site. Unfortunately, although multiple samples were successfully radiocarbon-dated, the dates appear out of stratigraphic sequence, indicating redeposition of 'old carbon' on more than one occasion and impacting any interpretation of the dating (pers. comm. Robson, 2023). Descriptions of the stratigraphy in the two cores to the east were also notably different from that observed in the cores undertaken within this study, with no mention of the stony layer encountered. This stony deposit affected coring across a wide area, suggesting that it is not a local deposit but likely a feature of natural geology. As such, although not represented on the DTM of the area, this may represent a dryland access route to the hill and enclosure, distinct from the wetland to its north, where the CHERISH cores were located.

Conclusion

A more extensive mechanical borehole survey (e.g. window sampling) is required to fully appreciate the stratigraphy and landscape evolution of the land around Dinas Dinlle. The CHERISH project has made a significant contribution to this. The palaeoenvironmental investigations place the site on a knoll or end of a hill ridge, surrounded by marshy land to the north (pers. comm. Robson, 2023). The DTM suggests the site is distinctly a hillfort; that is to say, topography makes up a considerable part of its landscape identity. The topography would have created a barrier to easy access, improved visibility to and from the site, and altogether caused it to dominate its landscape. Nevertheless, the proximity of the former wetland should not be dismissed. Whether this provided a flat plain which accentuated the topographic prominence of the site, provided an additional obstacle or a valuable local natural resource, or served other purposes, the wetland would have formed a substantial feature of the immediate hinterland around the site. Whether an intentional aspect in the choice of location or not, it undoubtedly played a role in the activities in and around the site and should be factored into our understanding and interpretation thereof.

5.2.8 Island Covert

Introduction

The classification of Island Covert as a marsh-fort by the Atlas of Hillforts is interesting. It, along with previous fieldwork reports by South Worcestershire Archaeology Group (SWAG) (Darlington, 1989; Price, 1989), refers to the area around the enclosure as marshy. The SWAG reports claim this was confirmed by coring; however, the results were not fully recorded. The BGS mapping of the area tells a contradictory story to these reports. There appears to be no evidence of traditional wetland deposits or geological variation beyond that of the hill to the south of the site. Coring was, therefore, deemed essential to determine whether or not there is evidence for wetland and, if so, to record its extent and relation to the site. The results of this work had significant implications for its marsh-fort designation. It is also important to attempt to acquire samples for dating to not only shine a light on the history of the environment but also, if possible, to understand the chronology of the enclosure itself better.

Methodology

In order to answer the questions arising from previous contradictory sources, a total of eight boreholes were undertaken at the site on 1st October 2022 (Figure 102). BH1 and BH2 were located across the northern side of the enclosure, with BH1 located within the enclosure ditch and BH2 outside it. These locations were chosen to determine the presence of wetland deposits on this side of the enclosure and to achieve a comparison between ditch fills and the broader depositional sequence, enabling further interpretations discussed below. BH3 to BH8 were undertaken on the eastern side of the enclosure, with BH3 to BH6 crossing the ditch on this side and BH7 and BH8 continuing beyond across an area of flattish ground between the tree covering. This transect provided both a profile through the ditch fill deposits and an impression of the nature of the deposits on this side, between the enclosure and the foot of the hillslope from Tipney Hill to the south.

Given the dense woodland, the GPS unit had an accuracy of between 0.909 and 2.341m. For BH3 to BH6, the boreholes were concentrated at a frequency less than the control quality (CQ) of each point. The distance between these points was measured in the field using a hand-tape. Buffer zones were created around the original GPS points in GIS, using the CQ as a radius. Points were then rectified within the buffer areas to match the alignment and separation recorded in the field. Height data for each point was also rectified for all points using a LiDAR point cloud. Elevation was extrapolated from the nearest recorded points, and averages were taken when the core was between two LiDAR points.

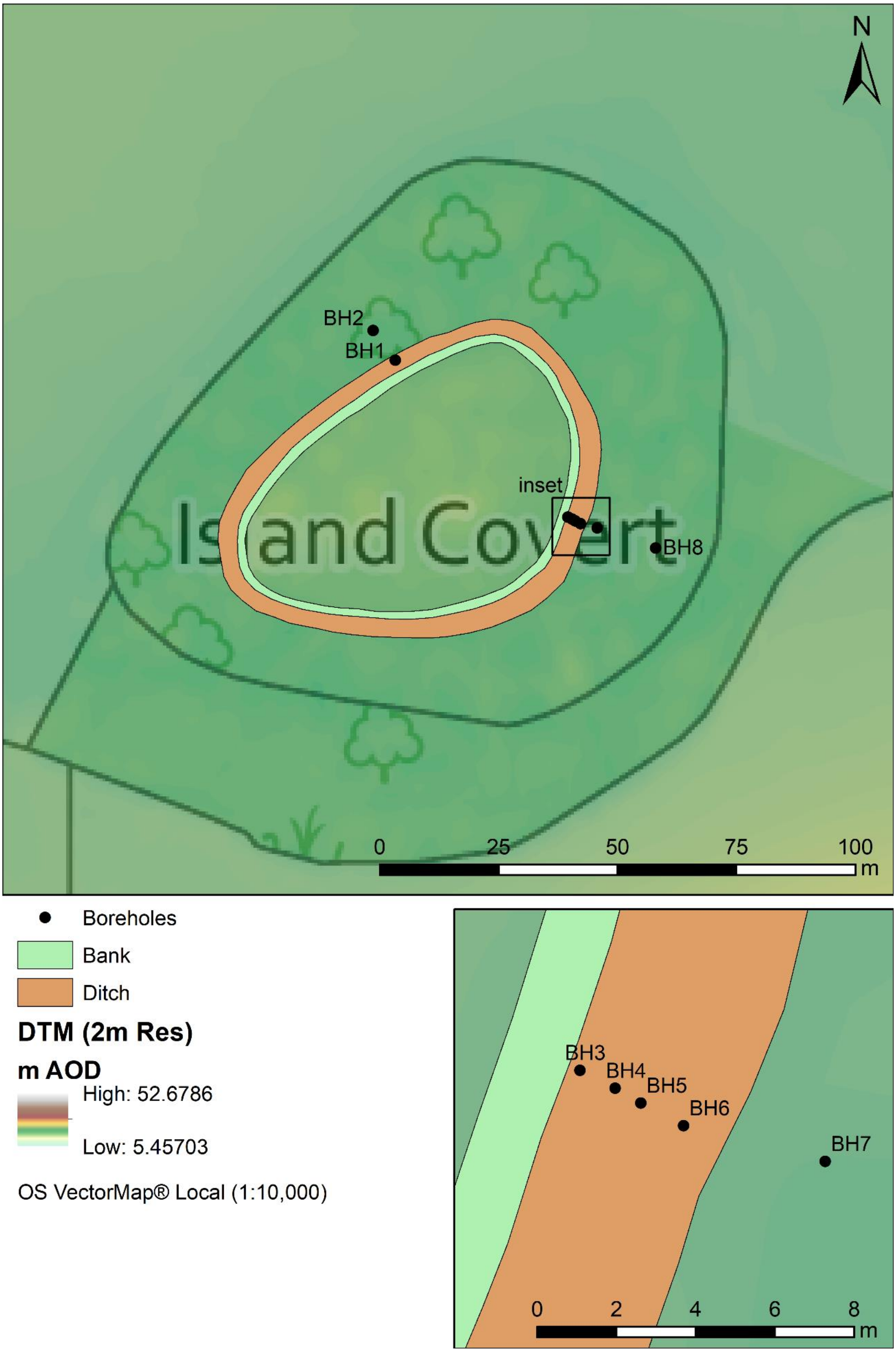


FIGURE 102. LOCATION OF BOREHOLES AT ISLAND COVERT.

Results

The borehole survey has produced two transects across opposing sides of the enclosure. The first, consisting of BH1 and BH2, on the north side, shows a contrasting picture of a shallow, silty 'topsoil' made primarily of leaf litter overlying a sandy geology in BH2, with a deeper topsoil and intermediate blue-grey clay deposit overlying a clay geology in the ditch in BH1. This sequence paints a clear picture of standing water in the ditch followed by a higher rate of infill, possibly augmented by water-borne deposition or collapse/erosion of the bank on the inside of the ditch.

The leaf litter-rich (see Appendix 3.8) upper deposits had slight variations in their composition (silt and clay) but had a diffuse interface. These deposits have been banded together as a single topsoil for the purpose of illustration, as shown by the lines connecting borehole sequences in Figure 103. In addition, the sand and clay underlying geology was interpreted as a single underlying 'natural' for the purposes of determining the depth of coring.

The second transect, BH3 to BH8, has a similar topsoil of silty and clay material mixed with leaf litter. Underlying this is a blue-grey clay. Unlike the first transect, however, this material does not appear to be confined to the extent of the ditch but extends further to the south towards the field boundary, where there is a marked rise in ground level up to Tipney Hill. As in BH1 and BH2, this overlies a mix of sand- and clay-based geology. Somewhat unexpectedly, however, BH3, taken through the ditch on the side closest to the enclosure bank, produced a considerable depth of the blue-grey clay where it would otherwise be expected to narrow following the ditch cut. Due to heavy rooting and also so as not to damage the already vulnerable earthworks, no coring was undertaken through the bank or inside of the enclosure. It is difficult to determine whether the stratigraphy of BH3 indicates the blue-grey clay continuing beneath the enclosure. It is unlikely that the blue-grey clay could have extended any considerable distance under the raised interior of the site. It would suggest an isolated deposition process to create the island or a substantial expenditure (material and effort) to build up the ground level artificially over the clay. The results of this work create an enigma that requires further investigation to unravel. Nonetheless, it does not detract from the interpretation of the landscape provided by the stratigraphy of the other boreholes.

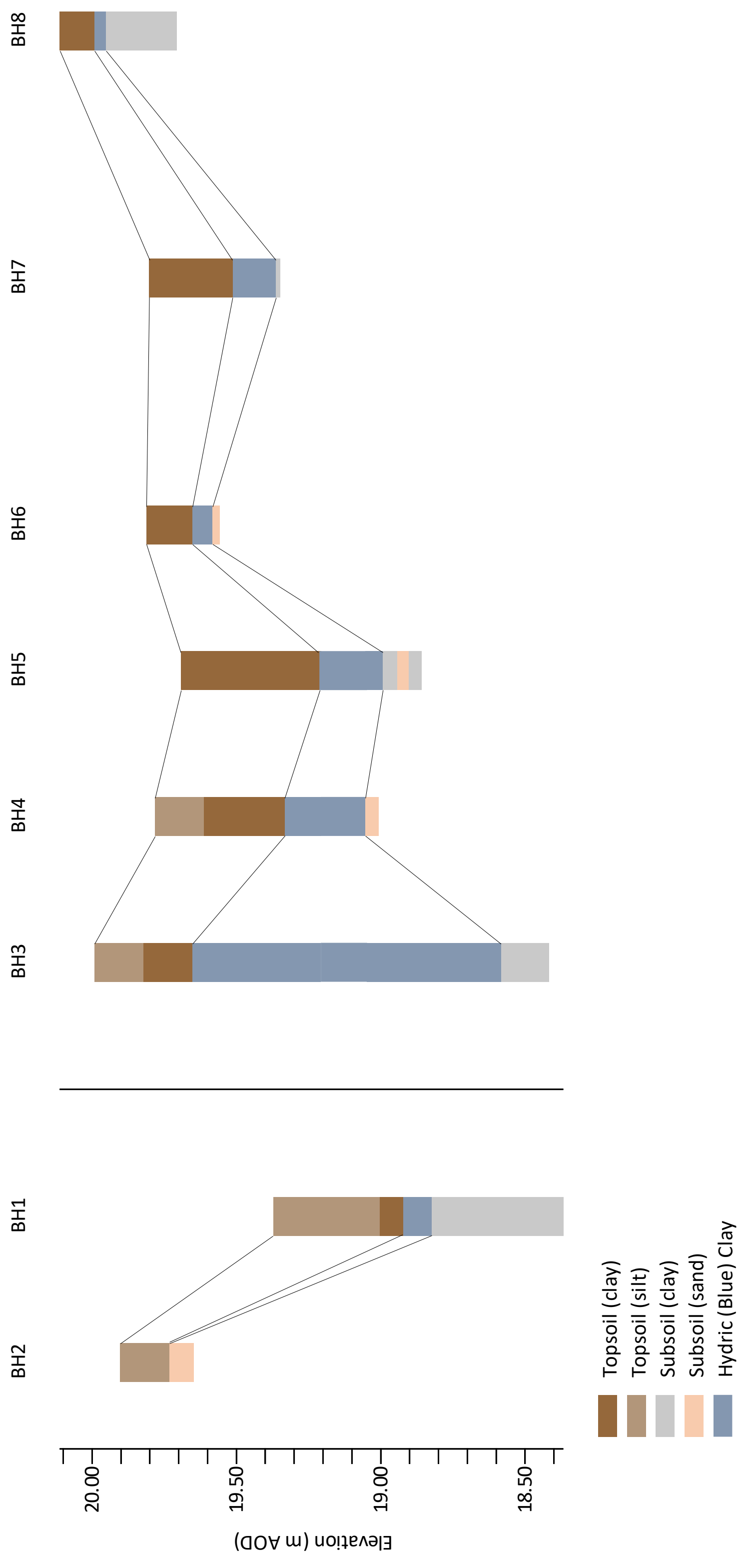


FIGURE 103. ISLAND COVERT BOREHOLE STRATIGRAPHY.

Discussion

Whilst only representing a cross-section of the landscape around Island Covert, the results of the borehole survey help to build a picture of the historic landscape around the enclosure. It suggests that the wetland was confined to the extent of the ditch on the north side of the enclosure but extended across a wider area to the south. Without dating evidence, we cannot say when this period of wetland around the site was present, though the presence of the blue-grey clay in the ditch fills suggests it post-dates at least one phase of activity. In addition, the absence of any identifiable primary deposits may suggest that the flooding occurred soon after digging the ditch, not accounting for recutting or clearing, which would require excavation to provide a higher resolution section to examine. It seems likely, however, that the creation of the enclosure was quickly followed by or contemporary with the incursion of the wetter landscape.

Conclusion

While the results of the coring have not provided any dating evidence, the stratigraphic sequence does infer that the landscape surrounding the enclosure was waterlogged, particularly on the southern side. From this, an argument may be made for its status as a marsh-fort, though several key factors remain elusive. These include a confirmed Iron Age origin of the enclosure and a better understanding of the site's morphology which would require a more thorough survey of the surviving earthworks currently hidden beneath the bramble and potentially excavation to explore the site's function.

5.2.9 Peckforton Mere

Introduction

Peckforton Mere was selected as one of the sites for further investigation to confirm whether or not the site should be classified as a marsh-fort. Beyond the margins of the mere itself, there appears to be no evidence of wetland or even 'boggy ground' that could be construed as such. Therefore, coring is essential to determining the nature of the environment around the site before beginning to determine how best to categorise it. Previous investigations of the Peckforton Mere enclosure have also suggested that the most likely position for an entrance would have been to the south-east. Field observations have suggested the mere may have originally extended further around the north of the site. LiDAR shows the site elevated on a promontory with lower ground to the south. Factoring both of these observations, coring across this area will determine whether any wetland on this side may have impacted access to the site.

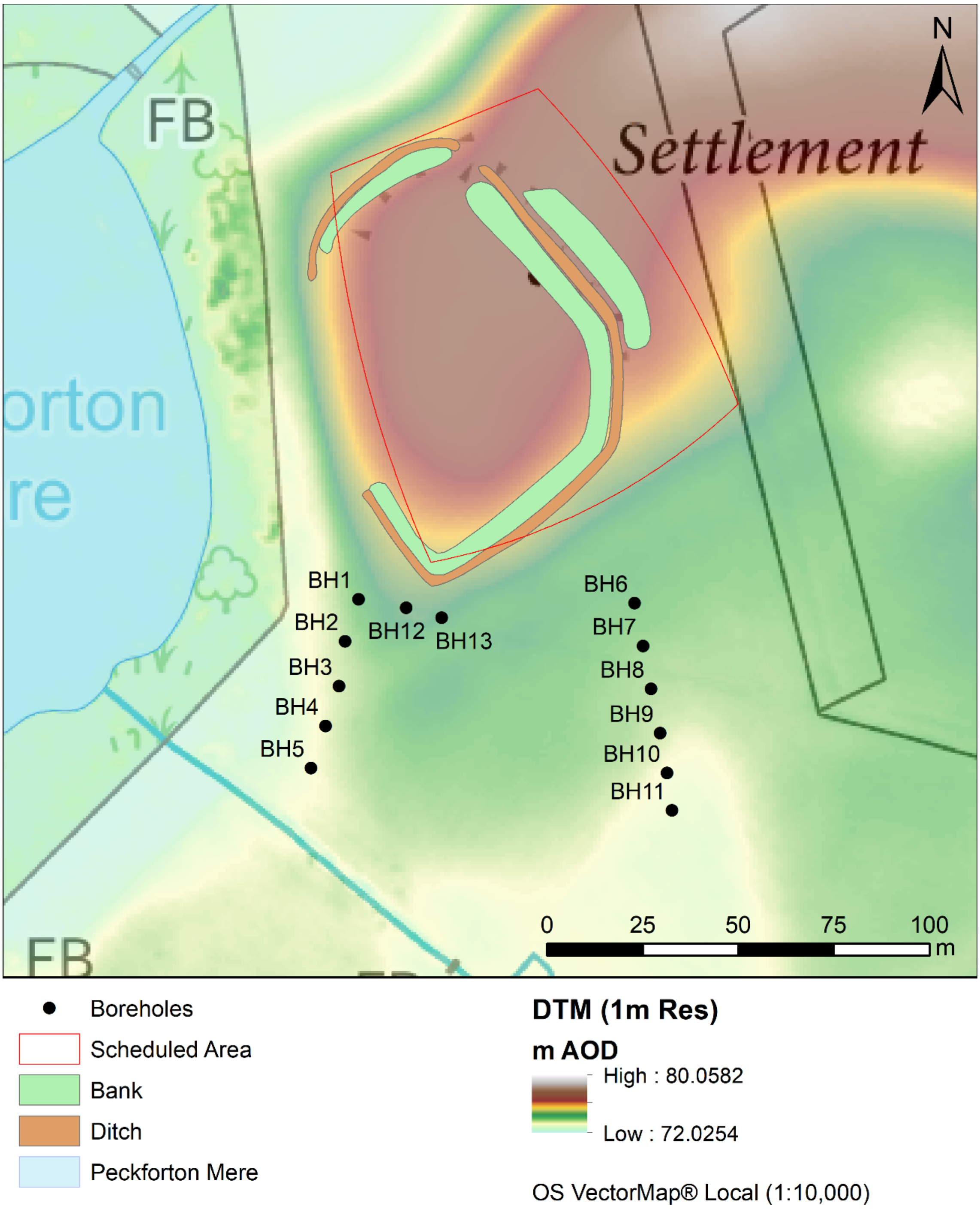


FIGURE 104. LOCATION OF BOREHOLES AT PECKFORTON MERE.

Methodology

In order to determine the extent of the former mere and any wetland, as well as the nature of the environment around the enclosure, three transects consisting of a total of thirteen boreholes were carried out to the south of the enclosure on 1st November 2022. Two broadly north-south transects were set out 72m apart. The western transect consisted of five boreholes, BH1 to BH5, with the eastern of the two encompassing the six, BH6 to BH11 (Figure 104). These were located to provide good coverage of the land south of the enclosure and determine the extent to which wetland deposits may have extended around the site. The eastern transect, particularly BH11, was designed to reach an area where in-the-field observations of scrub vegetation and slight surface water indicated there may have been wetland deposits. These surface observations also correspond with a lower area, as shown on the DTM. An additional third transect was continued eastwards from BH1. This transect comprised two additional boreholes, BH12 and BH13. The two boreholes were carried out to determine, as far as was possible in the remaining daylight, whether deposits varied between the two transects.

Results

The boreholes in the western transect exhibited a relatively consistent profile. All boreholes featured a rich organic silty sand topsoil ranging from 0.29-0.34m depth, except for BH1, the furthest upslope, which had 0.48m topsoil depth. Below this was a recurring sequence of brownish sand giving way to a 'cleaner' yellowish grey sand, which was interpreted as the base level for coring. The only substantial variation from this pattern was identified in BH3, which featured a 0.28m thick sandy clay deposit between two layers of sand subsoil. No indication of this was found in any other borehole in this transect.

The eastern transect offered very similar stratigraphic sequences. Topsoil varied in depth from 0.26-0.38m. In this transect, BH7 and BH8 offered similar intermediate sandy clay deposits to those identified in BH3.

BH12 and BH13 revealed a similar sequence of deposits to those found in BH1, with topsoil overlaying a consistent sand subsoil.

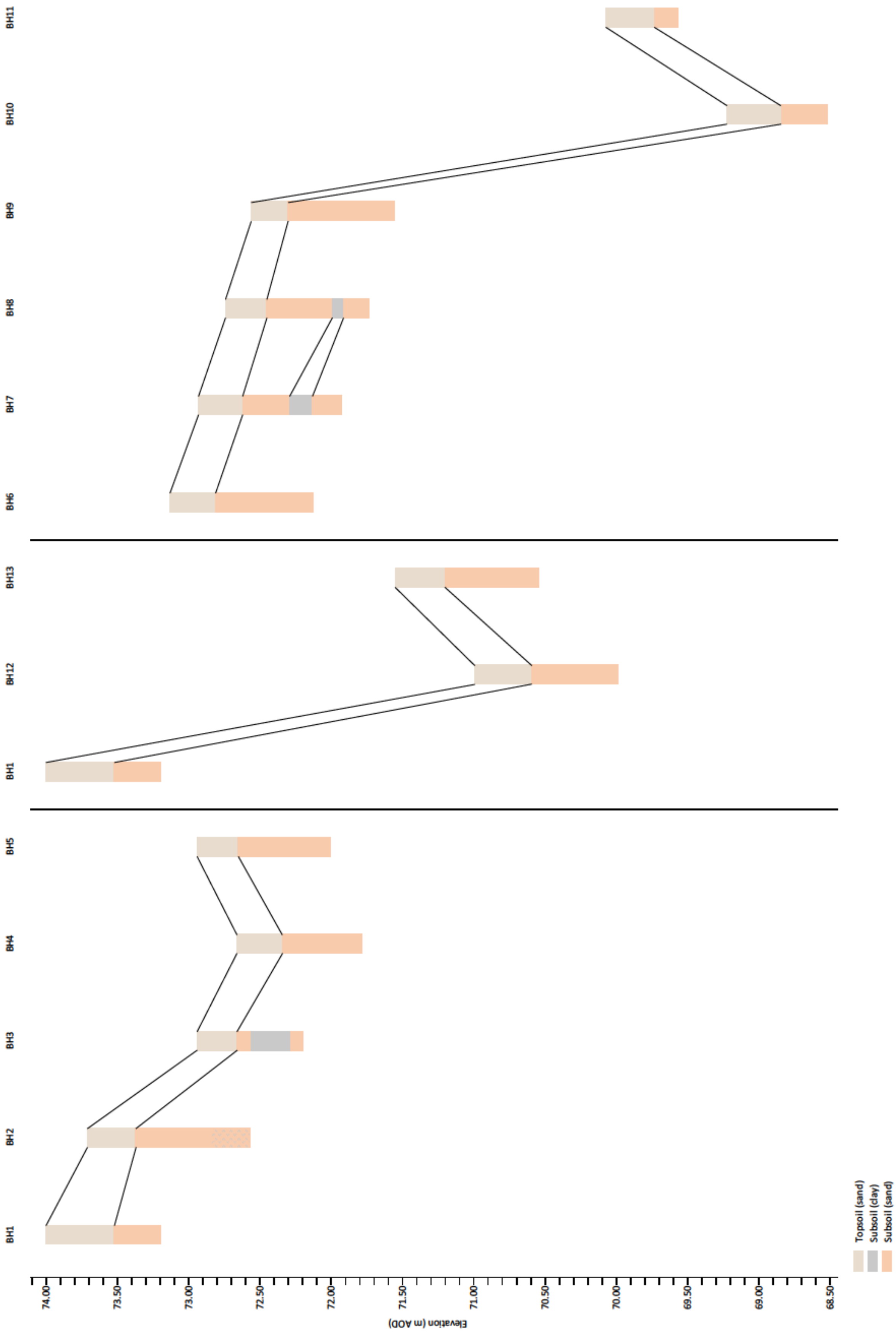


FIGURE 105. PECKFORTON MERE BOREHOLE STRATIGRAPHY.

Discussion

The results of the borehole analysis for Peckforton Mere indicate relatively consistent deposits, not necessarily associated with any wetland. The sandy clay deposits found across BH3, BH7 and BH8 appear to be the only variation. Interestingly, this does not appear to conform to the area of lowland to the south of the site as expected; instead, it appears to cut across the slope. From the small-scale sample, it is difficult to determine a sufficient explanation for this, whether it represents a linear feature or purely coincidental discrete localised variations within the geology. Also somewhat surprising are the deposits identified in BH5, BH10, and BH11, all of which extended into the lower ground to the south, where varying vegetation appeared to indicate that there may be a change in the underlying deposits. Instead, they all maintained a sequence of topsoil and sandy subsoil similar to that found across the site. It remains possible that the mere may have once extended further, south of the enclosure, in the lower area indicated on the DTM. In conjunction with field observations indicating a larger historical extent to the north, it suggests the mere or its marginal wetland may have once wrapped around three sides of the enclosure. Indeed, at the time of coring, there were patches of surface water across the areas to the north and south, and it would likely have been more widespread prior to the introduction of the land drains for agriculture. While there is no conclusive evidence, the absence of former wetland in the borehole sequences may be due to intensive ploughing, which has destroyed the earthworks.

Conclusion

Unfortunately, the results of the coring at Peckforton Mere provide limited useful addition to our interpretation of the environment around the enclosure. On our current understanding and inferences made from field observations, it seems possible that the extent of the mere may have extended slightly around the north and south sides of the enclosure. This layout would compliment the univallate earthworks on these sides, perhaps providing a natural barrier and justification for why a second set of earthworks was not deemed necessary as it was on the north-east facing side. The decision to have any earthworks on the sides of the enclosure, unlike other sites such as Oakmere, may indicate an interpretation of seasonal wetness with any wetland not seen as a sufficient boundary absent anthropogenic embellishment. Perhaps the most significant feature is the potential gap in the western side of the enclosure, facing the mere, as identified in the earlier desk-based assessment, with all the potential interpretations it entails: functional, ceremonial or otherwise.

Based on this current understanding, it seems likely that the enclosure was situated at the head of a slight promontory of higher ground leading up to the mere, possibly within the neck of the River Gowy. Any hints of former wetland most likely represent a historically wider watercourse rather than a wetland in the sense of marshland. Whilst this undoubtedly holds its own significance for interpretations, in terms of its validity as a 'marsh-fort', it seems more pertinent to describe the site as a lake-side enclosure instead. Despite the absence of any high-resolution model of the chronological evolution of the environment, it seems likely that the River Gowy in an enlarged form may have encircled three sides of the enclosure, expanding at least during seasonal flooding closer to the north-west and south-east earthworks and maintaining a more substantial, permanent basin to the west of the site which now survives as the mere.

5.2.10 Stonea Camp

Introduction

The interpretation of Stonea Camp set out in the earlier discussion (see Section 4.2.27) is dependent on the identification of wetland deposits to the south-west of the site during previous fieldwork at the site (Malim, 2005: 44) and from Waller's (1994) work mapping the Fens. The BGS mapping, however, paints a less clear picture. It identifies peat deposits approximately 200m to the north-west and 600m to the south-east of the site, but where Malim (2005: 44) has claimed to have found peat deposits, the BGS has mapped Tidal Flat Deposits. This site was, therefore, selected as a principal candidate for coring to determine the nature of the landscape on this side of the enclosure. It will also explore the implications of the results on our understanding of the site and the obstacle local wetland would have had on access and activity.

Methodology

Coring at the site was undertaken on 13th December 2022. It consisted of a transect of six boreholes, BH1 to BH6, running perpendicular from the south-west earthworks. These positions were chosen to establish a profile of the deposits along the transect and assess the nature of the past environment. The survey also aimed to identify and recover samples of peat deposits to compare and confirm with those mentioned by

Malim. Corroborating Malim's reports of these deposits along the south-western stretch of the enclosure was also the justification for the dense resolution of boreholes 1 to 5, spaced 10m apart (Figure 106). While it had been hoped to continue the transect further, this was unfortunately not possible due to light conditions and time constraints.

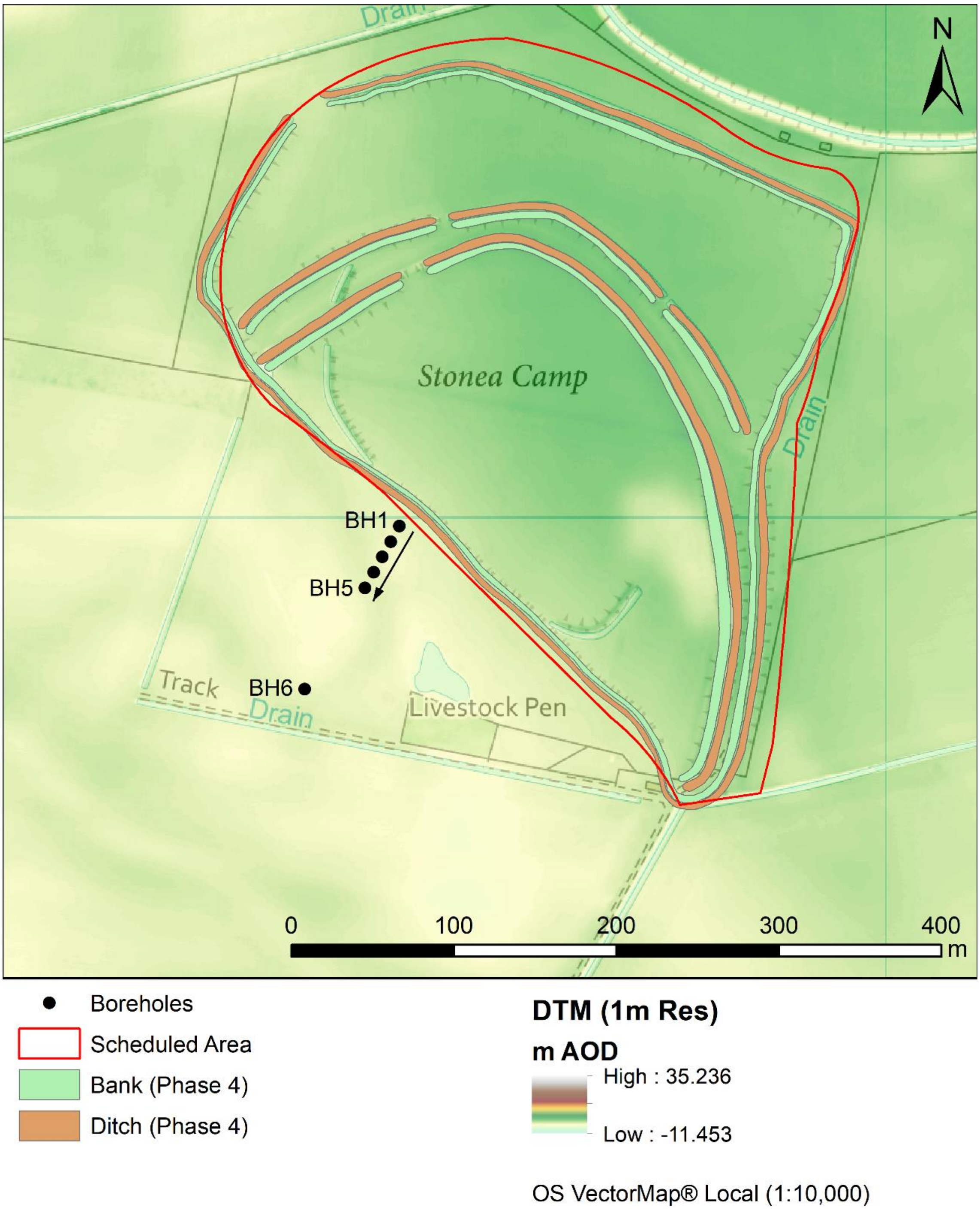


FIGURE 106. LOCATION OF BOREHOLES AT STONEA CAMP.

Results

The borehole stratigraphies show a similar profile along the transect. Each has a rich reddish brown silty clay topsoil, varying between 0.38-0.44m BGL, with BH3 slightly deeper at 0.59m BGL. This depth seems broadly consistent with the historical ploughing of the area. Below this, the profiles indicate varying deposits of clay and, often clayey, sand, interpreted on-site as a banded geology.

There are two minor variations from this profile. BH1 hit the top of a layer of marl at the base of the core (1.49-1.53m+), and BH5 featured a thin layer of silty material at approximately 1m BGL. Unfortunately, it was not possible to hand auger any deeper, so it is uncertain how deep the marl deposit in BH1 continued. The silt deposit in BH5 seemed distinctly different from the other material encountered at the site, and on-site interpretation suggested that this may have been intrusive material as a result of bioturbation. This interpretation was supported by evidence for burrowing on the surface, particularly noticeable midway between BH4 and BH5 at the time of coring.

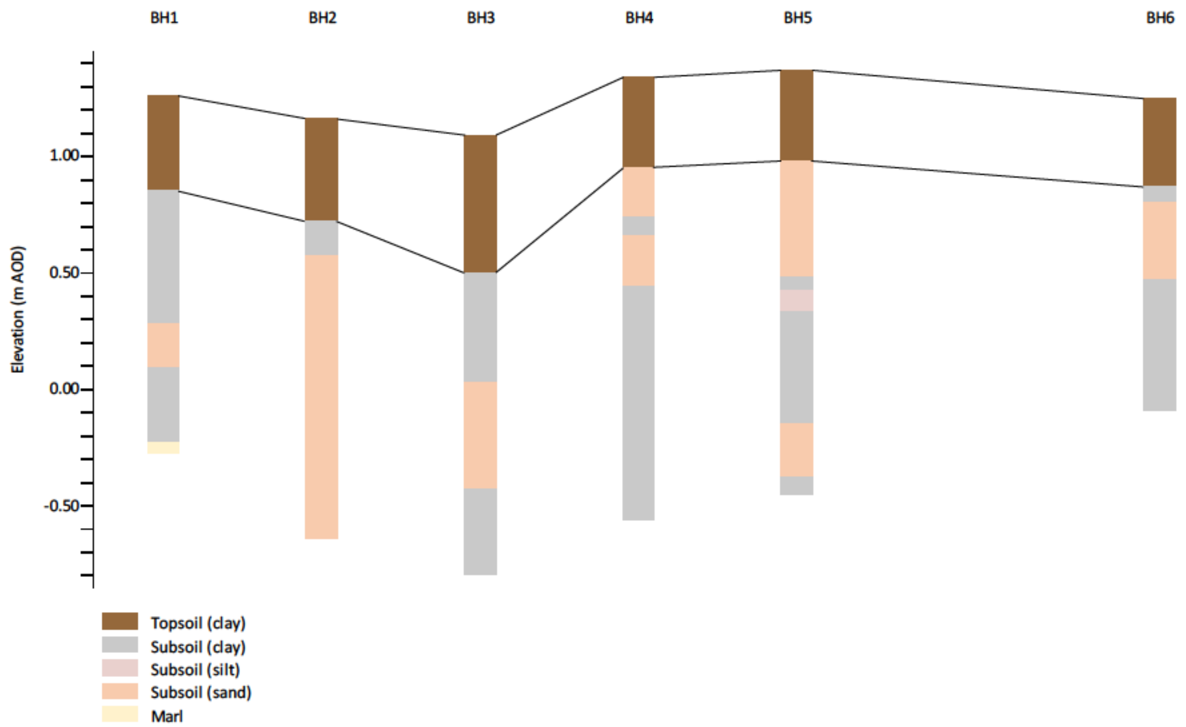


FIGURE 107. STONEA CAMP BOREHOLE STRATIGRAPHY.

Discussion

The results of the coring at Stonea Camp provided a surprising contrast to Malim's description (2005: 44). None of the cores were able to identify the peat deposits in proximity to the south-west earthworks previously mentioned. Instead, the profiles show no clear-cut indication of wetland beyond the marl touched upon in BH1. Marine ingress in this area is evident in Waller's palaeogeography maps from c.1800BP (1994: Figure 5.22). The marl appears most likely to be associated with the Ampthill Clay Formation (dated to the Upper Jurassic - BGS, 2024a); therefore, it is irrelevant to the interpretation of the later prehistoric environment.

Malim (2005: 44) references two previous borehole locations where peat was located and later used for radiocarbon dating: one carried out as part of the Fenland Survey at Manea and the other carried out in 1993, c. 50m south-west of the site. Waller (1994: 323) places the former at NGR "TL47909300", 2.9km due east of the enclosure. It describes the deposits as approximately 1.70 to 1.85m BGL. Malim does not identify the depth of the peat to the south-west but describes them as sealed by 'clays, silts and sands… [deposited by] increased water movement over the subsequent millennium' (2005: 44). It places the peat significantly deeper than was reached by the coring carried out within this project. Given the proximity of the coring to the edge of the enclosure, this suggests a substantial difference between the former ground level within the site and the surrounding wetland, placing it on a slight hill, a feature of the landscape which is lost to modern observation.

In personal communication, the landowner reported that areas which got boggy and featured standing surface water in more recent times were further afield, 1km south of the site. This is not to say that this was indicative of the prehistoric state of the landscape but rather indicates the extent to which the wetland has receded. The area around Stonea Camp has been subject to intensive agriculture, with multiple deep drainage ditches cutting through the landscape at significant detriment to the preservation of its historic environment. As noted in Section 4.2.27, field observations on 9th August 2021 also identified surface water patches in this vicinity.

Waller's mapping of this area also provides an interesting comparison. In particular, the maps showing the environment c.2600BP and 1800BP, pre- and post-dating the enclosure's construction and primary period of use, place the site on the edge of a headland or island, respectively, with fen to the south-west of the site (Figure 66).

Conclusion

Limitations and on-site misinterpretations have had an unfortunate impact on the results of the borehole survey at Stonea Camp. Nonetheless, they have provided useful information which builds upon the existing environmental survey work by Waller and Malim. The sequences indicate a substantial change to the landscape since the Iron Age, which encourages a reassessment of how the relationship between site and landscape is interpreted. The depth of the clay, silt and sand deposits, which may overlay the Iron Age peat deposits, suggests a substantially different topography in the past. While this does not account for water above the surface, it does hint at a more pronounced topographic position for Stonea Camp. Nonetheless, the wetland does appear to be a distinguishing characteristic of the enclosure's contemporary landscape. There exists a consensus that the south-west side of the enclosure would have backed onto fen with considerable watercourses weaving through and amplifying the natural obstacle. While water transport is not out of the question, the dryland to the north extending from the site and, at times, connected to other islands appears to be a likely route of access to the site. As such, it seems the enclosure takes advantage of the natural environment to provide a barrier to access, allowing a focus of earthworks towards the north where a dryland approach may have been possible. In this sense, using traditional categories, it may be seen as an overlap of a 'marsh-fort' and promontory fort.

5.2.11 Wardy Hill

Introduction

The enclosure at Wardy Hill incorporates an earlier curvilinear earthwork to the north, which has been interpreted as either a causeway or dyke. The desk-based assessment of the site has identified conflicting interpretations of the land east of this feature, whether it features peat deposits. In order to address this, this site was selected for a small-scale auger survey with coring focused across the area east of the causeway. The cores aimed to enable a better understanding of whether the enclosure controls a causeway to a smaller island in the fens or whether the earlier dyke was reused to form a de facto annexe.

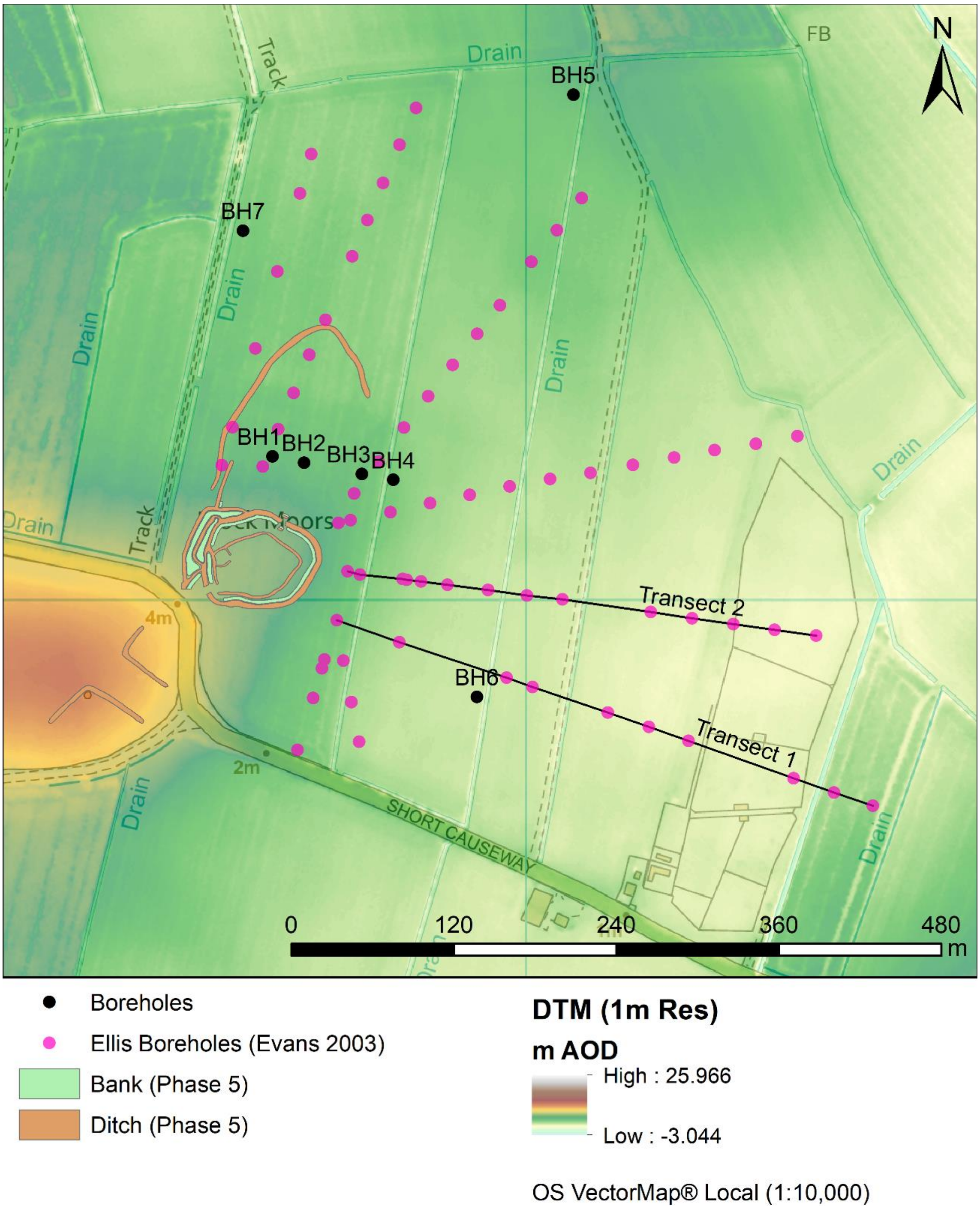


FIGURE 108. LOCATION OF BOREHOLES AT WARDY HILL.

Methodology

Seven boreholes were carried out over 14th-15th December 2022 to investigate this area (see Figure 108). Boreholes 1 to 4 formed a west-east transect across the area to the east of the causeway to investigate the area, with boreholes 5 to 7 placed at separate targeted locations to address specific issues. BH5 addressed the potential for a dryland island to the north, where the ground can also be seen as higher in the DTM, testing the interpretation for a causeway. BH6 was located on the lower ground, east of the end of the initial transect, to act as a comparison to calibrate interpretations of BH1-4. BH7 was located west of the causeway to determine whether there were any variations in deposits on either side of the earthwork.

Results

The boreholes exhibited a consistent topsoil of silty clay, varying 0.20-0.52m BGL, changing into yellowish brown clay. BH1-4 and BH7 all featured underlying blueish grey clay deposits, interpreted as having been deposited in a previous wetland environment. The presence of similar deposits on either side of the earthwork is significant. If representative of conditions contemporary with the creation of the earthwork, it may support the interpretation of a causeway across the wetland over a boundary marking the edge of the wetland. BH5, where the island to the north of the causeway was believed to be located, revealed deposits of light grey marl. Marl deposits are often attributed to wetland margins but date much older, thereby supporting the suggestion of dryland within the enclosure's surroundings. BH6, somewhat surprisingly, offered a contrast to BH1-4, featuring no evidence of the blueish grey clay. It may be that this borehole was not deep enough to discover comparable deposits; however, a comparison of the depths AOD with BH4, the closest borehole, would suggest the necessity for a sizeable unaccounted-for drop in the level of the top of the deposit if this was the case.

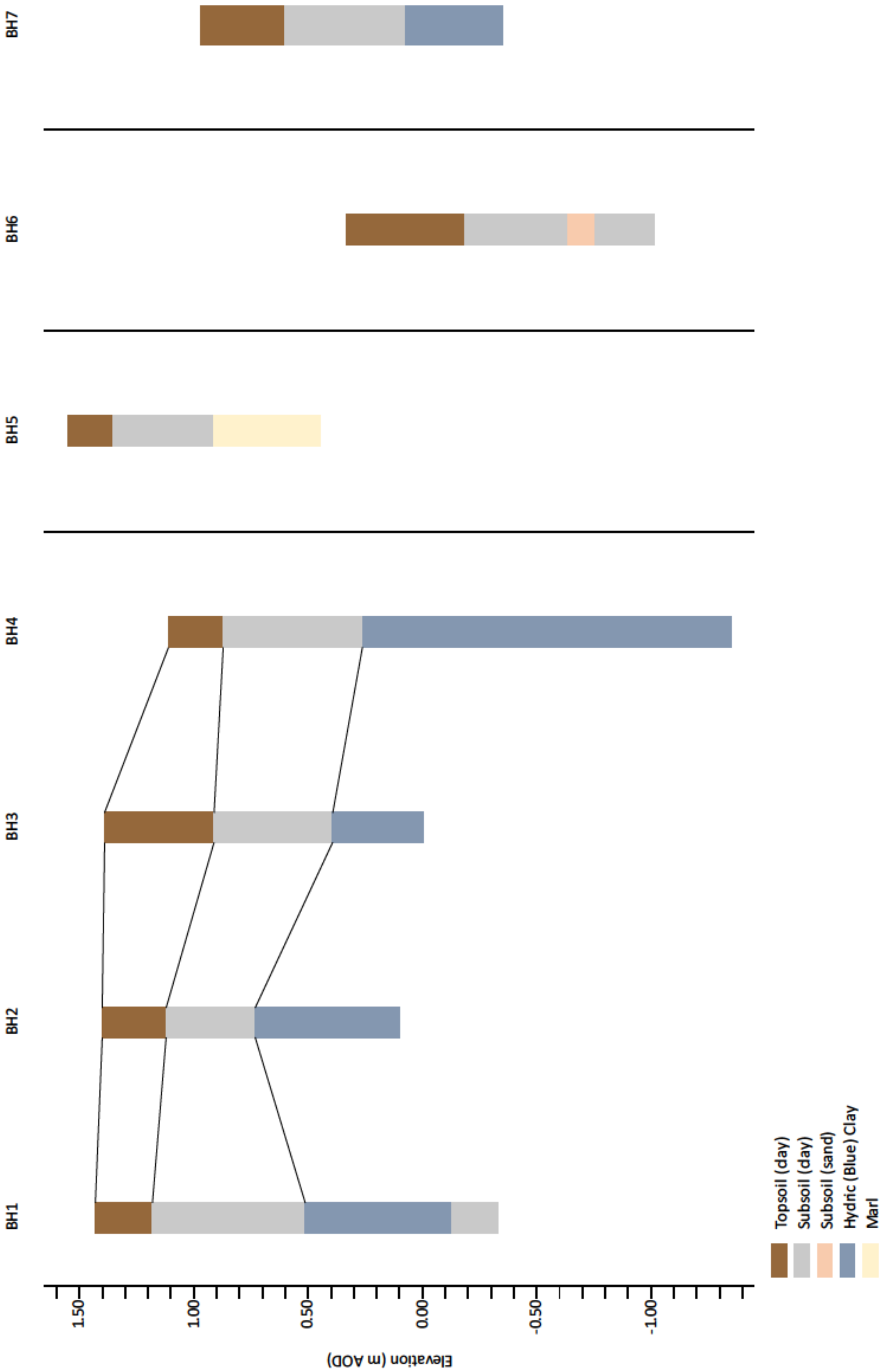


FIGURE 109. WARDY HILL BOREHOLE STRATIGRAPHY.

Discussion

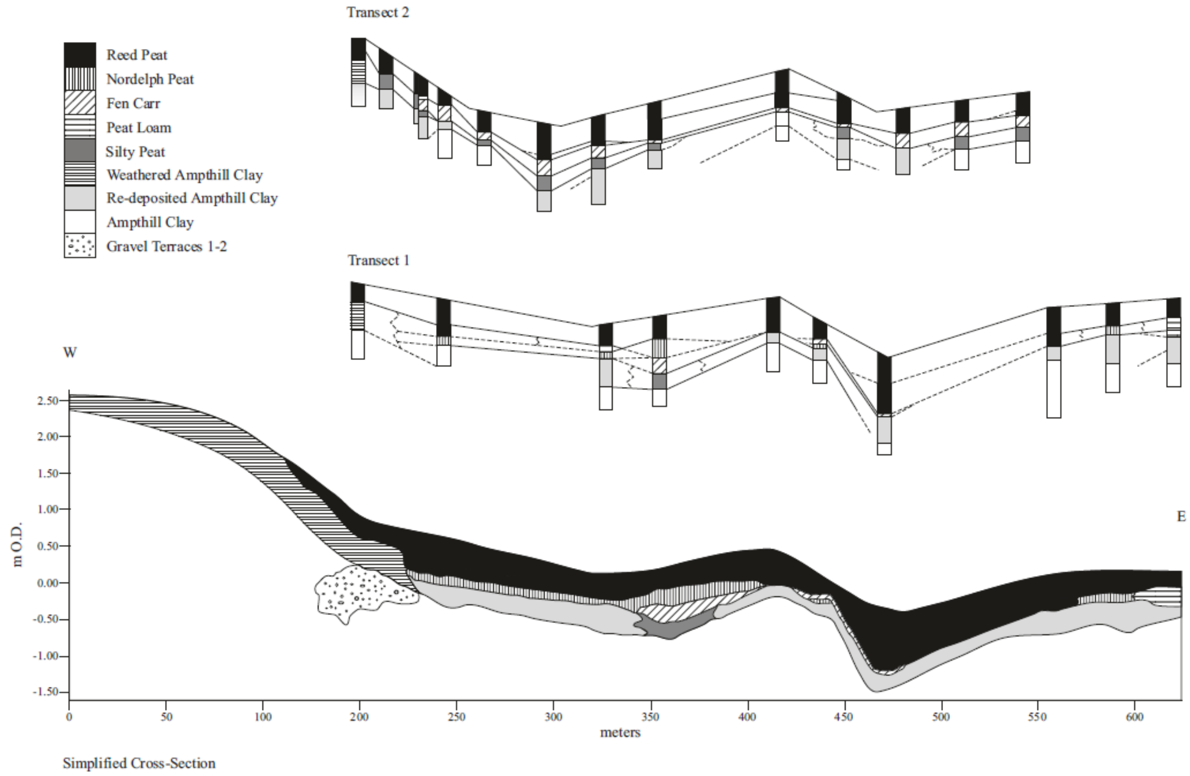


FIGURE 110. ENVIRONMENTAL TRANSECTS FROM ELLIS' BOREHOLE SURVEY OF WARDY HILL (EVANS, 2003: FIGURE 12)

This work has built upon the borehole survey carried out by Ellis (Evans, 2003: 10-15; Figure 110), focusing on the unpublished area north of the enclosure, in and around the curvilinear earthwork. Selective coring was used to identify the nature of the environment in this area. Due to limited publication and no records of the earlier work, integrating the two surveys fully has not been possible. The third borehole (from west to east) in Ellis' Transect 1 (hereafter referred to as T1B3) and BH6 in this survey represent the closest overlap of data. T1B3 is located 26m north-east of BH6. It has been interpreted in Evans (2003: Figure 12) as approximately 0.40m of Reed Peat, over 0.10m Nordelph Peat, overlying 0.40m Re-deposited Ampthill Clay on top of Ampthill Clay 'natural'. There is some variation between the simplified section and the illustration of the individual borehole stratigraphy, with the latter including a layer of Ampthill Clay between the Reed and Nordelph Peat layers. The clay is not present at this level in the rest of the transect and likely represents a discrete deposit, not indicative of the overall environmental sequence. The sequence within Ellis' boreholes largely correlates to the results of the borehole survey conducted within this research. Though no distinction was made between the Reed and Nordelph Peats and differences in the methodology mean that the deposits were recorded differently, i.e. as rich organic clayey silt (Appendix 3.11), this likely represents the same material. The subsequent Ampthill Clay corresponds with clay deposits found in BH6. BH6 was augered to a greater depth than T1B3, so lower deposits were not recorded.

Due to degradation by agricultural activity and methodological constraints (i.e. not incorporating soil micromorphological analysis), it was not possible to determine whether the ploughsoil represented former peatland. The topsoil in BH6 slightly differed from the other boreholes conducted at Wardy Hill as part of this research. Notably, it appeared darker and richer in organic content. As is noted, this may be compared with T1B3. If this is taken as evidence of former peatland, it would suggest a variation from the space north of the enclosure where the other boreholes were conducted. This would appear to suggest that this area was relatively drier. Ellis dates the formation of this upper peat layer from the Bronze Age to the Early Iron Age (Evans, 2003: 10 – though it is unclear where this dating comes from). This chronology would suggest the presence of wetland east of the site in the Iron Age.

The blueish grey clay at the base of the boreholes is also indicative of former wetland. Interestingly, this was not present in BH6, but the current topography and borehole data suggest that this may have been a deeper area at the time of deposition. As such, it is plausible that BH5 and BH6 did not reach this layer. The blue/grey colour suggests a highly saturated soil; however, if the dating of the peaty layer is true, this would indicate a much earlier environment, considerably pre-dating the Iron Age and any earthworks at the site.

Conclusion

Disturbance of the topsoil by agricultural activity has significantly impacted the preservation of the sediment profile at Wardy Hill. As a result, the interpretation of sediments at this site has heavily depended on the early work carried out in 1991-92 (Ellis, in Evans, 2003: 10-15). Interpreted as a remnant representative of the peat deposits described in the earlier work, the variation between the topsoil in BH6 compared to the other boreholes is indicative of the former later prehistoric environment. It reveals peatland to the east of the enclosure. By contrast, the landscape within the area of the curvilinear appears to be dryland. This interpretation is consistent with the construction technique of this earthwork; it is unlikely that ditches would have been cut through marshy ground. We may suggest, therefore, that this earthwork, which predates the enclosure, may have been incorporated into the final architecture to form a de facto annexe. Considering the location of the site and factoring in the DTM, it seems plausible to suggest that the marshy ground would have extended up to the open side of this enclosed area, north of the main full-circuit enclosure.

5.2.12 Warham Camp

Introduction

The wetland landscape to the west of Warham Camp is well attested in the BGS survey and was evident on the surface during the site visit in the earlier stages of this research. The main issue in determining the nature of the local environment contemporary with the enclosure's construction and primary use, highlighted from the desk-based assessment of this site, was the profile and dating of the wetland deposits. For this reason, the site was one of the 13 selected for a small-scale auger survey. This survey aimed to achieve a stratigraphic profile through the wetland and recover samples for radiocarbon dating.

Methodology

In order to answer the questions raised about the wetland at this site, a single transect was undertaken across the wetland on 25th January 2023. This comprised four boreholes, BH1 to BH4, running broadly NE-SW and spaced approximately 50m apart. The transect was orientated as best as possible to be perpendicular to the band of wetland, therefore providing the most accurate profile. Several other constraints, including access in terms of land ownership and current land use (e.g., dense vegetation), also factored into deciding the area cored. These limitations have been mitigated by a contemporary borehole survey carried out by York Archaeology (Keyworth, 2022) in advance of the modification of the route of the River Stiffkey, which was not published publicly at the time of this fieldwork.

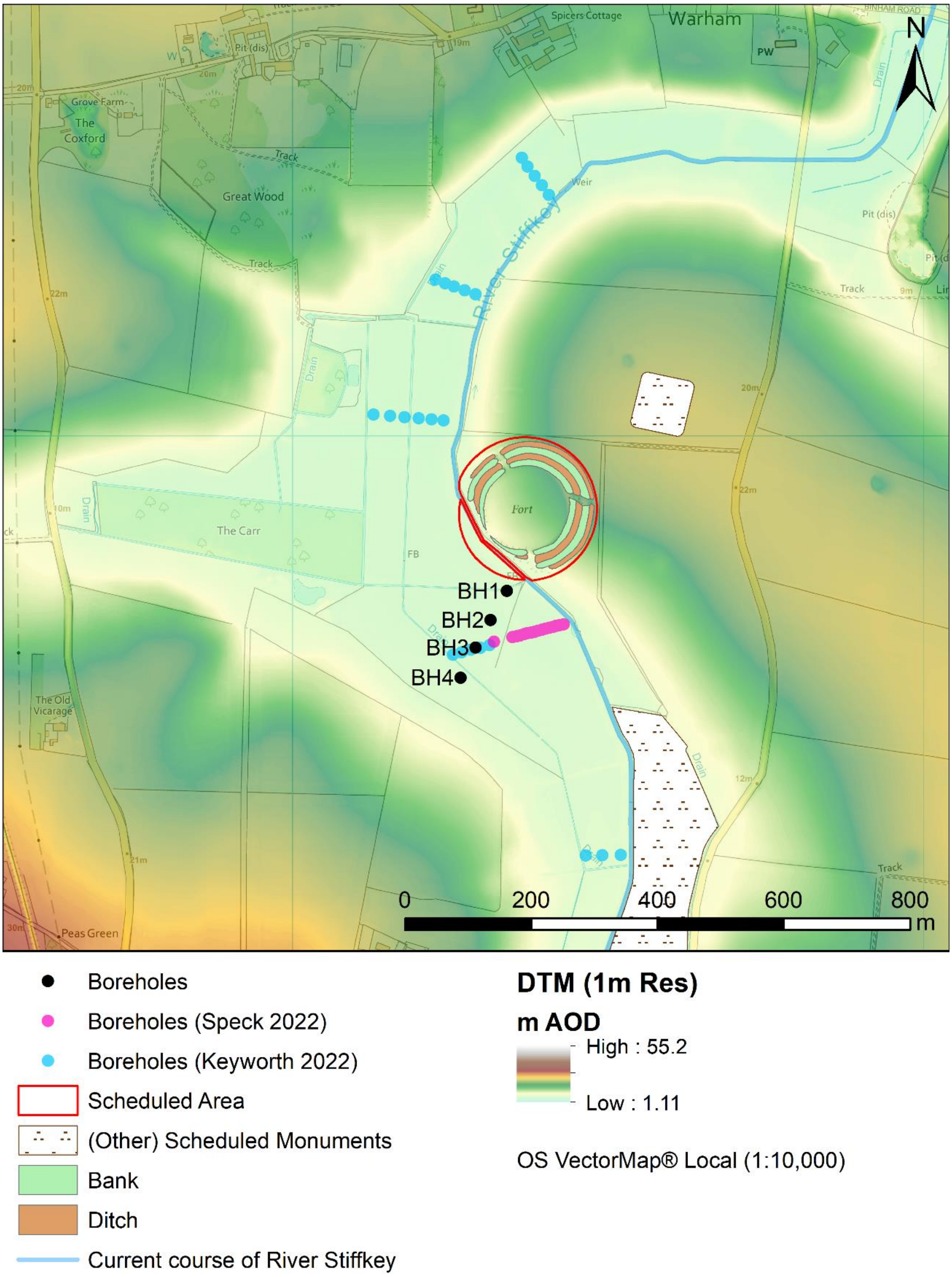


FIGURE 111. LOCATION OF BOREHOLES AT WARHAM.

Results

The transect featured clayey silt topsoil across all boreholes ranging from 0.21-0.40m BGL. Historical satellite imagery going back as far as 1999 does not appear to indicate any ploughing of this land. Though this does not negate the possibility of such activity prior to this, the overly saturated conditions mean it is likely to have limited productivity beyond its current use as grassland. The build-up of this 'topsoil' is instead more likely attributed to silt deposition through the flooding of the River Stiffkey.

Below this in BH1-3 was a silty coarse sand. In BH1, which is closest to the river, this deposit is interbedded with gravel and clay layers. This may relate to dumping material during the eighteenth-century original river modification.

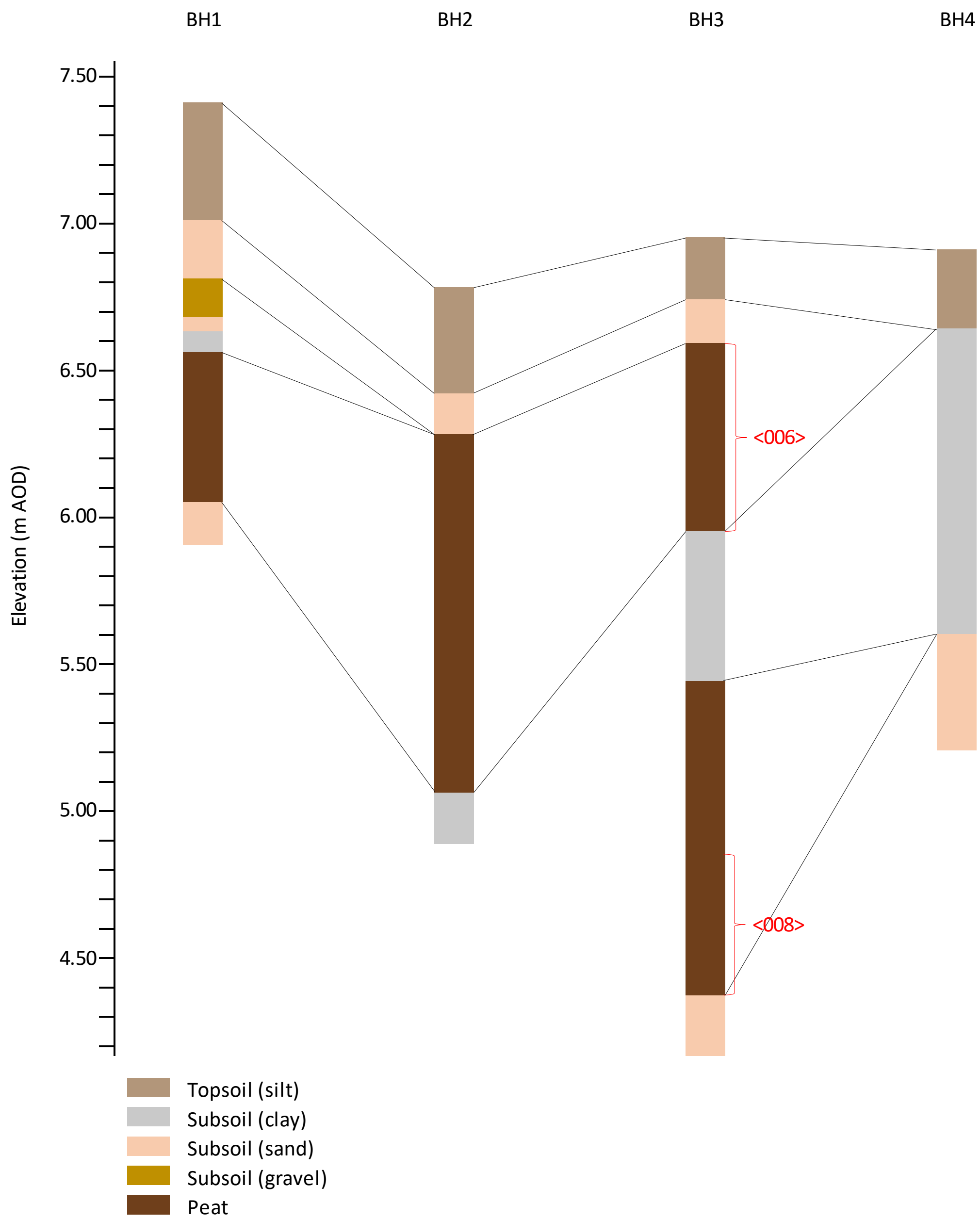


FIGURE 112. WARHAM CAMP BOREHOLE STRATIGRAPHY.

The most recent layer of peat was identified in BH1-3, underlying the coarse sand. Interestingly, this was noticeably deeper in BH2 and not present in BH4. This may indicate it did not extend as far as BH4, contrary to expectations based on the LiDAR DTM. The blueish grey colour towards the base of the deposit may, however, still provide some indication that the wetland environment continued to this point (Appendix 3.12). This may reflect a variation in the depositional processes along this edge rather than the cessation of the wetland.

Radiocarbon dating

Two samples from Warham Camp were submitted for radiocarbon dating. These were 006 (WWSN_03003) and 008 (WWSN_03005). Sample 006 was of the entirety of its respective deposit, 0.36-1.00m BGL. As a result, it was not possible to distinguish a smaller sub-sample from the base, so the dated material only indicated the time around which it formed. Sample 008 was taken from the base of the lower deposit, 2.10-2.58m BGL, and so, while still taken from a broad range, may offer a date slightly closer to the beginning of this phase of peat formation. The two samples represent the two phases of peat formation identified in BH3 and help us to determine the longue durée of environmental development at the site.

The results show the following:

TABLE 19. RADIOCARBON DATES FROM THE BOREHOLE SAMPLES AT WARHAM CAMP.

Sample Number	Context description	Lab Code	Radiocarbon Age (BP)	Calibrated date (95.4% probability)
006	Upper layer of peat in BH3	SUERC-111370	1581±24	424-549 cal CE
008	Base of lower layer of peat in BH3	SUERC-111371	9626±23	9223-8844 cal BCE

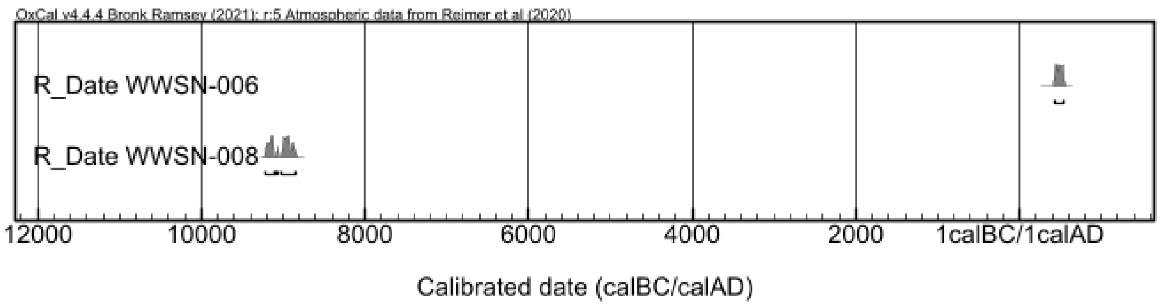


FIGURE 113. GRAPH OF THE RADIOCARBON DATES FROM THE BOREHOLE SAMPLES AT WARHAM CAMP.

Sample 006 provides a date which places the second phase of peat growth in the late Roman to early Medieval period. The earlier phase identified in BH3 (Sample 006) dates to around the beginning of the Mesolithic.

Discussion

As part of a project by Norfolk Rivers Trust aiming to realign/ restore the course of the River Stiffkey, York Archaeology undertook a series of five transects of a total of twenty-four boreholes across the west bank of the floodplain near Warham Camp (Keyworth, 2022). This survey is built upon the previous work by Speck (2022) as part of their Master's research at the University of Southampton, comprising sixteen cores, incorporated into York Archaeology's Transect 2. The research conducted by York Archaeology served the purpose of identifying historical channels to inform restoration and to aid in mitigating the impact of the works. As such, the report does not focus on the development of the former wetland with consideration to Warham Camp but presents additional data which can be integrated with the fieldwork carried out above and enable a more thorough interrogation of the palaeoenvironmental development than would otherwise have been possible within the scope of this project.

The results of these previous surveys support the results of this research. They suggest a deep and well-developed wetland environment extending up to the edge of the enclosure. Samples from both previous surveys were radiocarbon-dated (Keyworth, 2022: 17-18; see Table 20 for dates, Figure 114 for locations). These have produced similar results to the samples from BH3, confirming the beginning of wetland development in the Mesolithic and continuing until the Roman/ Anglo-Saxon periods.

TABLE 20. RADIOCARBON DATES FROM PREVIOUS BOREHOLE SURVEYS AT WARHAM CAMP (AFTER KEYWORTH, 2022: TABLE 7; RECALIBRATED)

Borehole Number	Context description	Lab Code	Radiocarbon Age (BP)	Calibrated date (95.4% probability)
WS15	Top layer of silty peat	BETA-635192	1590±30	419-548 cal CE
		BETA-635193	1250±30	674-877 cal CE
	Base of organic layers	BETA-635194	9940±30	9655-9296 cal BCE
		BETA-635195	8800±30	8168-7732 cal BCE
ST70.5	Top of organic silt clay deposit	UBA-48379	1859±29	120-243 cal CE
	Base of organic layers	UBA-48380	8037±51	7135-6701 cal BCE

By the time of the construction of Warham Camp in the Iron Age, the wetland environment to its west would have been well established and likely existed in or close to its final extent (as shown in Figure 114).

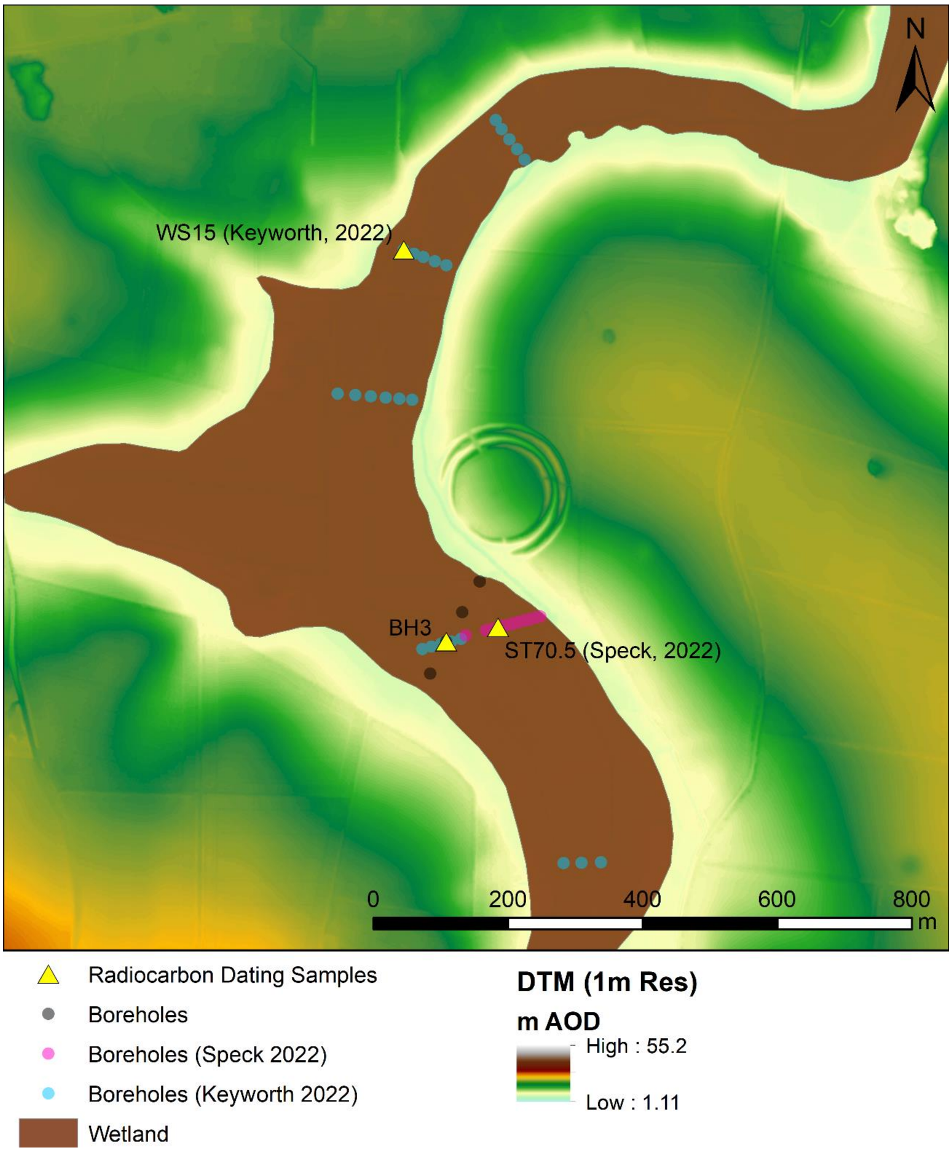


FIGURE 114. THE LOCATION OF RADIOCARBON-DATED SAMPLES AT WARHAM, OVER MAP OF THE WETLAND EXTENT.

The results of the combined surveys support the BGS mapping of peatland to the west of Warham Camp. It shows peatland following the valley of the River Stiffkey, the course of which currently lies along the eastern edge of the wetland (prior to works to restore it to more in keeping with its historic channel). Previous fieldwork has identified multiple shallow and highly mobile historic channels across this area (Keyworth, 2022: 28-29). It builds a picture of a highly dynamic water system. Channels of the river of varying sizes wound through the landscape, infilling and being replaced. As a result, the wetland would have been formed as a floodplain. The dynamicity of the environment would have produced a marshy landscape with a range of wetland micro-ecosystems. Given the depth of the channels (Keyworth, 2022) and the breadth of the valley at points, it seems unlikely that the river would have supported any substantial modes of transport. As such, it would have provided an obstacle to easy travel to or from the west of the site. The channels would have provided a ready water source for anyone using the enclosure or its immediate surroundings. Furthermore, the peatland is widest immediately adjacent to the location of the enclosure. With multiple river channels cutting through this, it would likely have created a rich ecosystem, attracting a variety of flora and fauna, accessible as a resource to people in or around the enclosure.

Conclusion

This research supports the labelling of Warham Camp as a form of marsh-fort. The enclosure sits on a hillslope against the edge of the floodplain of the River Stiffkey. This landscape, characterised by shallow channels of the river and deep peat formation, is best interpreted as a wet, boggy morass. It is likely this would have created an obstacle to access on this side of the enclosure. This is particularly significant given the likely position of an original entrance on this side of the enclosure. Existing breaks in the earthworks on the dryland side of the enclosure have been dated as later cuts, with the missing entrance likely facing south-west where the earthworks have now been destroyed. Excavations related to the restoration of the River Stiffkey have not yet been published and may shed new light on this area. The decision to position the enclosure directly on the edge of the wetland, in a hillslope position, may have implications for directionality and visibility but also speaks to a closer association with the wetland.

5.2.13 Y Werthyr

Introduction

Y Werthyr was selected as another key site needing coring to build a fuller understanding of its landscape. The extent of the alluvium identified by the BGS did not appear to correlate entirely with the marshy areas depicted on OS mapping or observed during the earlier site visit. Broadly, it appeared to follow the path of the rivers around the site. It was, therefore, concluded that a borehole survey would be beneficial to determine the extent of the alluvium or other wetland deposits. This survey was designed to assess the extent to which the site could be classified as situated in marshland and to evaluate how this may have impacted access to the site and its overall function.

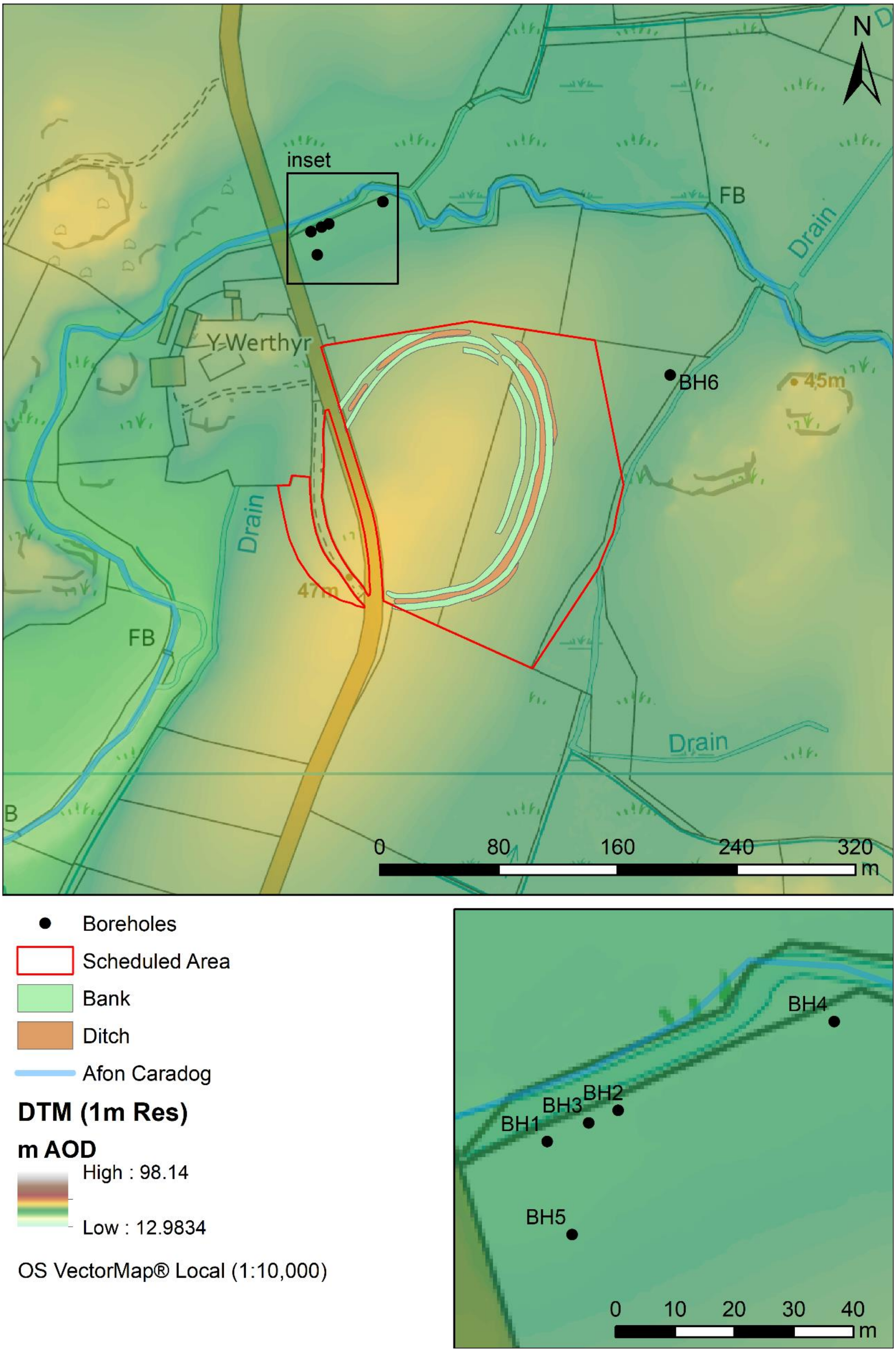


FIGURE 115. LOCATION OF BOREHOLES AT Y WERTHYR.

Methodology

Six boreholes were undertaken at Y Werthyr on 7th November 2022. These were located primarily in the field immediately north of the site. While vegetation and surface conditions to the south-east of the site (Figure 115) suggested the potential for greater evidence of wetland, this area was protected as a SSSI, and it was not possible to gain permissions within the scope of this fieldwork.

Boreholes 1 and 2 were located 13m apart along the edge of the field bordering the river. An additional borehole, BH3, was added between these two, given the significant disparity in stratigraphy between them. A fourth borehole (BH4) was located 39m further east of BH2 to confirm the pattern, and BH5 was located 16m south of BH1 to determine how far the deposits extended towards the enclosure. A further borehole, BH6, was taken to the east of the enclosure to determine whether there was a similar depositional sequence to that identified in BH1 to BH4.

Results

The east-west transect, BH1 to BH4, along the river edge revealed a variety of deposits. Notably, however, they suggest a pattern of banded sand and clay deposits with manganese-rich and hydric (blue) clay deposits appearing in multiple boreholes.

Borehole BH5, slightly uphill to the south of BH1, revealed a surprising difference from its neighbouring borehole.

Borehole BH6 revealed yet an altogether different sequence of deposits.

Overall, the topsoil was generally consistent and ranged in depth with BH1 to BH4 between 0.18 to 0.24m BGL and BH5 and BH6 both 0.37m deep. This is likely the former plough depth prior to the conversion of these fields to pasture.

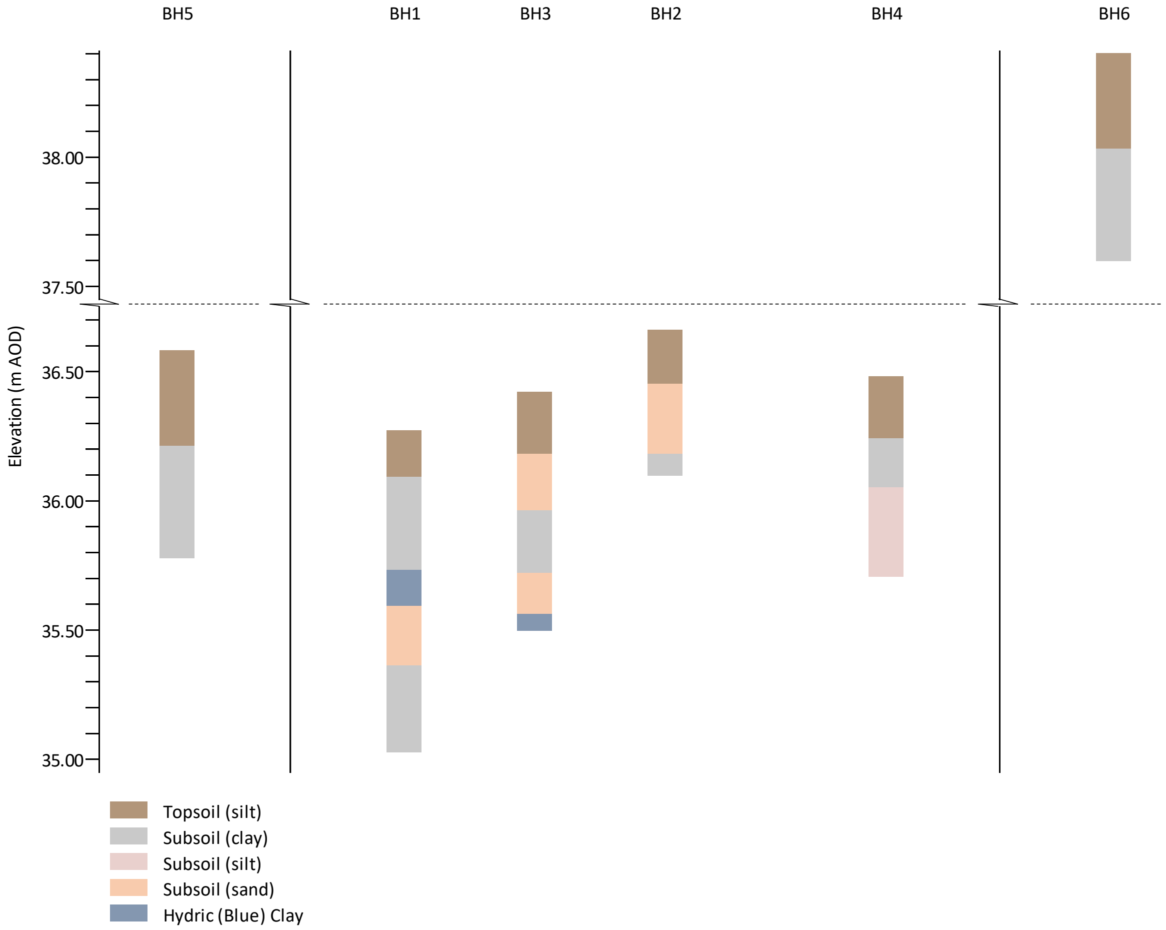


Figure 116. Y Werthyr Borehole Stratigraphy.

Discussion

The variety of deposits identified across BH1 to BH4 is somewhat unexpected, given their relative proximity. They are nonetheless informative. They indicate a pattern of sporadic but repeated flooding, which is expected along the banks of a river. The topography of the landscape shows the river currently at the southern edge of a wide flat valley, approximately 150m wide. While the river may have meandered within this valley throughout history, it seems likely that this landscape would have remained akin to its current state. While the vegetation across it indicates wetland, with long coarse grasses, it appears more consistent with flood plains than marshland. While the area to the south-east, which was not investigated, may have likely revealed deposits more consistent with a boggy landscape, this represents an isolated patch of the wider environment. It seems, therefore, that the enclosure has not been located in a wetland environment in the typical sense. Rather, it appears to have been located to make use of the obstacles and resources provided by the river that encircles the site.

Conclusion

The results of this borehole survey suggest that Y Werthyr should not be considered to be a 'marsh-fort'. There does not appear to be any evidence of wetland beyond the immediate margins of the river. It seems more likely that the site was chosen for enclosure due to its proximity to the waterway. This may have been purely for access to the water, but the river also provides a natural obstacle that may have been a factor. The topography may also have been a factor; the site does occupy the end of a promontory. While it does not offer the most visually prominent location, such is the nature of the relatively low-lying landscape in which it is situated; the position is elevated above the valleys surrounding it to the east, north and west. It is difficult to say with certainty why the site was located here, but it is likely the result of multiple factors, both identified and not.

5.3 Review of the borehole survey results

The borehole surveys carried out at these thirteen sites have provided a range of new data, addressed the questions highlighted in Chapter 4, and raised new considerations for the histories of these sites. The research has addressed a range of questions unique to each site, but across all sites, the information has helped build a better understanding of the environments and their relations to these sites. It has enabled a better analysis than was hitherto possible and allowed new patterns across these sites to emerge. In some cases, the results have sought to confirm or elaborate on existing knowledge; in others, the results have been more drastic, causing us to re-evaluate our interpretation of landscapes. The results from Cherbury Camp have probably been the most impactful. The site was previously widely accepted to be in a wetland location, with evidence tracing back to observations and analysis by Arkell in 1939. The results of the borehole survey and field observations contradict this assertion and have led to a thorough, critical re-examination of Arkell's interpretations, offering multiple possible explanations (see Section 5.2.6). At other sites, the survey has refined existing knowledge, confirming medieval accounts in the case of Athelney and the historical archaeological survey at Island Covert, which lacked records. The investigations at Boney's Island have provided a fuller understanding of the landscape from which to test the two potential environmental possibilities that arose through the desk-based assessment of the site. Though the nature of the deposits at some sites has meant that not all of the aims were met (e.g., dating samples could not be recovered where there was no organic material), the surveys have expanded our understanding from the initial desk-based assessments. It highlights the value of palaeoenvironmental/ geoarchaeological analysis and provides valuable data for discussion and analysis in the following chapter.

6. Discussion

6.1 Introduction

The desk-based assessments and fieldwork have reassessed and expanded our previous understanding of individual sites. The summaries produced in Chapters 4 and 5 highlight the broad variety of sites to which the term ‘marsh-fort’ has so far been applied. The use of a single term implies commonality between the sites, yet an examination of the nuances of each site reveals a broad spectrum of design, function and intentionality. The distinct variations emphasise the need for this urgent review of the marsh-fort category. The following chapter addresses this by examining the fundamentals of forming typologies. It will address the existing classificatory framework, its origins, purpose and issues. The chapter will then build from this review to present a new framework using interpretive categories. The application of a data-led approach comprising pattern analysis across the thirty-four case studies within this thesis will demonstrate the benefits of this new framework in progressing our understanding and management of these sites. Through this, it hopes to develop fluidity within the taxonomic approach, succeeding the traditional deductive style of terms, such as ‘marsh-forts’, dictating categorisations.

6.2 Why do we categorise? And issues with formulating a classificatory system

6.2.1 Reasons for typologies and issues with their formation

In order to establish a new classificatory framework for ‘marsh-forts’ that better represents the nuance of these sites, it is important to first address why we categorise archaeological sites.

Typological analysis is defined as ‘the systematic arrangement of material culture into types based on similarities of form, construction, decoration or style, content, use, or some combination of these’ (Aldenderfer, 1996: 727). The creation of categories acts as an analytical tool (Boozer, 2015: 95), one which is engrained as a fundamental process of archaeology. Categorisation is a common feature of many research fields, often developing early on as a means to deal with the otherwise ‘haphazard accumulation of raw data’ (Boozer, 2015: 94; Adams and Adams, 1991: 266). While hillfort studies are long established, ‘marsh-forts’ as a field is still in its early development.

Sutton Common is often regarded as the sole investigated marsh-fort. More recently, there has been an uptake in current and ongoing investigations which refer to marsh-forts from the outset (e.g. Wilkins et al., 2016; 'Potteric Carr', in Cole, 2023); however, these aside, the compilation of previous research within this study has highlighted that more research has been carried out than was previously recognised (e.g. Martin, 1988; Malim, 1992, 2005; Evans, 2003; as well as others not included in this preliminary gazetteer: e.g. Pickstone and Mortimer, 2012; Havard et al., 2019). The sites discussed were referred to by other names or left uncategorised and only analysed within their own local and regional networks. Marsh-fort studies, as we may term them, are currently in their infancy. This offers the best opportunity to consider issues that have caused issues in other fields (e.g. Boozer, 2015) and develop a classificatory model best suited to our investigations moving forward.

Past classificatory systems of archaeological sites (and material culture) have been criticised as overly homogenising the data (Gero, 2007: 320). This, in turn, acts to obscure the paradox between archaeological data as 'partial, complex and ambiguous' and its perception as 'tangible and "real"' (Boozer, 2015: 93-94). Instead, Gero (2007) encourages us to embrace the ambiguous. In this, we are challenged to reconsider our approach to categorisation. Anomalies are inevitable. How we deal with them is up to us. Our discussions and analysis should include an acceptance and explicit recognition of the ambiguous nature of our data. While our focus may be drawn to those sites that conform to categories, we must be careful not to constrain our view, to ignore or obscure the ambiguous.

One other issue is in the recognition of our own preconceived ideas in the formulation of categories. Wylie (2017: 208) claims epistemic preunderstandings are deeply entangled in archaeologists' approaches to data and shape categories of analysis (formal, spatial, temporal, functional, stylistic etc.). These 'preunderstandings' are the results of past lines of enquiry and their assumptions, which may since be lost and forgotten. It is important, therefore, to consider the depth of underlying preconceptions and their impact. We must not be complacent. We must question both why and how we categorise. Only through an open and critical revision of existing theory may we hope to progress our understanding of the past.

6.2.2 Repetition and difference: patterns for informing typologies

Determining typologies is the process by which we structure ontologies, infer meaning and enable further integration and understanding. These typologies build upon concepts of repetition and difference: shared or varying features. They create the perception of copies whereby we may deduce that sites, features or activities were the same and/or shared a common function and/or meaning. Deleuze (1994: 347) highlights, however, that 'incompossibility is not reducible to contradiction, and compossibility is not reducible to the identical'. This line of thinking has multiple implications to consider when developing a classificatory framework for 'marsh-forts'; the most prominent is that regularity does not equal commonality, and form does not always equal function, and vice versa. These shall be addressed below.

Regularity does not always equal commonality

The categorisation of hillforts while following a common logic has been varied (for example, see Table 3, p.23). More recently, the Atlas of Hillforts attempted to make data and classifications more consistent (Lock and Ralston, 2023). As Harding (2017: 298) previously recognised, however, 'the association of sites, large and small, simple or complex, into a single category of hillforts has undoubtedly been an oversimplification of archaeological classification'. The application of terms such as 'marsh-fort', however, whilst arguably consistent in its basic definition, does not reflect any form of consistency between the widely varied sites termed as such. It has, to copy the words of Gero (2007), become overly homogenised and subject to the issues that ensue. Beyond the issues of lost detail, as highlighted in Section 6.2.1, homogenisation of data produces misconceptions in interpretation. Our use of classifications implies a degree of commonality. The result is twofold. Firstly, sites become equated under false impressions of commonality. Secondly, we ignore the idea that just as we may interpret these sites differently, so too may they have been by the people who built and used them.

The first of these will be explored further in Section 6.3, but fundamentally, it is the product of simplification. Descriptions of features are simplified in order to homogenise data so it may fit into existing database systems. As a result, detail is lost. It produces regularity, where a more thorough examination of the sites reveals none is apparent. This approach, consequently, produces false impressions of commonality in the motivations and function of these monuments.

Just as we may falsely recognise commonality where there is none, so too is it possible that this may have occurred among the groups of people that constructed them and the successive generations that continued to use them. The heterogeneity of monuments does not definitively imply that their designers had a common mindset (cf. Fleming, 1999: 120). As with hillforts, marsh-forts exhibit a wide diversity of features and functions. These likely reflect the individual needs of the communities that built them. Previous attempts at classifying marsh-forts, notably Norton (2021), have heavily relied on Sutton Common as the defining example of the category. This dependence is based on the large quantity of evidence from the site, in contrast to others. By building the category this way, however, it has implied that Sutton Common acted as a template for constructing other 'marsh-forts'. It envisages bands of Iron Age 'architects' travelling to the site and proceeding home with ideas for a Britain-wide marsh-fort building programme. It is doubtful this was the case.

As well as different groups building different marsh-forts, it is important to recognise that motivations may differ within the same community. Individuals or sub-groups may have had personal motivations or vested interests in creating these enclosures and any internal structures. These may have varied considerably and non-exclusively, covering a range of social, economic, political and religious factors. Just as different elements of society today have personal motivations, it is important to recognise that people in the past were not homogenous, just as we argue that the sites they occupied were not.

Form does not always equal function

This question of relating, or not relating, form to function is a common feature of archaeological interpretation. Derived from the modernist architectural principle that 'form follows function' (Trebsche, 2009), archaeologists have turned it upside down to interpret past structures. Archaeology is the study of the past through its physical remains. As archaeologists, therefore, we are confronted with 'form', from which we must endeavour to envisage 'function'. Shared forms have been used to imply shared functions. However, function alone is not the sole determining factor in the design and construction of archaeological sites and structures. Just as different individual, sub-group, and community ideologies can influence motivations to build, so can they impact their design. Architecture can be copied or integrated or even designed as a rejection of past ideas. Form may also be influenced by practical constraints such as technologies or the availability of resources and time.

Within a single cultural group, where objects, places and structures may have a common meaning, they may also be interacted with differently by individuals (Cipolla et al., 2024: 92; cf. Johnson, 2010: 86-88). Function can change through time (Cunliffe, 2006: 152-153) but also contemporarily with each interaction. Churches are fundamentally perceived as places of worship, often adorned heavily with religious iconography and artefacts. Yet, they can be multi-functional, serving as places of refuge when under attack or in times of natural disaster, as meeting places, as displays of power or as propaganda for sponsors. Secondary re-use of sites may also be lost. The Church of St Mary-at-Lambeth in London, once a church, now functions as a garden museum. If the building was abandoned and display cases removed, it seems likely that future archaeologists may easily miss this second use. Throughout time, houses have served as places of business, as well as domestic activity. It is unlikely that the archaeological record will detect 'Work from home' hybrid working arrangements. Open spaces such as parks may have multiple uses beyond their intended recreational function, from sports matches, markets and 'car boots' to fairgrounds. These additional activities may leave an ephemeral impact on the archaeological record. They also represent the utilisation of space by different individuals and groups beyond the original primary intention of the overall community. Meaning can be inferred by the individual experience. Recognition of this allows us to realise that repetition of form does not always equate to a repetition of function.

On an additional note, by contrast, we may also recognise that different forms can sometimes share function. Different ideas may lead to similar outcomes. Consider, for instance, the vast array of burial practices throughout time (Parker Pearson, 2003). We recognise common features of their functions: memorialisation and exhibitions of respect and reverence for the deceased and creation of places for memory and contemplation, to name just a couple. These functions echo across the many varied forms of burial monuments throughout time and across cultures. By ignoring the potential for this difference in form, we dismiss the potential for creative agency among prehistoric people, assigning them to rigid dogmas based on functionality and minimalism.

6.2.3 Interpretive and Descriptive categories

Cunliffe (2006: 153) summarises that the most accessible categories of hillforts to examine are: size, location, boundary form/ complexity, activity and chronology. By discerning patterns in the data through these categories, he claims we may begin to understand the 'complexity of meaning embedded in hillforts' (ibid.). The categories are descriptive, the product of features identified as important by archaeologists. As Cunliffe terms them, the most 'accessible'.

Typologies in big data

Traditional frameworks that focus on these descriptive categorisations dominate our approaches to understanding archaeological sites. Nonetheless, the quantitative data which they produce should not be dismissed. Big Data projects can help to identify patterns on a large scale and inform general patterns. For the study of archaeological sites, these patterns can inform interpretations of general architectural developments and the systems of beliefs and ideology that underpin them. The Atlas of Hillforts is the most recent and substantial example of this within the field. The discussions of this in the project's summative volume demonstrate the potential of this dataset (Lock and Ralston, 2022). It is not alone, however. The Atlas of Hillforts follows a tradition of applied quantitative analysis to identify patterns and infer meaning (e.g. Hill, 1996).

While such analyses of large data sets can help with some interpretations, in other situations, they can form a hindrance. The interactions with large digital datasets cause us to fundamentally change the nature of our engagement. Pre-digital discussions allowed for a more organic, unbounded discussion of archaeological sites and material. On the one hand, this resulted in a wide variety of methodologies, interpretations, and publications, but it also enabled more fluidity, where approaches may be adapted to suit the needs of the data. In effect, it was data-driven. The nature of digital databases, however, requires that the data become quantitative. While this gives the illusion of creating conformity, it often results in the dismissal of data that does not fit the database. It becomes database-driven. The intention here is not to echo the past criticisms of processual approaches 'dehumani[sing]' the past (e.g. Shanks and Tilley, 1992: 60). Developments in theory and the technologies we use to process large datasets have provided us with better tools to manage them (Kristiansen, 2014). What we do encounter, however, is, as Huggett (2020: S9) terms it, a reversion to the perception of data as 'givens' rather than 'made' as a product of theory, process and purpose (see Smith, 2018: 3 for risk of taking digital data as accurate and truths). As such, we encounter a two-fold problem. Databases determine and manipulate the significance of data. Data is forced into pigeon-holes rather than used to inform the creation of categories.

As discussed in Section 6.2.1, categories act as analytical tools. But should they be the final form of categorisation? They fragment and squish the data, obscuring ambiguity and giving false impressions that the data fits neatly into the databases. Just as Boozer (2015) and Wylie (2017) caution us to be wary of past preconceptions influencing our categorisations, do we not, too, have a responsibility to the future treatment of the data to attempt new, more representative frameworks?

Different values of meaning: a review of existing terminology

Examination of the existing classificatory framework has identified a primarily descriptive focus, particularly weighted towards topographic position: contour forts, promontory forts etc. At a surface level, this creates an issue. Would these have been identifiable to the people in the Iron Age who constructed them, and therefore, do they have meaning, and are they ultimately useful?

Looking deeper, however, it becomes apparent that even this existing framework sits upon a spectrum. Meaning is attached differently to categories of topographic position. Recognition of this has implications for how we interpret these sites. Contour forts appear at the more descriptive end of the spectrum. As the name suggests, they follow the natural contours of the land they occupy. By contrast, promontory forts and hillslope forts interact with their position in a way that invokes more meaning. Discussions of these categories within hillfort literature feature a greater degree of inference. They include discussions of directionality and association with other places (e.g. Brown, 2009: 196) and economies of the resources required to build them (e.g. Harding, 2012: 15).

This unconscious bias is best exemplified by Forde-Johnston (1976) but still underpins many contemporary approaches to hillfort studies. In the introductory chapter of his 'Hillforts of the Iron Age in England and Wales', he provides a brief description of contour and promontory forts as the two broad categories which cover the majority of hillforts (op. cit.: 7). His description of contour forts is purely descriptive. They 'cut off the upper portion of a hill from the ground below by following, more or less, the line of the contours encircling it.' By contrast, the description of promontory forts is twice the length and includes a more detailed reflection. As with contour forts, he describes a promontory as 'defined… as an area to which the approach is limited, to a greater or lesser extent, by natural features such as cliffs, very steep slopes, rivers, etc.' From this description, however, he infers interpretations regarding the way people used these landscapes. Forde-Johnston mentions how these natural features minimised the need for fortification. Earthworks were only 'needed on the side from which the promontory can be approached.' We can already see implications for resource management and the economics of balancing work against outcomes. There are connotations about access routes and directionality. A similar imbalance and themes of discussion are repeated in more detail within the third chapter of his book, which directly addresses 'the siting of Iron Age forts'.

Forde-Johnston is not alone, however. A similar emphasis on the economics of promontory forts can be found in other works (e.g. Harding, 2012: 15-16; Garner, 2016: 266). Lock and Ralston (2022: 78) add some interpretive value to the discussion of contour forts, identifying how, in some examples of these sites, a contour is followed irrespective of the irregular shape of the enclosure produced. Such rigid adherence to the morphology of the landscape raises questions about the underlying motivations and reasoning. However, this remains overshadowed by the detailed discussion of promontory forts (op. cit.: 84-89). Lock and Ralston reiterate the use of and engagement with the natural landscape as an economic tool for minimising labour and, in the case of coastal promontories their potential for local anchorages. Furthermore, they acknowledge the nature of promontories in marginal landscapes, for example coastal sites 'at the hem of the land and the sea', and suggest they may have held additional ritual significance (op. cit.: 86).

Ultimately, this highlights a variation in the depth of meaning behind these terms and their usefulness to archaeologists looking to categorise these sites as a way to interpret them.

Typologies: approaching "emicness" through interpretive classifications

Debates over how we use typologies have focused heavily on whether they are inherent or a theoretical construct by archaeologists (see Wylie, 2002; Adams and Adams, 1991; Dunnell, 1986). I accept them to be the latter. Typologies are shaped by the experiences of archaeologists, as well as inherited preconceptions derived from the scholarship of the archaeologists and philosophers who have come before. Such discussions are also heavily related to notions of emic and etic classifications (Adams and Adams, 1991: 282-284). These terms were first coined by Pike (1954) to describe human social behaviour. The emic perspective refers to the examination of culture from the insider's perspective. In relation to classifications, it serves to establish typologies recognisable to the people who made the sites or artefacts. The etic perspective, by contrast, reflects the outsider's perspective. As such, classifications using this model are reliant on an external set of standardisations. The etic approach can be identified clearly in the descriptive, quantitative nature of current hillfort classifications.

Criticism of the emic approach highlighted the challenges in correctly determining the intentions of long-dead individuals and groups (Adams and Adams, 1991: 283). The etic approach, by contrast, aimed to be neutral. As with many methodologies of this era, though, the post-processual debates emphasise they are not. The etic typologies are formed on the basis of features deemed significant by the modern observer, with all of their preconceptions. Given the nature of archaeology, dealing with the past, it is not possible to achieve a genuinely emic perspective. The closest we can get is through our interpretations. If we accept that all typologies are constructed, then etic classifications are equally subject to the same errors or gaps in knowledge as emic ones. Adopting a more interpretive system of classification changes our approach to become more flexible and offers greater opportunities to develop our understanding of the intentions of people in the past. As with all archaeological theories, these classifications will undoubtedly be open to future revision. In transitioning away from the current allegedly neutral and long-established 'truths', however, this new model offers an attempt at altering our mindset to deal with the past.

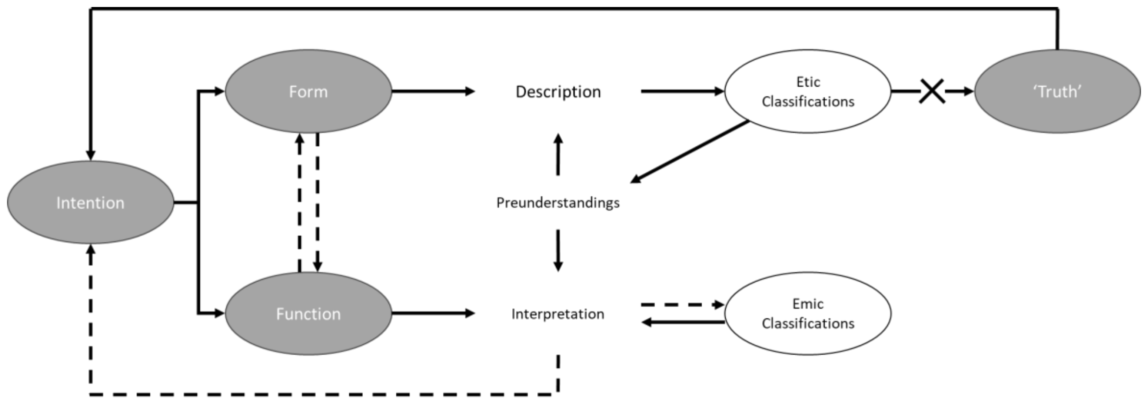


FIGURE 117. DIAGRAM SHOWING THE PROCESS OF EMIC AND ETIC CLASSIFICATIONS AS ANALYTICAL TOOLS.

A new interpretive approach to classification helps to set aside lingering habits founded in now-disused notions. Echoing Wylie (2017), it is important to recognise the preunderstandings which established the existing framework in the first place. The use of typologies has long been an integral part of archaeological study. They form a central part of the methodology of culture history and relative chronology. Such dependencies have, however, since become defunct due to breakthroughs in new dating technologies (Cipolla et al., 2024: 92). Yet as theory and practice have moved on, this way of categorising hillforts has endured. Some publications have begun categorising sites through 'façade schemes' (Driver, 2013; Garner, 2016). These approaches attempt to move away from a detached quantitative model towards a consideration of monuments from a human perspective, reflecting both the nuances of the architecture and their landscape settings. In doing so, they represent a more interpretive model. This is yet to be widely adopted, though, with other studies still preferring a reliance on traditional descriptive systems to create quantitative databases (Lock and Ralston, 2017; 2022).

Different systems of classification are not 'right or wrong' overall but can be judged in accordance with the objectives of their application (Boozer, 2015: 96). Adams and Adams (1991: 4) suggest that 'better' typologies ought to prioritise consistency and communicability over maximum objectivity. That is to say, the current descriptive typologies are not without some merit. They allow us to quantify that X number of sites are a certain hectarage, or those in the Y region had more sets of vallations. Instead, the development proposed in this study questions the purpose of the questions from which this data derives. An interpretive approach adopts an alternative mindset. Would the Iron Age people who constructed these enclosures have noticed a tangible difference between 2ha enclosures and those that were 2.5ha? Instead, they might distinguish a relative scale between small and large sites. How might they have recognised this, however, without methods of land survey? A logical response to this might be the volume of activity within them. Larger sites can host a wider range of functions or similar functions on a larger scale (i.e. catering to a larger population). We, as landscape and settlement archaeologists, act as geographers of the past. Spatial analysis, while useful, enforces an external perspective. An interpretive approach offers an immersive alternative. One more akin to how a modern lay person may experience the difference between a village and a city. Not by its area, population density or other quantifiable statistics but by the lived experience they represent.

Interpretive classifications also allow us to widen our scope. In their ‘agenda for action’ over twenty years ago, Haselgrove et al. (2001: 14) outlined the need to consider how Iron Age people understood and perceived their landscapes. The current classificatory system remains, however, centred mainly on earthwork architecture. An interpretive classificatory framework provides a valuable tool for examining this. Whilst descriptive typologies focus on individual aspects, interpretations enable a greater plasticity to adapt to these questions. They enable us to process the relationships between features as well as the features themselves.

6.3 Descriptive comparisons

6.3.1 Introduction

Traditional approaches to categorising hillforts have focused on three factors: size, earthworks and topographic location. This approach stems from the Ordnance Survey *Map of Southern Britain in the Iron Age* (1962a) and was adopted by many of the archaeologists who have made significant impacts on the topic since (e.g. Forde-Johnston, 1976; Hogg, 1979; Harding, 2012; and most recently Lock and Ralston, 2022: 30-31). The origin of this approach in mapping neatly suggests why these elements were chosen. They are the most apparent upon visiting the sites. We often refer to the monumentality of hillforts when discussing these sites. Scarre (2011: 9) defines monumentality as ‘evoking size and durability on the one hand, and commemoration or memorial on the other… passing on meanings and messages beyond generations'. While meanings may be hidden to the casual observer, the extant earthworks through which early hillforts were identified, stand as a testament to size and durability. Factoring too the early military focus of their interpretation it becomes clear why our classificatory models have developed with the focus on these factors.

This approach has been adopted here to examine the examples of potential marsh-forts in this study. This serves as a comparison for the alternate interpretive-focused approach presented later in this discussion. This analysis will demonstrate the categorical breakdown of these sites using quantified data relating to their size, earthwork morphology and topographical positions. It will draw on data and the approaches of the Atlas of Hillforts (Lock and Ralston, 2017). Of the thirty-four sites discussed, however, three (Athelney, Boney's Island and Skipwith) are not listed in the Atlas of Hillforts, and data for these has been filled in conforming to the same criteria. Bomere Wood was also missing data for its total enclosed area; this has been estimated for this study. The data used in this discussion has been listed in Appendix 6.

6.3.2 Size

Hillforts have been traditionally ranked by size of enclosed area using three categories: small, medium and large. The standards for these were set by Rivet (1961; see Table 21; converted from acres in the original text to hectares for comparison) and adopted by the Atlas of Hillfort due to their 'lasting influence and [widespread] use' (Lock and Ralston, 2022: 102; parenthesis, author's own).

TABLE 21. SIZES OF HILLFORTS BY ENCLOSED AREA (AFTER RIVET, 1961).

Small	<3 acres (1.21ha)
Medium	3-15 acres (1.22-6.07ha)
Large	>15 acres (6.08ha)

The Atlas of Hillforts sets a minimum threshold of 0.2ha for admission (Lock and Ralston, 2022: 30-31, 110; 2023; following Hogg, 1975: xi). Cash Mill and Green Island enclose 0.1ha and do not meet this requirement but have been included in the Atlas on other grounds.

Applying the above categories to the data from the thirty-four case studies produces the following distribution:

TABLE 22. DISTRIBUTION OF CASE STUDIES BY SIZE CATEGORIES.

Size	Number of sites
Small	9
Medium	18
Large	7

This mode of categorisation suggests that the enclosures are primarily medium-sized. With a roughly equal number of small and large enclosures, one might expect a reasonably even distribution. Instead, as we see from Figure 118, this categorisation somewhat skews our impression of the data. It suggests the most common enclosures were less than 1.0ha, with a broadly downward trend in frequency for larger sites.

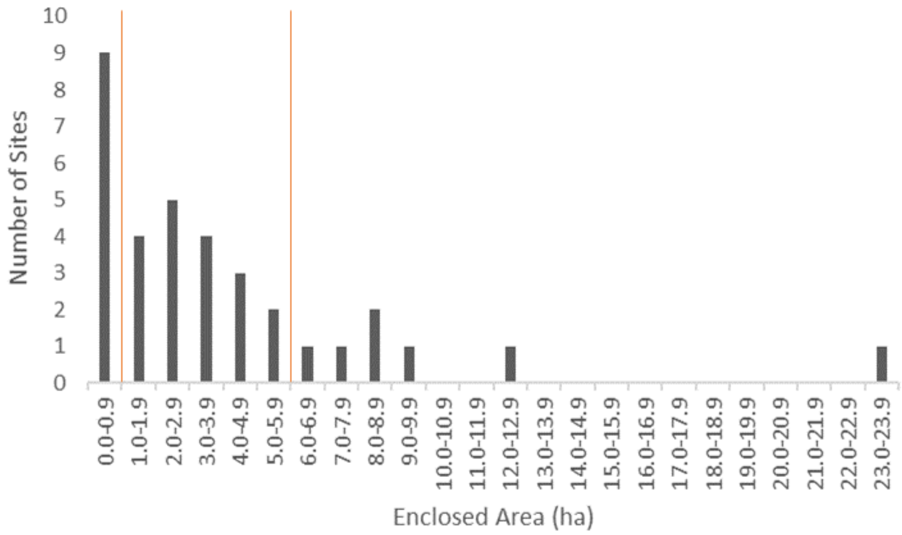


FIGURE 118. CHART SHOWING THE DISTRIBUTION OF CASE STUDIES BY ENCLOSED AREA (1HA INCREMENTS; PARTITIONS DENOTE SIZE CATEGORIES AS EXPRESSED IN TABLE 22).

Categorising the size of the enclosures using this tripartite system gives a false impression of the data. The varying scope of each range skews our perception. The frequency table (Table 22) gives an impression of the frequency chart peaking in the middle. In contrast, the higher resolution chart (Figure 118) tells a story of declining frequency as sites get larger (see Lock and Ralston, 2022: 114-118 for similar applications to the full Atlas of Hillforts database). The arbitrary nature of the tripartite system also obscures differences. On the basis of size as an indicator for the number of people and/or activities that could fit within the enclosure, Athelney at 6.8ha, would be more comparable with Arbury at 5.6ha than it would be with Salmonsbury at 23ha. This system, however, disguises this by fitting the data into categories produced in advance rather than in response to the data. One struggles to imagine that an Iron Age person visiting

Athelney and Salmonsbury would think of the two as similar, just as a person today would conceive of a village and a town as distinct.

Ultimately, the conclusions from the interpretation of size data are limited unless combined with other aspects. Thus, discussions incorporating size tend to incorporate comparisons with earthwork morphology, topography or geographic distribution (e.g. Lock and Ralston, 2022: 118-139). Varying factors can impact the size of enclosures. These may include, but are not limited to: constraints of the location (e.g. the size of a hill, island, or promontory), limited resources, population size and function (the scale and quantity of activities planned to occur within). In the case of marsh-forts, wetland surroundings may place natural constraints on the extent of enclosures. Depending on the construction type, there may also be environmental limits on the locally available materials. Much of this discussion is lost when focusing on the numerical value. These factors become homogenised into a list of possibilities for the group rather than explored individually on an individual case basis.

6.3.3 Earthworks

Vallation forms the cornerstone of discussion regarding the earthworks of hillforts. The term refers to the number of circuits of banks and ditches. These may be broken down into three categories: univallate (a single circuit), bivallate (a double circuit) and multivallate (three or more circuits). The Atlas of Hillforts lists the number of ramparts by numerical value, with a breakdown for each quadrant as well as categorical values both current and phased, including sub-divisions of these three categories with the 'partial' prefix (Lock and Ralston, 2017). For this discussion, the data has been simplified to the maximum total number of circuits in the sites' final (most extensive) phase. The data is presented below using both the simplified tripartite system (Table 21) and a system that includes the breakdown of 'partial-' vallate sites (Table 22). Lock and Ralston (2022: 139) explain that their use of the prefix, which is repeated here, reflects sites where the circuit is incomplete. For example, this would include sites such as Oakmere, where the earthworks cut off the easiest access but do not enclose the entirety of the site.

These categorisations were sourced from the Atlas of Hillforts but amended prior to analysis. These amendments were due to discrepancies in the data. The alterations are set out in Appendix 6. The application of both systems to the thirty-four case studies produces the following distributions:

TABLE 23. DISTRIBUTION OF CASE STUDIES BY VALLATION.

Vallation	Number of sites
Univallate	12
Bivallate	12
Multivallate	10

TABLE 24. DISTRIBUTION OF CASE STUDIES BY VALLATION, INCLUDING 'PARTIAL-' VALLATE CATEGORIES.

Vallation	Number of sites (single type)	Number of sites (dual type)[8]	Total number of sites
Partial-Univallate	3	5	8
Univallate	8	0	8
Partial-Bivallate	0	4	4
Bivallate	9	2	11
Partial-Multivallate	0	3	3
Multivallate	7	0	7

The tripartite categorisation suggests a slight preference towards univallate and bivallate enclosures. This distribution is consistent with general trends among hillforts (see Section 2.1.2). However, any insights and interpretations we may begin to make are cut short by errors due to the simplification of data. Differences in vallation have been used to make a range of inferences, from defence-in-depth (Armit, 2007) to monumental expressions of power (Harding, 2012: 13). Nevertheless, in uniformity, much of the nuance of these earthworks is lost. Their profile and form indicate their appearance more than simply the number of circuits. Cherbury, for example, is multivallate; however, it is unlikely this would have been apparent to anyone viewing the enclosure from the outside, given the flat nature of the terrain (Reeves, 2023). In contrast, the stepped bivallation of Clare Camp (Figure 38) features fewer circuits but is more impactful on the viewer.

[8] Where sites are included in multiple categories (see Appendix 6).

In addition, the simplification also loses the nuance, particularly of more complex architectural styles using varied vallation within the same site. Lock and Ralston's (2017) use of 'partial-' categories goes some way in attempting to address this. However, information is still lost in the campaign to homogenise the data. Take Billie Mains, for example. Described as bivallate and partial multivallate in accordance with the Atlas of Hillforts' designations (amended from the actual Atlas description of partial univallate and partial bivallate, following the results of this research – see Section 4.2.5). The enclosure is formed of a 'core' bivallate enclosure, with three sets of additional earthworks set at varying spacing cutting across the dryland approach (Figure 18). The spacing of the earthworks might suggest segregation of space, with an outer enclosed area analogous to the bailey of a medieval castle (though not implying any analogy in its function). The outermost of the three additional earthworks is detached and spaced even further from the other two. This layout may create additional segregation of space, represent phasing, perhaps a later extension, or have some other meaning altogether. This information, however, and the opportunity to interrogate it becomes lost in the simplification of earthwork descriptions. It lacks representation of the architecture in plan-view as well as by form, its directionality and its relationship with its surrounding landscape.

Hillfort studies have come a long way since the early categorisations dependent purely on the degree of vallation. Harding (2012: 53-89) describes in detail the range of construction styles for perimeter works (ramparts, ditches, palisades etc.). Nonetheless, the core categorisation by vallation persists. Databases and generalising discussions simplify earthwork architecture to uni-, bi- or multivallate in their attempts to homogenise data through descriptive categorisations. Detailed recognition of the different architectural styles, meanwhile, is constrained to site-specific discussions and comparisons or books such as Harding's specifically focused on the styles in question.

6.3.4 Topography

Hillforts are also commonly associated with prominence in their landscapes. Sites are commonly located in topographically advantaged positions, often with connotations for land management and control of people and resources. As such, topography is key to how these sites are defined and categorised. As Section 2.1.5

(Table 3) outlines, the terms used vary. The Atlas of Hillforts suggests these terms are distinct from topography, with ‘Hillfort Type’ and ‘Topographic Position’ listed separately (Lock and Ralston, 2017). The two are, however, inextricably linked (as indicated by other scholarship, e.g. Forde-Johnston, 1976).

Employing the terms used in the Atlas, the thirty-four case studies are distributed below (Table 25). Where listings were not in the Atlas (Athelney and Boney’s Island), ‘topographic types’ were assigned following similar criteria (see Appendix 6). As such, a total of twenty-five sites have been described as marsh-forts. This represents the twenty-three from the Atlas with the addition of the Athelney and Boney’s Island. Where sites listed by Fletcher (2007) were listed in the Atlas under other designations, these have been maintained for this discussion.

TABLE 25. DISTRIBUTION OF CASE STUDIES BY TOPOGRAPHY.

‘Topographic Type’	Number of sites (single type)	Number of sites (dual type)	Total number of sites
Contour Fort	1	1	2
Partial Contour Fort	3	2	5
Promontory Fort	0	3	3
Hill-slope Fort	3	1	4
Level Terrain Fort	2	6	8
Marsh Fort	12	13	25

Unsurprisingly, given the subject of this thesis, there is an inherent bias towards sites classified as ‘marsh-forts’. Nonetheless, interrogating these terms and their use by archaeologists to inform typologies presents three key challenges:

TABLE 26. CHALLENGES PRESENTED BY THE USE OF TOPOGRAPHIC TYPOLOGIES.

Definition	Of the twenty-five ‘marsh-forts’, thirteen were assigned a secondary type. This perhaps reflects ‘marsh-forts’ referring to a geological criterion rather than topographical. A review of the data from the Atlas carried out as part of this study has, however, identified some fundamental flaws which persist in the current application of the term ‘marsh-forts’. Inconsistencies in the use of the term derive from a lack of definition. As mentioned throughout this thesis, the existing definition is too broad and is open to a

	wide variety of sites, which are often dissimilar. This also reflects the application of all of these terms to a degree. Their current use as categories rather than descriptors implies a degree of regularity among the sites, which is often lacking.
Simplification	These terms also often disguise the unique ways by which the enclosures respond to their topographic positions. Attempts have been made to recognise additional features, such as marsh-forts located on knolls as opposed to inland promontories (Lock and Ralston, 2017). Through the combination of descriptive terms and a homogenising approach, however, our data and interpretations continue to be hindered.
Implication	As mentioned in Section 6.2.3, these categories have varying degrees of descriptive and interpretive function. Promontory and Hill-slope forts have connotations for routes of access and directions of visibility, respectively. Marsh-forts have implications about the nature of the environment (though also in an element of simplification, it does not recognise the diversity of wetland environments and the intricacies of the relationship with the site). By contrast, contour forts are more descriptive, relating to the natural more than the human landscape.

6.3.5 Conclusions

These three elements have formed the basis of defining and categorising hillforts for the last six decades of research. The elements represent the initial observation by the modern visitor but are also swayed by the modern visitor’s mindset. They represent the legacy of entrenched minimalist interpretations of hillforts with a focus on military potential: their scale and advantage in landscapes. The quantitative aspect of descriptive terms also speaks to the desire of the modern observer to homogenise data in order to make comparisons and inductive inferences.

These descriptive classifications have often been used to create distribution maps (e.g. Lock and Ralston, 2022). These may help us to identify patterns representing social, economic and political influences. They may, for example, tell us that larger enclosures are more common in the south of Britain. They afford us generalising observations of the past. Nevertheless, they limit us, too. While using larger datasets may help us minimise the impact of individual outliers, there remains a loss of substance. The data is cleaned, both simplified and homogenised. We lose key information about the interactions between sites and their landscapes. They imply regularity where it was not intended or realised (Harding, 2012: 14).

As Wylie (2017: 208) puts it, we must recognise our own preunderstandings in order to progress (see discussion in Section 6.2.1). Recognition of the root of these terms is fundamental to enabling the development of new classificatory frameworks. The use of descriptive terminology focused on elements derived from militaristic interpretations obscures the nuance of the many other functions of hillforts. They represent facets and patterns perceived as important by the modern observer but fail to sufficiently recognise the assumptions on which they are based (Hingley, 1984: 22). Sites are often equated through these categories, which have distinctly different interpretations. Moving away from a reliance on descriptive terminology to interpretive categories provides an opportunity to review our approach to these sites and build on our previous knowledge more meaningfully.

6.4 Formulating new classifications

6.4.1 Introduction

The formulation of typologies is intrinsically intertwined with the recognition of patterns within the data. In order to achieve this, we can adopt either inductive or deductive approaches. Discussions about the sheer quantities of data now available to us have suggested a new scientific paradigm, or rather the 'end of theory' (Anderson, 2008). Such perceptions have been challenged and rejected by archaeologists who argue for the continuation of hypothesis-driven approaches (e.g. Huggett, 2020). Such criticisms are founded on the understanding that even in Big Data, theoretical rules and structures still impact the management and use of the data. Gattiglia (2015: 115-116) has suggested that rather than replace hypothesis-driven approaches, data-led approaches should still use hypothesis, but it should now follow the analysis rather than precede it. Essentially, it argues for a more empirical approach. However, as Huggett (2020: S13-S14) has pointed out, this fails to recognise the theoretical underpinnings of data collection and management. Theory is everywhere. Wylie (2017: 204) has referred to it as the 'scaffolding of preunderstandings' and Bowker (2014: 1797) as 'theoretically structured [databases which]… enable certain perspectives and disable others' (parenthesis, author's own).

A re-examination of our current theoretical scaffolding has identified the defunct motivations behind the existing descriptive model of categorisation. A lack of clear and precise definitions has resulted in the grouping of sites with minimal commonality. Adopting an interpretive approach to classification rather than descriptive mitigates the loss of information. It places interpretation at the forefront of archaeological analysis, bringing us into contact with the material remnants of past people. Through this, we are able to attribute greater meaning to the material and classifications we use to process it. The method encourages us to engage with theory as an intrinsic part of data collection rather than something added post hoc. It causes us to question our preunderstandings and asks what we gain from the archaeological sites and material. Just as Andrews et al. (2000) argued regarding excavation methodology, by bringing interpretation to the forefront, we are able to bring greater value to our knowledge. This approach attempts to offset some of the issues of more quantitative and algorithmic computer-based pattern analysis. Fundamentally, it highlights the importance of the archaeologist as a proxy for lived experience in the interpretation of archaeological remains (Pryor, 2021: 8-9 provides an interesting anecdote to this effect; see also Hingley, 1984).

The theoretical discussion that has dominated this chapter so far raises considerations essential to the formulation of a new framework for classification. As previously mentioned, however, communicability forms a primary function of typologies (Adams and Adams, 1991: 4). Descriptive categories may, on the surface, appear to best represent the visual character of an archaeological site. The individual looking at these classifications may understand its form, but it is unlikely they will have an appreciation for the functioning of the site. This issue relates heavily to the way the existing descriptive classifications simplify sites and diminish their character. As archaeologists, we attempt to understand the past. By switching to an interpretive model, the system becomes more representative of our understanding and allows us to communicate a better sense of the site and its context.

6.4.2 Determining motivations as a foundation for interpretation

In order to develop a series of interpretive classifications, it is first essential to establish the fundamental motivations for these sites. We can take this from the current definition of marsh-forts: enclosure and wetlands. By examining the motivations for enclosure and building in wetlands, we can begin to highlight some key avenues for interpretation.

Motivations for enclosure

Enclosure has been a recurring element of human interaction with landscapes. They are both common and widely divergent. As mentioned in Section 2.1.3, they can range from a sheep pen to a grand hillfort, like Maiden Castle. Enclosures can denote settlement or sacred spaces; they may be defensive, monumental, ephemeral, or symbolic. They can encompass large areas like Territorial Oppida, tower over their surroundings like medieval city walls, or comprise low hedging demarking field boundaries and land ownership. Form and function vary wildly, and so does the relation between them.

If we use our existing knowledge of the functions of hillforts in the Iron Age as a starting point, we can narrow down our discussion. This analysis builds upon some of the ideas posited by Cunliffe (2006 - see Section 2.1.2) and integrates them into the discussion of marsh-forts.

The act of creating and managing the site over several years and possibly generations also has associations with the creation and enforcement of community. Mercer (2006: 69) and Woolf (1993: 232) have suggested, in their respective discussions of Neolithic causewayed enclosures and Iron Age oppida, that the process of construction may have been more important than the end product. Where large populations were already centralised, the construction of these monuments may have served as an expression of their identity and social cohesion or a demonstration of the group's resourcefulness. Where large communities had not yet formed such cohesion, gathering people and resources for a large project would have fostered greater centralisation. The construction would have required large groups of people, not just for the construction but to support supply networks and facilitate the diversion of part of the societal ‘workforce’. Therefore, the shared focus of constructing the enclosure would have acted as a catalyst for creating a sense of shared purpose and identity.

Following its construction, the enclosure would have continued to define social groups (Hingley, 1984). These sites may have acted as a territorial marker or position of centralised power and resources in wider landscape/ multi-site networks and relationships (see Section 2.1.2). From a more symbolic perspective, however, the act of enclosure also represents the formulation of insider/outsider dualities. Brestel (2015), studying the later Iron Age oppidum of Manching, comments on the use of boundaries restricting entry and sight to specific breaks through the earthworks. In doing so, they act to enforce social inclusion and exclusion. Chapman (2000) has shown through viewshed analysis that the interior of the main enclosure at Sutton Common was only visible from the inside, and conversely, not much of the landscape outside the enclosure was visible from the inside. The construction of Sutton Common would have required resources from a large area. Likely, the activities that took place inside would have been supported by substantial networks of transportation or exchange. What the viewshed models suggest, however, is that the activities of the interior were intentionally insular. Whilst enclosure may have functional purposes (e.g. defence or keeping stock), it is also symbolic. It suggests that the activities (economic, social, religious or other) which took place within the enclosure were distinctly separate from those in the wider landscape. The restricted views meant activities of the interior were only visible to those on the inside, and equally, it ensured those on the inside were focused on said activities and undistracted by activity on the outside. This thesis did not have the scope to conduct similar viewshed analyses for the other enclosures; however, site visits where earthworks survived considerably suggest that others may have exhibited restricted visibilities. The boundaries of the enclosures created a sense of distinct spatial identity through notions of inclusion and exclusion. This interpretation can be claimed for all sites, including those where it was possible to see over them; however, the restriction of visibility may also be considered an additional facet to the analysis of this motivation.

Enclosure may also act to consolidate or associate with previous features of the site. These may be cultural or natural. In the case of the former, enclosures have often been constructed on sites of earlier activity. Where this has been evident, interpretations often suggest that the sites held established significance (e.g. Mullin, 2012: 87-88; Garner, 2016: 261). The continued use or later re-use of sites does not definitively indicate an awareness of earlier activities but may instead speak to the appeal of fundamental features of their landscapes, for example, the views they afford or the resources they provide. By enclosing these spaces, communities may hope to demonstrate control of these locations. A similar pattern may be seen in enclosures built in natural places. Such locations may have been significant prior to the enclosure but for reasons less tangible in the archaeological record, for example, the location of a past event or a notable feature such as a tree. In some cases, these sites may have held social or religious significance. The construction of enclosures on sites of earlier ritual activity, therefore, serves to centralise ritual or votive activity and 'harness' and bound the landscape, creating defined ritual 'places' (Hutcheson, 2004: 92). This is particularly pertinent to the context of these sites in wetland (see Section 6.4.2 for further discussion).

Motivations for building in the wetlands

The choice of environment also plays a defining role in the choice of site. Landscape meaning is a key theme of prehistory, with an emphasis on natural places. These tend to lie in periphery locations, on the edge of what we have typically regarded as more productive land (i.e. dry and low-lying). These often include raised landforms (e.g. hills or mountains) and watery or wetland places (Bradley, 2000). Van de Noort and O'Sullivan (2006: 33) have contested the view of wetlands as physically and socially marginal landscapes, suggesting this perspective typically belongs to the outsider. Nonetheless, one cannot deny the intrinsic physical liminality of wetland. It exists as an intermediate between dryland and water but equally reserves its own identity and nuances. The wetlands were, as they are today, special.

Challenging landscapes

Marsh-forts are just one of several types of sites which occupy the Iron Age wetland. Alternatives include crannogs and lake villages (e.g. Cavers, 2010; Henderson and Sands, 2013; Coles and Minnitt, 1995). While they are architecturally different, the work on these sites offers us other insights into the people who lived in these landscapes. Coles and Minnitt (1995: 207), in their analysis of Glastonbury Lake Village, suggest 'the site selected was almost deliberately difficult: difficult to establish a foundation, difficult to keep dry, difficult to maintain, and impossible to guarantee against natural disaster'. Building upon this idea, we might suggest that the act of creation was as important as the final product (site), just as it forms a motivation for enclosure. Driver (2013: 133) argues that 'design schemes have been clearly imposed on the terrain for a higher symbolic purpose, often requiring more work'. Construction in these landscapes would likely have had many challenges. In overcoming these, is the act of creation representative of a triumph over nature? Here, we encounter issues with modern connotations, focusing on human domination over nature, whereby nature is a resource to exploit. Recent theoretical discussions have called for a posthumanist approach that disputes the opposition of nature and culture (Cipolla et al., 2021; Thomas, 2015: 1288). Instead, it highlights the complex relationships between humans and their environment, encouraging us to think of wetlands not just as resources but as dynamic landscapes which impacted human behaviour and cultural practices (see Van de Noort and O'Sullivan, 2006 for further discussion).

It is certainly true that the construction of marsh-forts would have encountered challenges because of their locations. However, just as human effort was spent overcoming elements of nature (e.g., clearing vegetation), environmental constraints also appear to have influenced site architecture. An example of this comes in the profile of the earthworks at some of these sites. Marsh-forts are typically situated on the margins of wetlands or islands within them. These sites are often only slightly higher than the surrounding wetland and close to the water table. This position would have caused issues in the digging of ditches. Ditches cutting or running adjacent to the wetland would have been prone to flooding and an increased rate of sedimentation. As a result, sites adapted from the traditional enclosure form of most hillforts. In the case of The Berth, it appears that the builders decided to forego ditches altogether, adapting to the natural terrain and creating banks by terracing the hillslope. There remains the potential that where only partial ditches have been identified at other sites, there may be partial construction due to these challenges. Other sites, however, have adapted in other ways. Sites such as Arbury, Borough Fen, Stonea and Sutton Common appear to have used wider, shallower ditches (see Malim, 2005: Figure 44 for comparative illustration of first three examples; Van de Noort et al., 2007: 88 for Sutton Common; cf. Harding, 2012: 74 has associated broad, shallow ditches with dump ramparts as an architectural style). Despite this, there is evidence that these ditches were still waterlogged. This may, however, have played into the appearance. Wide water-filled ditches may have given an impression of scale without the need for deep excavation. In doing so, they offered the opportunity to present an ability to overcome challenges to outsiders. It was unlikely this was a motivation for building in wetlands but indicates how designs may have been responsive to the natural environment, and how social gains may still have been produced despite natural obstacles.

Antony Brown (1997: 294) argued that prehistoric societies had ideologies which “explained” natural phenomena, were therefore deterministic, and that the perceived risks and challenges posed by inhabiting wetlands were made redundant. Such an argument, however, removes the agency of these people, suggesting they are separate from and subject to environmental determinism. Evidence of deposition in wetlands contradicts this, representing attempts to negotiate with the wetlands and the spirits which inhabit them to achieve favourable outcomes. As already mentioned, the architecture of the enclosures also appears to have elements which respond to the environment. Sutton Common may also feature a similar reactive element in the construction of the many raised four-post structures (see Section 4.2.1). These may have been a response to wet ground within the enclosure. Such timber structures would have been an additional challenge in the wet environment. It has been suggested that timbers from the initial phase of Danebury would have begun to rot within 20-30 years (Cunliffe, 1986: 49). This would likely have accelerated in the wet conditions. The construction of these structures and the wetland enclosures, in spite of the challenges, highlights their significance to the people who built them. The adaptation of architecture to mitigate some of these elements, does, contrary to Brown’s belief, represent an element of risk management. It reveals people in tune with the environment, intentionally facing but also choosing to mitigate the challenges of their environment.

Boundary landscapes or meeting places?

Hillforts have often been associated with boundaries and the control of territories (Brown, 2009: 195-213; Stanford, 1972: 313). The physical liminality of wetlands lends itself to developing these considerations. Wetlands and water both create physical barriers to land access. Wetlands, particularly, can create challenges if the ground is too wet to travel by foot but not wet enough to facilitate a boat. Often these environments require specialist knowledge to traverse. This can include knowledge of defined crossing places, trackways or where to step or not to. To the ‘insider’, however, wetlands can be easily navigable and rich environments to occupy. Wetlands, just like watercourses, can provide transport routes that dryland cannot (Van de Noort, 2004: 79-92; cf. Haughey, 2013). Ethnographic examples of forested environments, such as the Amazon basin, where dryland movement is hindered, reveal how settlements are often located along rivers, which are used as the primary means of travel (Brown, 1997: 285). A similar logic appears plausible in wetland environments. Environmental analyses at several of the case study sites in different regions have shown a tendency towards these wetlands being populated by woodland species such as alder carr. Along with the boggy ground, this may have encouraged the occupation of the wetlands to be centred around traversable routes or required the creation of traversable routes such as trackways. These routes may have provided the impetus for the construction of sites along them. They may have afforded central places for different groups travelling along networks to meet and acted as hubs for the movement and exchange between the defined routes and the 'wild' landscape. It is possible even that in predominantly wetland landscapes, where wet is the norm, that we might view marsh-forts as a monumentalisation of dry spaces for communal activities.

Building on the above mention of wetlands and watercourses, however, we must be careful not to consider the two completely the same. Mullin (2012) has suggested that differences in metalwork depositional practices represent different treatment of rivers and wetlands. In rivers, it may have taken place at boundaries between groups, whereas wetland deposits occurred in areas controlled by single groups (op. cit.: 53; Fontijn, 2002). Given the centrality of rivers within many prehistoric and historic societies, however, it seems unlikely that they were periphery. Such interpretations of rivers as boundaries have instead been associated with areas subjected to European colonisation (Beckinsale, 1969). Settlements and activity are often centred around watercourses. They provide resources and transport. If they act as territorial boundaries, then Beckinsale (ibid.) argues that it draws political control away from the core, where it is better exercised and would require cooperation between communities for safe transportation and the use of resources. The same is true of wetlands if they are interpreted as boundaries. It causes us, however, to question our understanding of boundaries, moving away from barriers to meeting places for different societal groups. Moreover, it creates additional implications for interpreting wetlands as liminal spaces between the 'real' and supernatural world.

It is also important to consider the diversity of wetland environments in determining the level to which these landscapes generated a hindrance. While wetlands have been presented as a single entity within this thesis in order to manage the scope of the study, as highlighted in Section 3.1.3, there are many forms. While bogs may feature soft ground which is difficult to traverse, alluvial environments such as floodplains may be seasonally wet or dry. In addition, there is diversity within these two types of wetlands. Fen wetland can have areas of open water which may be suitable for boats or floating materials, while raised bogs may be possible to walk across but too soft for heavier goods transported by animal or wheeled vehicle (cf. Coles and Coles, 1989: 154-155). Alluvial environments can be equally diverse, with deep single channels creating floodplains which flood occasionally or seasonally but remain dry for most of the year, or multi-channel meandering river systems such as that identified at Warham (Section 5.2.12; Keyworth, 2022) creating a broader wetland habitat. The nature of the environment would have impacted the degree to which they facilitated or hindered access through the landscape and in relation to the sites which were built alongside them.

Controlled access and defensive potential

Where archaeological sites, in general, have been located on floodplains, they have been identified in areas typically less prone to flooding (Brown, 1997: 287-288). Similar themes are evident in the case study sites, as mentioned above in the discussion of risk management. Many of the sites examined were located just out of reach of the wetland, whether spatially or in terms of elevation. Such sites would have provided dry refuges within wet environments. As such, we might consider both the challenges of constructing these enclosures as a motivation for their construction and the challenges of access following their construction. As already discussed, these landscapes would have afforded a hindrance to access. They would have required 'insider' knowledge to navigate. All of this builds a sense of inaccessibility, which some have interpreted as relating to security (Van de Noort, 2004: 62). The wetland landscape would have provided a natural obstacle to access. This barrier may have been used for defensive purposes but may also have been felt in other ways, shaping movement through the landscape. Control of movement and access may have had multiple intentions. Not least, it may have been used to inform social rules, formed specific cognitive associations through directional views, or held significance in the choreography of ritual processions. As an aside, we must also consider that while the environment (geology and nature) can be shaped by the people who occupied it, it also may impose its own will, encouraging people to adopt specific routes. Routeways may follow slightly drier ground, paths created by wildlife, or both, for instance. In attempting to determine how people interacted with the environment and identifying these bilateral relationships, we can begin to see how the duality of access and inaccessibility in wetlands mirrors the notions of inclusion and exclusion mentioned in relation to the formation of enclosure. They both offer functional defensive potential but can also enforce social ideologies and identities.

Natural places, sacred places?

Natural places have been argued as important sacred spaces in Iron Age societies (Webster, 1995). In Iron Age belief systems, they are often associated with supernatural beings (Wait, 1985). The study of votive depositions has suggested that wetland environments, in particular, acted as gateways to the supernatural world inhabited by gods or spirits (Cunliffe, 2005: 566; Wait, 1985: 15). The physical properties of wetlands helped to facilitate the view that they were 'magical' spaces with items deposited in them disappearing from the material world and becoming unrecoverable (Bradley, 1998; 2017). By making these gifts to the gods or spirits, Iron Age societies created contracts of reciprocal exchange whereby they might expect benefits in return (Ross, 1995: 441). The construction of monuments and enclosures in these landscapes therefore aimed to bind and formalise these sacred spaces. The monumentalisation of natural places demonstrates their importance to the community as well as outsiders and creates a defined space for ritual performances and interactions with the supernatural world, which imbues these spaces with their perceived power.

Considering how the natural world may have impacted the use of wetlands, we may also consider how this is represented through vegetation. Drylands and wetlands encourage different species of both flora and fauna. As such, where spaces have been cleared for human activity, this would have considerably impacted the broader ecosystem. Environmental analysis carried out at several sites has suggested evidence for woodland clearance prior to the construction of these enclosures. This would have had a functional purpose, providing space for other activities as well as materials that could be used for the construction of the enclosure and other domestic and productive occupations (e.g., fuel for metalworking). The removal of select species, such as oak, on the dryland whilst leaving others, such as alder, in the wetland would have had a profound impact on the environment and local ecosystems, both aesthetically and ecologically. Multiple interpretations may be construed from this. Selective clearing may have functional purposes; for instance, different types of wood have different properties and only some required felling (see Coles et al., 1978). Alternatively, there may have been an unconscious bias towards certain species due to the selection of other land properties, such as only clearing dryland. However, we may also consider the intangible: whether different species had symbolic associations which required their removal from landscapes or their transition from the natural to the cultural world through their use in the construction of sites or artefacts. Alternatively, the curation of the environment may have intended to highlight the significance of what remained, for example, the alder.

Islands in wetlands may have also been revered for their dryness. While they would have been functionally useful, their apparent resistance to fluctuating water levels may have equally led to symbolic meaning. This is particularly the case where their elevation above the wetland is subtle or underlying geological differences (e.g. better draining soils) discouraged wetland expansion. It is important, however, to reflect on differing perceptions of topography. The naming of subtle (often imperceptible to outsiders) rises in the Fens as hills, such as Belsar's Hill, may indicate a greater appreciation for topography among those who permanently occupy these landscapes. On the other hand, we might consider the attention is not on their resistance to flooding but on their location as 'flood-adjacent'. Flooding has significance in many prehistoric and ancient cultures, the most famous being the Nile flood in Egypt. Floods deposit nutrient-rich alluvium, providing benefits for both the natural environment and agriculture. As a result, prehistoric and ancient cosmologies have often emerged, attributing such events to supernatural powers (Brown, 1997).

Wetlands can also have mysterious properties that enforce their interpretation as other-worldly. The wet conditions can create foggy atmospheres, and multiple historical accounts have recorded phenomena such as Will-o'-the-wisp, a luminescence attributed to the anaerobic fermentation of decaying plant material in wetland environments (Chapman, 2024; Roels and Verstraete, 2001; Garlaschelli and Boschetti, 2013).

While phenomena such as this are intangible in the archaeological record, they encourage us to think more broadly about prehistoric wetland activity, how the environment would have appeared then as opposed to now and how the contemporary environment may have been perceived.

Economic potential

As well as symbolic factors, wetlands also have a high economic potential. They can often feature higher biodiversity, higher productivity and less susceptibility to drought, providing many resources and functions (Brown, 1997: 282; Table 27).

TABLE 27. WETLAND RESOURCES (AFTER BROWN, 1997 AND VAN DE NOORT AND O'SULLIVAN, 2006).

Food resources	
	Fishing
	Fowling
	Hunting
	Gathering
	Water and pasture for stock
	Rich land for cultivation
Other material resources	
	Building material for shelters
	Material for matting and baskets, osiers and coppice poles
	Water for cooking, drinking and washing
	Medicinal plants
	Curing leather
Functions as a resource	
	Transport (e.g. log boats)
	Floatability (as a means of transporting e.g. logs)
	Fording, and socio-economic foci that arise around crossings
	Exchange

As mentioned in Section 3.1.2, Van de Noort and O'Sullivan (2006: 37) have highlighted the differences in the resource potential of different types of wetlands (e.g. floodplains and peat bogs). The geochemistry of the landscapes would have resulted in differing flora and fauna and produced differing economic affordances. As discussed above, in relation to the hindrance they afforded, the differing types of wetlands and alluvial environment produced varying degrees of wetness, sometimes subject to seasonal change. Salt marshes and fens, for example, would have provided seasonal pasture for grazing (Pryor, 2001: 408), fishing and hunting opportunities (Coles and Coles, 1989) and reeds and sedge for thatching (Rippon, 2000: 41). Alluvial floodplains would also have produced land for grazing and opportunities for fishing and hunting but may alternatively have also produced fertile silts for cultivation in drier periods (Brown, 1997) and facilitated trade and transport (Van de Noort, 2004: 79-92; Brown, 1997). Nonetheless, even less biodiverse wetlands provided valuable resources. While less productive in agricultural terms, mires can afford opportunities for hunting game, foraging and produce conditions suitable to the production of bog iron (see discussion in Section 4.2.30).

The importance of all wetlands, but particularly floodplains, for grazing, has been highlighted by multiple scholars (e.g. Brown, 1997: 283; Van de Noort, 2004: 34-59; Lambrick, 1978: 113-114). In a regional study of Suffolk, Martin (1989: 32) noted that most identified Iron Age sites were located within 1 mile of a watercourse and comparing this to the Ministry of Agriculture advice for the maximum distance that cows should travel in milk, uses this to suggest a focus on cattle rearing. Of course, it is not just cattle that require water; there are many other motivations for locating sites close to water sources. Nonetheless, wetlands would have provided rich pasture for seasonal grazing and may have resulted in an added impetus to build enclosures in these locations.

These activities provide a sample of the economic draw of wetlands. In contrast to the more modern views of untamed marginal landscapes, which promoted their drainage, they are instead rich and productive. Along with the other factors mentioned above, wetlands held substantial potential for resources, meaning and function, appealing to the prehistoric communities that inhabited them.

6.4.3 Identifying interpretive features to inform new classifications

Archaeological categories are still fundamentally tied to the data. Without data supporting them, they remain hypothetical and of limited use to our applied understanding and interpretation of sites. Moving from a descriptive to an interpretive approach, however, we must amend the focus of our data analysis accordingly. In examining the potential motivations for enclosure and the choice of wetland landscapes, several themes emerge from which we can begin to form interpretive classifications. These themes centre around the relations between sites and landscapes, dryland and wetland, sub-divisions, and dualities in social space (see Driver, 2013: 137 for a discussion of duality in later prehistoric architecture). The duality of features included and excluded from sites gives us an insight into the functioning of particular spaces and an approximation of emic typologies. The themes discussed below are not an exhaustive list of these features but represent some of the most common and notable identified in this study. Neither are they exclusive, with many interlinked and interdependent, as this discussion will show.

Directionality

Recent studies, GIS-led and analogue, have highlighted the importance of directionality in interpreting hillforts (Murray, 2018; Driver, 2013). Directionality is deliberately used here as an extension of the term 'orientation', to represent not just the cardinal direction but a more interpretive focus implying relations with other aspects of the landscape. Examination of earthwork architecture and how it relates to its landscape can inform us of any directional construction biases. The direction of entrances is a common theme in the study of Iron Age sites (Hamilton and Manley, 2001: 11-12; Hill, 1996: 110). It has been associated with beliefs connected to sunrise and sunset (Oswald, 1997; Townend, 2007). The direction of entrances or the construction of more elaborate earthworks in certain parts of the enclosure can also indicate intended access routes. When combined with thorough landscape investigations, we are able to deduce the intended journey to the enclosure. In some cases, this may be direct. In the majority, however, it is heavily curated, whether by the environment or human intervention. Different positions on the approach may afford certain views. Tying in with the economies of earthwork construction, affording the most impact for a reduced cost, focus can also be directed towards these areas; slopes made steeper, features more prominent (Driver, 2013: 118-127).

Directionality may represent a perception of importance, both facing towards the enclosure and from it. Facing towards it, the viewer may identify significant features. Grandiose entrance structures inform us of a focal point of interaction as well as an intention to impress and perhaps intimidate those passing through. It affords significance to the passage into the enclosure, thereby enforcing the duality of inside and out. Looking outwards, examinations of directionality may indicate relationships with other sites or landscape features. Other factors beyond access routes may also impact the level of monumentality in a direction. It may alternatively relate to symbolic associations with its surrounding landscape. Continuing to use entrances for analogy, the Centre Gate of Buckingham Palace is by far the most elaborate entrance to the grounds but is typically reserved for ceremonial purposes, while daily access is gained via less monumental side entrances.

Visibility

Visibility is another key feature to be considered when interpreting these sites. In some respects, this theme is heavily intertwined with concepts of directionality. Intervisibility between sites suggests cognitive associations, social networks and intentions of display (Tilley, 1994; Llobera, 2007). Such studies have been applied to hillforts (Matthews, 2014; Gullick et al., 2017) using viewshed analysis and, more recently, to marsh-forts (Norton, 2021: 101-109) to infer socio-political connections and territorial groupings/ tribal identities. Matthews (2014: 7) has highlighted that many of these analyses are based on the assumption that all sites were active at the same time. Whilst this challenges some of the interpretations from this methodology, many are still valid. Sites do not need to be 'active' to participate in social cognition and associations. Indeed, in many cases it may be deliberate that sites refer back to monuments which were 'abandoned' or at least ended their primary phase of activity by the time the viewpoint was in use.

In contrast to the traditional focus on visibility and intervisibility, Norton has raised intended invisibility as a potential interpretation of marsh-forts (2013: 83; 2021: 103). Marsh-forts are typically located in low-lying positions, unlike their hilltop counterparts. As such, it follows that the traditional discussions about landscape prominence and visibility are less relevant to the discussion of these sites. If intentional, such a characteristic raises several interpretive possibilities. Following the 'go-to' for hillforts, we might question whether secrecy in invisibility provided defensive potential. This interpretation openly contradicts our widespread interpretation of the defensive functioning of Iron Age enclosures. Hillforts are typically explicit. They depend on the scale of their earthworks and their dominant landscape positions to actively defend or passively deter potential attackers. We may, however, observe the potential for regional differences based on the local terrain. The lack of sufficiently steep topography in some of the study areas covered by the case studies (e.g. the Fens) may necessitate changes in tactics. Examples such as those in

Shropshire, where nearby hilltop locations are available, however, raise questions about the wider applicability of such an interpretation. Invisibility may also be tied into the discussion about the challenges in accessing wetland sites. Fontijn (2007) discusses the 'invisibility' of depositional sites, concluding that 'knowledge on where and how to deposit items in unbounded marshes may even have been an authoritative resource, defining insiders from outsiders.' Knowledge of how to access sites through the wetlands may have acted in a similar capacity.

Aspects of landscapes that could hide the site from view could also have been used to create directionality, ensuring the site could only be viewed from pre-determined locations. In southern Chile, for example, there is evidence of large-scale woodland clearance to create pathways of intervisibility between *rehuekuel* (levelled hilltops with groups of mounds) and distant sacred mountains (Dillehay, 2007: 323). Through the curation of visibility/invisibility and line of sight, past societies would be able to create and infer meaning. By examining the relationships between locations, both intervisible and hidden, we may begin to reveal past societies' interactions with their environment and the symbolic associations attributed to certain elements.

Accessibility

Another key aspect of the sites we must consider is their interaction with their environment. Such interrogations should extend beyond the more traditional access discussions, which examine the breaks through the circuit of the enclosure. Many aspects of this have been discussed in the preceding sub-section (6.4.2) and the preceding two themes directly above. Accessibility reflects the movement through the landscape, both approaching and departing from these enclosures. It considers the challenges of movement; in the case of wetland sites, this relates primarily to the impact such an environment would have had. Impacts may include boggy ground and the specifics of vegetation; they may include whether or not boats were required to facilitate transport. By examining the movement through the landscape, we may discover elements of curation related to the themes of directionality and visibility that may inform meaning. The control of access may furthermore enforce the separation of 'insiders' and 'outsiders'. This may have had practical functions in defence, been intended to define identity, or formalised social rules and symbolic significance. By contrasting elements of accessibility and inaccessibility through different elements of the overall site and environment, we are able to discern such meaning.

Connections to the wider landscape

Continuing to look beyond the sites, we must also consider the wider environmental conditions and their impact on the perception of the space. Examining the geology of each site, we should consider the qualities and differences between wetland, dryland, and water. The different qualities of these elements were highly significant to Iron Age societies. They influenced functional decisions about land use and were significant in determining depositional practices (e.g. Bradley, 2017; Fontijn, 2002). So, too, did the nature of the vegetation have functional and symbolic associations resulting in bilateral impacts with past people. The presence or absence of certain species may have attracted or deterred. Symbolic associations or veneration of certain species may have governed human activity through belief systems that interpreted natural phenomena. Function and symbolism need not be separate, either. Alder, for example, was a common species identified in many of the landscapes examined in this thesis. Alder would have been useful for a range of activities. Moreover, it burns well even when green and 'bleeds' red sap when cut. The species is fast-growing and, managed properly, would have been a regenerative, seemingly unlimited resource. Symbolic associations may have arisen around it, which would have created social rules surrounding its sustainable management. By examining the relationship between sites and their environments, we can build a bigger picture of the functioning of sites and develop a more emic perspective from which to determine typologies.

Spatial segregation

In addition to curating the external world, people of the Iron Age also sought to control the space within these enclosures. Evidence for spatial organisation varies considerably between sites (Brown, 2009: 68-71). At some hillforts, evidence for distinct zones for domestic, industrial and storage activities has been identified (ibid.). Such interpretations typically derive from the results of extensive excavations. At a pre-excavation level, however, such spatial segregation may be identified through separate spaces such as annexes, outworks and secondary enclosures. The separation of these spaces by earthworks or palisades distinguishes them as separate spaces. Evidence for barriers continuing between these spaces distinguishes them from expansions of existing space. Spaces external to the core enclosure have separate spatial identities but maintain an association with the rest of the enclosed space. These complex relationships would have likely been realised through their use for distinct activities. The semi-external nature of these spaces raises questions about their position in the duality of inside/outside space and the potential for perceptions of liminality or differing levels of meaning. Identifying sites with these characteristics opens us to the wider complexity of sites and the complexity of functions which reside within them.

6.5 Observations and patterns towards a new classificatory framework

6.5.1 Introduction

This section will identify and implement new classifications for the thirty-four case study sites currently under the collective banner of 'marsh-forts'. It will achieve this by, first, identifying patterns relating to the relationship between site architecture and their landscapes, incorporating interpretations around the function of these sites. In doing so, the resultant interpretive classifications will form an alternate model to the traditional descriptive classifications that have been ascribed. Through this, the approach will remove sites that do not fit within the fundamental requirements for marsh-fort consideration. It will identify alternative types that have been hitherto merged with wetland sites through the application of generalising criteria and warrant their own independent analysis, which is reflective of their individual nuance. This analysis will also re-consider the dating of sites where it is currently contested and equally distinguish those that do not belong in this Iron Age-centred discourse. Following the removal of this 'residual dumping', the subsequent analysis will integrate our existing understanding of enclosures and wetlands, and identify new relational patterns across the sites to inform new groupings. This new model will enable a more representative approach to managing these sites, which will reflect their individual nuance and better convey the sum of our understanding.

6.5.2 Removing the residual dumping

The re-classification of the marsh-fort sites in this study is dependent on pattern analysis. While this study attempts to minimise any pre-determined bias, it is important to cleanse the data to prevent anomalies from influencing the new groupings. The new classificatory model aims to move away from the simplistic criteria clouding its current application. Nonetheless, the nature of 'marsh-forts' is subject to specific constraints. Geologically, there is a dependence on 'marshland'. The wide range of wetland environments offers a large scope for discussion, but sites with no relevant environmental considerations have been removed from this discussion. The second is a chronological constraint. It is recognised that 'hillforts', taken in their generic sense as an archaeological category, emerged in the late Bronze Age and are predominantly a feature of the Iron Age. While sites outside this chronological range warrant further exploration, they have also been removed from this discussion and its later prehistoric focus.

Non- Iron Age sites

Two of the thirty-four sites examined in this study have been dismissed on the grounds of chronological anomaly. These are Cash Mill and Green Island. In addition, Bomere Wood has also been excluded on the basis that the site does not provide sufficient evidence for any archaeological enclosure.

TABLE 28. NON-IRON AGE SITES EXCLUDED FROM FURTHER ANALYSIS.

Cash Mill	post-Roman?	Morphologically, the site is substantially different from other sites in this study, as well as comparable hillfort examples. For this reason, the site has previously been interpreted as a rath with a post-Roman date. (see Section 4.2.13)
Green Island	Medieval?	The site is similarly distinct in its architectural form. While the lakeside location of the site provides interesting parallels with other sites such as Oakmere and Peckforton Mere, morphological analysis to date has supported a medieval date. (see Section 4.2.17)

Until more reliable dating can be obtained to the contrary, the discussion of these sites does not appear to hold relevance to this current study. This is not to say that these sites do not warrant further examination; indeed, for some, their relationship with their environment raises their own questions. Rather, the uncertain dating of the sites risks impacting the comparative analysis of the selected case studies as a collective, reducing the accuracy of the resulting conclusions.

TABLE 29. SITES WHERE ARCHAEOLOGICAL REMAINS ARE UNCONFIRMED.

Bomere Wood	no site?	Visits to this site and an interrogation of existing evidence (e.g. LiDAR) have provided insufficient evidence for the existence of any archaeological site. Instead, it appears probable that the earthworks result from a combination of natural geological processes and historic quarrying. (see Section 4.2.6)

As with the un-dated sites, excavation of the Bomere Wood 'earthworks' is required to facilitate further interpretation and comparative analyses. This is to determine their origin as either archaeological or geological. Absent this currently, the site has been excluded from further discussion within this study.

The remaining sites included as case studies in this thesis have been accepted as Iron Age (or at least later prehistoric). Where possible, their dating has been corroborated by dendrochronology, radiocarbon dating and material culture chronologies (in that order of preference). This study has also accepted sites dated securely on architectural grounds where no samples or artefacts to facilitate other dating methods have been recovered.

The sites of Athelney, Billie Mains, Boney's Island, and Island Covert are also worth mentioning due to their uncertain dating. These sites have been included in this study, but this has been largely dependent on morphological grounds, and several questions have been raised about whether they are Iron Age or later in origin.

Table 30. Sites with contested dating included in comparative analysis.

Athelney	IA/Med.?	This site is dated to the Iron Age; however, this chronology requires further validation. Work on the site by Wessex Archaeology and the Environment Agency is in reporting as this thesis is produced and may result in future revision. The site was, however, included within this study based on comparisons with other wetland enclosures. This perceived similarity supports the tentative interpretation of previous artefact assemblages from the enclosure ditch. (see Section 4.2.3)
Billie Mains	Prehist./Med.?	This site has only been identified through Aerial Photography and has received no in-depth analysis of its likely chronology. It is listed on Canmore as a prehistoric settlement, but the basis for this is unclear. It may equally have medieval origins. Despite this contestation, the site is still beneficial to discussions about the relationship between site architecture and the environment. It has, therefore, remained in this study with caution. (see Section 4.2.5)
Boney's Island	IA/Post-Med.?	This site has also been included with caution. The dating of this site has also been contested, with considerably later historical associations with the Napoleonic War. These later associations are engrained in local traditions and the naming of the site. Despite this, the morphology of the site appears more akin to later prehistoric enclosures and has justified its inclusion here. (see Section 4.2.7)
Island Covert	IA/Med.?	This site is equally morphologically similar to later prehistoric enclosures; however, some discrepancies question the Iron Age

comparability. This includes the absence of a clear causewayed entrance and its location in a hollow at the foot of a hill, which is particularly dissimilar from other Iron Age sites. Analysis has suggested the site pre-dates CE 967; however, this still allows for the better part of a millennium since the Iron Age. Despite this, the site has been cautiously integrated into the following analysis and discussion.

(see Sections 4.2.20 & 5.2.8)

Whilst future investigations would benefit our understanding and dating of these sites, there appeared sufficient grounds from morphological comparison to support a preliminary Iron Age date, so they are included in this study. Where these sites have been included, careful consideration has been given to discussing their properties while not allowing them to determine the criteria of their classifications. Additional evidence from these sites may enable further integration in the future.

Missing wetland

While the new classificatory framework seeks to move away from the dependence on descriptive criteria – the wetland tick-box approach – the discussion of these sites and their relation to the wetland still depends on the presence of said wetland. The examination of the thirty-four case studies, both desk-based and through field observations and environmental surveys, has demonstrated the breadth of landscape types that can be described as wetland. These can range from the broad marshland of estuaries and alluvial floodplains to deep peat bogs but can also include the narrow boggy banks of rivers, where watercourses permeate the edges of the land. The examination of these sites has, however, identified two sites where the wetland description is more questionable than most. These are the sites of Arbury and Cherbury. Both sites are located in flat landscapes, and the ditches would likely have held water at times. The evidence for this is strongest at Arbury, where the low permeability of the geology enabled the waterlogged preservation of organic deposits. Nonetheless, the results of this research have not found sufficient evidence to support the interpretation that these sites occupied wetland locales. This revelation raises additional questions about the function and classification of these sites. This research has highlighted how 'hillforts' can be identified in a much greater variety of landscapes than their name suggests. Despite this, however, there still appears to be a deep connection to the natural places mentioned by Bradley (2000), notably raised landforms and wetlands. In recognition of this, the locations of Arbury and Cherbury Camps are particularly curious. They raise questions about the relative significance of other purposes and functions for these sites, questioning the existence of other intangible landscape considerations or the importance of other factors in creating large earthwork enclosures.

These sites do not form the focus of this study but still require addressing. As such, they have been included as an alternative category in Section 6.5.4 but are not integrated into the wider comparative analyses.

6.5.3 Considerations

In addition to the above criteria, other considerations should be noted in the analysis of these sites and their formation into categories. These nuances are often complicated to fully determine without intensive excavation and the recovery of high-precision chronologies. This can include determining the development of enclosures, whether they were 'original' or an evolution of an existing site, and whether they developed over multiple phases. The latter point can open questions about continuous or changing functions. Furthermore, we must consider the intangible aspects of this heritage. Sites and their landscapes can be interpreted differently, not only by archaeologists existing centuries after the fact but also by individuals and sub-groups within the communities that constructed them. We may also encounter the issue of irrecoverable evidence where sites have been destroyed by landscape activities in the intermediary.

Previous works have highlighted the distinction between 'formal' and 'organic' site architectures (Evans and Hodder, 2006: 319). Evans and Hodder (ibid.) suggest this is evident in regular and irregular earthwork circuits. They contrast what they term the 'regular' circuits of Belsar's Hill and Arbury Camp with the 'irregular' circuits of Borough Fen, Stonea Camp and Wardy Hill, suggesting in the case of the 'regular' that they share 'a sense of plan formality'. Several of the sites in this study have had flints and other earlier prehistoric artefacts, indicating a tradition of activity in these areas before the construction of the Iron Age enclosures. Norton (2013: 93, 95) has spoken to the longevity of social memory, suggesting that sites such as Sutton Common and Stonea Camp, where there is evidence of earlier prehistoric activity, indicate a 'retained memory of ritual activity'. While the earlier artefacts serve as a testament to the draw of these landscapes, it is impossible and unwarranted to suggest the Iron Age communities were associated with or even had an awareness of earlier groups and periods of activity. It is important not to compress the span of prehistory.

There are few sites where extensive excavation has allowed for a more thorough and precise chronological understanding. Of those, only The Berth, Wardy Hill and Stonea Camp have provided tangible evidence for the construction of enclosures around earlier activity centres. At The Berth, the enclosure may have resulted from the growing iron production and metalworking at the site. The construction of the enclosure served multiple potential purposes: to consolidate the resource, to enforce the identity of the social space, and to 'make tangible' and act as a medium for ritual exchange with the wetland. At Wardy Hill, the enclosure appears to have arisen around a pre-existing settlement and field system. The act of creation speaks to the formalisation of this space. The possible connection to the Isle of Coveney and the wetland inlet known as The Cove suggests that the motivations for embellishment may have extended beyond the development of the settlement to the development of the social landscape around it. It raises the question of whether the enclosure was established because of the settlement or whether it already occupied a preferred location for constructing an enclosure – a 'right place, right time' hypothesis. Stonea Camp differs somewhat from the other two sites in that it has not provided evidence for earlier activity directly within the bounds of the later enclosure. The site forms part of the Iron Age phase in a long sequence of landscape use stretching from the Neolithic and continuing long past the enclosure was abandoned. The area around the site features substantial domestic activity and an established ceremonial/ritual landscape. It includes a Neolithic cursus, a possible causewayed enclosure and multiple Bronze Age burial monuments. Whilst we must remain rightly cautious about the longevity of social memory, these monuments would have formed noticeable landmarks. As tangible activity undoubtedly continued in this landscape, we must question whether social and cosmological significances also continued. These sites demonstrate that their construction does not stand isolated within time. Some sites may have been developed directly in response to the requirements and motivations of their time; however, some may have been influenced by previous activity and events. Such past influences may have been active until the time of the Iron Age enclosures' construction, or they may have formed remnants of distant pasts whose meanings were lost but were re-interpreted and integrated into the social beliefs of the Iron Age people. Even among the three sites discussed above, we may already begin to see the spectrum of tangibility from the surer correlations and motivations at The Berth to the vague potentials of ritual landscapes at Stonea Camp.

These three sites also demonstrate how motivations, designs and techniques may have changed across their multiple phases. Though speculative, examining change over longer periods raises questions about short-term intra-phase changes. Social action has the potential for reaction. It is difficult to determine whether the purpose and function of an enclosure remained the same from its inception to the completion of its construction. Scarre (2011: 19-20) encourages us to consider the 'multi-vocality' of monuments. Sites may mean different things to different people. Large enclosures likely formed central places. Traditional use of the term 'central places' focused on the centralisation and redistribution of resources (e.g. Cunliffe, 2005: 590-593). The term is used here, however, to encompass a broader range of considerations. The construction of the enclosures would have brought together groups which would have typically been spread over larger areas. Once constructed, they may have attracted visitors from further afield as venues for gatherings, trading hubs or landmarks for personal meetings. These are just a small sample of the various possible groups that may have used these sites. With a diversity of people comes diverse cultural systems, impacting the different ways people may have viewed and interacted with these spaces.

To interpret the wide variety of past perceptions of landscape, we must recognise that different preunderstandings shape our perceptions than those that influenced Iron Age people's conceptualisations of their environment (Knapp and Ashmore, 1999: 19-20; Lemaire, 1997; as well as recognising the perceptions of historically invisible peoples within this - e.g. Cipolla et al., 2024; Frieman, 2024). Culturalist views of landscapes as cognitive constructs have been criticised for polarising nature and culture (Tilley, 1994: 23; Ingold, 1993). Instead, we must adopt a post-anthropocentric, post-humanist approach, considering cultural factors as part of and subject to environmental factors. In doing so, we may develop a greater appreciation of the relationships between sites and their landscapes in the past.

The examples of Stonea Camp, The Berth and Wardy Hill enabled the discussion above, as already mentioned, due to the extensive excavations that have taken place at these sites. Only twelve of the thirty-four sites have had any mentionable excavation. These range from the complete excavations and detailed monographs of Sutton Common and Wardy Hill to small-scale test-pitting and partial trenching at Athelney and Warham Camp (Table 31). Therefore, It is important when comparing these sites to consider their varying capabilities as data sources. The archaeological data that does survive is both fragmentary and incomplete. As was mentioned in Section 3.1.2, the location of 'marsh-forts' makes them particularly susceptible to damage and destruction. Many of the sites have been ploughed, bulldozed or extensively quarried. Skipwith and Tharston are now lost to us, with only limited historical records to reveal their former existence. As archaeologists, we have become used to dealing with the fragmentary nature of archaeological data. We must, however, remain considerate of how the diverse extents of this fragmentation can impact our analyses and syntheses (cf. Frieman, 2024). It can create unintentional biases where material that survives in greater quantity or has received greater attention can acquire disproportionate significance.

TABLE 31. LEVEL OF INVESTIGATION AT SITES EXCAVATED.

		(Full excavation, considerable publication e.g. monograph = 3; Modern partial excavation, high level of data if minimal intervention = 2; Limited excavation =1)
Arbury Camp	Evaluation trenching and open area excavation of entrance	2
Athelney	Limited excavation of possible Iron Age features, dating evidence recovered*	1
Burgh Camp	Large scale excavations and published monograph	3
Cherbury Camp	Limited excavation complimented by survey of interior	2
Dinas Dinlle	Intensive excavation as part of CHERISH project, awaiting publication	2 (3?)
Oldbury Camp	Limited excavation complimented by survey	2
Salmonsbury Camp	Intensively excavated (although parts somewhat dated) but complimented by thorough extensive geophysical survey	2/3

Stonea Camp	Large scale excavations with multiple publications including a book	3
Sutton Common	Large scale excavations and published monograph	3
The Berth	Intensive excavation and partial survey, awaiting publication	2
Wardy Hill	Large scale excavations and published monograph	3
Warham Camp	Partial historic excavation and modern test-pitting	1

*new excavations at time of writing

6.5.4 Architecture and environment: new alternative categories

By the river

An emergent pattern that arose through the interrogation of the case studies is the proximity of many sites to watercourses. These sites appear to incorporate watercourses into their architecture-landscape relations in a variety of ways. Some appear to be situated in proximity to watercourses to provide water for people and livestock, while others appear to use the watercourses as natural barriers, similar to the role of topography in promontory enclosures.

River Type 1: River Promontory

One of the patterns that emerges from the comparative analysis of the case studies is the apparent integration of rivers in forming barriers. Such properties have been identified to varying degrees at six sites: Billie Mains, Borough Hill, Bullsdown Camp, Clare Camp, Tharston and Y Werthyr.

Billie Mains provides the clearest example of this architecture-landscape relationship. The enclosure is located in a 'V' between two streams, which were likely more substantial in prehistory. The earthworks of this enclosure appear directional, with an additional two or three rows of vallation facing the dryland approach. The watercourses form a natural barrier integrated into the boundary of the enclosure, allowing construction effort and resources to be concentrated on the side where dryland access could be gained. The architecture of the site suggests conscious decisions about the economies of construction. It suggests its focus was on external activity to the north-east, possibly to the other prehistoric monuments there or to other activities which have not yet been identified. The site does not appear to respond to the Iron Age enclosure on the hillslope to the south. Its relationship with the watercourses appears to be more functional, with the primary focus on its use as a barrier. The use of water as a resource likely formed a secondary appeal, but there is no evidence to suggest symbolic or ceremonial functions for the watercourses.

Clare Camp also shares similar attributes. It only has a watercourse running along one side of the enclosure, but more notably, it appears that the earthworks share a directional bias towards the dryland approach. This interpretation should receive some caution; however, as modern buildings have encroached on the river-facing side of the enclosure, there is some potential for the destruction of earthworks. It is also worth noting that the enclosure has a river-facing entrance, suggesting there may be greater use of the river. By contrast, the outer earthworks of Billie Mains were completely open on these sides, and they could be associated with a secondary purpose: access to water.

Bullsdown Camp and Y Werthyr appear to have had more symmetrical earthwork circuits. In this, they do not exhibit the same element of directionality found at Billie Mains and Clare Camp. Bullsdown may exhibit some directionality, but this is restricted to the positioning of its entrance. The entrance faces north-east towards the river. Access to this enclosure from dryland would, therefore, have required passage around the perimeter of the earthwork circuit, extending the duration the boundary was observed before it was possible to pass within. Nonetheless, the enclosures are located on 'promontories' with watercourses partially surrounding them, adding an additional barrier to the earthworks. At Bullsdown Camp, the River Loddon and its tributary, likely larger in prehistory, circle the site on three sides. At Y Werthyr, a similar result is achieved by the river on two sides, with the third side covered by the wetland operating as a natural obstacle. Borough Hill and Tharston may provide additional examples of this architectural-landscape form; however, as their architecture has been partially and fully destroyed, respectfully, and a lack of information for these lost areas has made it so far impossible to verify. At Borough Hill, the river-facing side has been destroyed; however, the enclosure's position in relation to the topography and the locations and types of later activity on the site suggests this perceived directionality is more likely the product of survival than the original design. Instead, it would seem more likely that the enclosure was originally complete and shared morphological similarities to Bullsdown Camp. Nonetheless, the sites equally occupy promontory-style locations with watercourses on three sides.

While some sites exhibit greater adherence to this architecture-landscape scheme, all of these sites suggest an integration of watercourses as a natural obstacle. This analysis, however, has equally suggested that this is on a spectrum. Billie Mains exhibits the clearest indication of directionality representing the consignment of watercourses to a convenience that minimises the cost of enclosure. The other sites occupy sites that utilise watercourses as similar obstacles; however, river-facing entrances and a lack of clear directionality raise the possibility of additional interpretations and comparisons.

River Type 2a: Riverside

Many of the sites located alongside rivers show different types of site-landscape relations. The earthworks in this category are often more uniform, showing no directional bias. The enclosures appear to be positioned beside streams for access to the water or to overlook and possibly control movement along the river. This theme appears to be common among several enclosures across Britain and encompassing a variety of sizes. Bryn Maen Caerau and Narborough provide particularly clear examples. Both appear to be broadly circular enclosures and are located at the edge of slightly higher ground overlooking river valleys. The previous categorisation of these sites as 'marsh-forts' stems from the alluvial floodplains which run alongside the edges of the current river channels. Neither site, however, has provided sufficient evidence for a substantial wetland environment besides a relatively narrow river margin. This more detailed examination of their environments questions the validity of applying the 'marsh-fort' classification. The focus of these sites appears to be the rivers, and it is therefore important that this is reflected in our classification. The position of these sites on the edges of the higher ground overlooking the rivers would have made them highly visible. We may, therefore, draw on existing interpretations of hillforts to suggest notions of landscape dominance and control, either physical or symbolic, over the river, the people using it and those passing along it or across it (Hutcheson, 2004: 6 posits Narborough may have overlooked a river crossing). The uniformity of the earthworks on both sides (facing towards and away from the river) suggests that the enclosures may have acted as conduits for interactions between the dryland and river environments, connecting people and resources, and facilitating interactions such as trade and transport.

Burgh and Clare Camps have several interesting similarities. Both appear roughly quadrilateral and have received similar damage to their river-facing earthworks. Nonetheless, they may have shared similar site-landscape relations to Bryn Maen Caerau. Both overlook river valleys and may share similar interpretations regarding their control of the watercourse and surrounding landscape. It has been suggested that Clare Camp may share some of the 'river promontory' type characteristics regarding the directionality of its earthworks. This interpretation is subject to whether the second outer earthworks were never constructed on the river-facing side or whether they have been destroyed. Nonetheless, the evidence of an entrance on this side through the surviving earthworks may signify interaction with this resource. The construction of a large earthwork entrance represents an intentional formalisation of this interaction. This entrance appears grander than expected if it was solely intended to enable the collection of water for occupation within the enclosure. Instead, it would be a significant feature of the enclosure, viewed from the river. It would have governed access to and from the river, enforcing the boundary and the duality of inclusion/exclusion.

Bullsdown Camp, Tattershall Thorpe, Tharston and Y Werthyr also appear to exhibit both characteristics of 'river promontory' type sites and 'riverside' types. Their uniform circuitry (real or interpreted) represents a more equal treatment of the riverine and dryland landscapes. The four sites occupy elevated positions over their landscapes. As such, their intention corresponds more with traditional hillfort interpretations of landscape dominance. The earthworks at Y Werthyr are considerably more damaged than those at Bullsdown Camp due to later land use, and at Tharston, the earthworks have been destroyed. At Bullsdown Camp and Tattershall Thorpe, it has been possible to discern elements of directionality in the orientation of their entrances more clearly. Bullsdown Camp has a single entrance that faces the river. The discussion above has noted the 'defensive' use of the river and how this orientation may have extended its dominance over the dryland approach. The orientation may also represent the connection between the enclosure and the river. The entrance broadly aligns with the confluence of Bow Brook with the River Loddon. The borehole survey along the edge of Bow Brook suggests it was likely a larger watercourse in the past. Given this, it is likely that this confluence was a significant link in a river-based transport network. It is possible that the merging of these two watercourses also had symbolic associations; however, this is not within the scope of this study to expand. At Tattershall Thorpe, whilst the site is now destroyed, historic plans show two entrances, one facing north towards the dryland approach and the other south-east towards the River Bain. There is no evidence to suggest that either entrance was more substantial or important. Instead, there is equal treatment, symbolising the enclosure's role as an intermediary for movement between the river and dryland. Interestingly, the site is also located near the estuary of the river into the Fens and then the prehistoric coast, suggesting the site was involved in considerably wider social and economic networks. All four sites, however, appear to have sufficient evidence in their landscape relationships to suggest they served as conduits for interactions, as discussed above.

Lastly, Borough Hill and Warham Camp are also worth discussing here. Warham Camp is situated on a hillslope overlooking the River Stiffkey. The directionality of the hillslope tilted towards the river provides clear evidence for a close association. Recent geoarchaeological surveys have revealed that the landscape differed considerably from the present. Prior to the channelisation of the river, it is believed the landscape was a boggy morass, possibly with multiple shallow channels of water passing through. Nonetheless, the overall form of the wetland reveals the wider valley of the river. At Borough Hill, similar themes have been identified. Palaeoenvironmental analyses suggest that river channels in this period had begun to be infilled, generating a broader wetland landscape which afforded greater hunting and grazing opportunities besides established grazing activity (Paul et al., 2016: 90). Such environments, whilst predominantly wetland and suited to the discussion below of 'marsh-forts', differ from other wetland environments in the through flow of water. Even reduced by infilling creating shallow channels, such action opens the potential for riverine transportation and other associations and connections. Whilst the environment may differ from the other examples in this category, such as Bryn Maen Caerau or Narborough, it is likely that elements would have been recognisably comparable to Iron Age societies and represent at least a partial shared functionality.

River Type 2b: Streamside

Hetha Burn West has been separated here from 'Riverside' type sites. While it exhibited many similarities with the sites discussed above, the scale of the watercourse has highlighted the need to reconsider the relevance of some of the interpretations. The site is located on a hillslope overlooking Hetha Burn. The local topography means the site is closer to the source of the watercourse than its widening into a river, which allows for a greater scope of function. There is no evidence to suggest the burn was wider in the Iron Age, and as such, it would not have easily borne transport or flotation. Instead, the landscape represents a reduction of the 'riverside' type and, subsequently, a reduction of associated interpretations. Taken in the context of other broadly contemporary enclosures higher up the slopes, the focus of this enclosure was more likely on access to the resource of the water itself. The lower part of the valley it occupied would have made for good grazing land, with the burn supplying water for both livestock and the people who managed them.

Lake Type: Lake Promontory

Critical interrogation of the case study sites has also identified two which are better associated with lakes[9] than marshes. Oakmere and Peckforton Mere, located in Cheshire, are situated on promontories extending into or abutting lakes. Oakmere is located on a small promontory extending into the side of the lake. The earthworks comprise a single side, which cuts off the promontory. The lake forms the remaining boundaries of the site. From this, we may draw some comparisons with the 'river promontory' type, particularly Billie Mains, which exhibits similar directional bias. The earthworks suggest that attention was focused on access from the dryland, with the water primarily viewed as a natural barrier. Peckforton Mere follows a similar pattern, although there is additional environmental complexity. The enclosure sits at the end of a promontory abutting a lake on its western side. Analysis of the boreholes was inconclusive as to whether land to the north and south of the promontory represented wetland or was limited to a seasonal floodplain. Nonetheless, the directionality produced by additional earthworks across the promontory on the dryland approach contradicted a potential total absence of constructed boundary on the lakeside, suggesting that

[9] 'Lake' is used here instead of 'mere' to distinguish between the bodies of water and the enclosures which are named after their locations.

access and external activity were focused on the dryland. While the lakes would have been a valuable resource for any activity in or around these enclosures, the architecture-landscape relationship suggests an intentional directionality to the enclosures in favour of the dryland. It would imply that the bodies of water were primarily viewed as boundaries, with other attributes relegated to secondary significance.

Other sites in proximity to rivers

Three other sites have been identified as being close to rivers but exhibit greater complexity in their environmental landscapes: Athelney, Holkham Camp, and Oldbury Camp. Athelney is located on an island surrounded by wetland but originally cut off from the nearest dryland promontory by the River Tone. Evidence for a bronze age trackway and a medieval account detailing a causeway suggest that the river was crossable in the Iron Age without the need for a bridge (see Section 4.2.3). We might, therefore, interpret a landscape similar to that which has been interpreted at other sites, such as Borough Hill or Warham, where shallow channels cut through the marsh. This interpretation suggests that the wetland was the predominant feature of the Athelney landscape rather than the river connection. Nonetheless, we may consider that the river may have facilitated transport and connections across a wider area.

Another interesting case is Holkham Camp. The enclosure is situated at the end of a promontory within a coastal marshland. Historically deep enough to allow ships to pass through, a tidal creek runs directly south of the enclosure (see Section 4.2.19). It has not been possible to confirm the existence or extent of this watercourse in prehistory. That said, it raises the possibility that the south-facing entrance of the enclosure was constructed to provide access to the creek for water transport. The additional earthworks on the south side of the enclosure show directionality towards this creek, symbolising its significance. The elaborated entrance would impress water-borne travellers accessing the enclosure from this side. In this sense, we may draw comparisons with the interpretations of the 'riverside' type enclosures above. The landscape around Holkham Camp, however, adds complexity and difficulty in assigning it to that classification. The attempt to categorise the site highlights the importance of determining the difference between rivers and marshland. While they share some similar attributes, such as allowing for access via boat, the two environments are sufficiently distinct so as not to be comparable enough to allow mutual classification.

Oldbury Camp shares a comparable landscape to Athelney in that it occupies an island surrounded but cut off by the River Oldbury Naite Rhine, feeding a tidal inlet which passes between the island and the nearest dryland promontory. The proximity to the coast, however, is where Oldbury Camp differs from Athelney. The island sits parallel to the River Severn near its mouth. The landscape of the site is, in simplest terms, complex. It is surrounded on three sides by wetland fed by flooding, likely exacerbated by tidal activity. Although geoarchaeological analysis has suggested that the land to the south was dry by the Iron Age, the site was cut off by the river and inlet. In this regard, we might consider the enclosure not on an island but at the end of a promontory into the wetland, with the river acting as an extension of the earthworks, cutting off the end of the promontory. This landscape feature would have required crossing, and no evidence of how difficult it was to cross or how this was managed in the Iron Age has yet been identified. The location of the site alongside the River Severn adds additional complexity to the interpretation, drawing similarities to the 'riverside' type sites above. The site demonstrates the complexity of categorising these sites. Sites may feature multiple interpretive attributes which could be recognised as similar to other sites by archaeologists and the people who constructed them without adhering to any specific 'pigeon-hole'.

Other sites, such as Island Covert, have been identified as being in broad proximity to rivers but have not been included here. They have been omitted where rivers are perceived as playing a less significant role in the functioning of the site.

Level Terrain Dryland

This study has identified two sites that were not associated with a substantial body of wetland or water. These are Arbury and Cherbury. These two sites were removed from the main body of the discussion in Section 6.5.2; nonetheless, they have been mentioned here as representing a new type of site. Examination of their landscapes questioned their wetland association, in the case of Cherbury, overturning previously held assertions. Several less tangible interpretations may be posited for these two cases; for example, they might be situated along terrestrial trade routes, fit within local centralised economic networks or relate to territorial identity. Their low-lying locations afford them elements of invisibility, as discussed in Section 6.4.3. Particularly interesting in this regard is the multivallation of Cherbury Camp, which, without a hillslope to stagger them, becomes invisible behind the front bank. This design contradicts typical interpretations in hillfort studies of multivallation as a display of power. The extra work spent creating additional earthworks would only have been observed while passing through the entrance. These sites represent an altogether new type of site that warrants further attention.

6.5.5 Architecture and environment: new types of 'marsh-forts'

Only twenty of the original thirty-four sites previously assigned 'marsh-fort' status appear to have sufficient grounds for such. This includes 13 out of 23 sites from the Atlas of Hillforts (57%) and 14 out of 18 from Will Fletcher (78%; *Sutton Common* monograph and pers. comm.). The accepted 'marsh-forts' include all seven of the sites appearing in both gazetteers. The refinement of this list follows the removal of sites that were not dated to the Iron Age, were not believed to be archaeological, were focused on rivers instead of wetland, and did not appear to have any watery connection. However, not all the sites mentioned in the preceding discussion have been removed from the following. This is due to the complexity of their landscapes, which exhibit features concurrent with multiple classifications. The twenty sites are set out below with any additional categories listed:

TABLE 32. REFINED GAZETTEER OF 'MARSH-FORTS'.

	Additional classifications
Athelney	'Other sites in proximity to rivers'
Belsar's Hill	
Boney's Island	
Borough Fen	
Borough Hill	River Type 1 & Type 2a
Dinas Dinlle	
Holkham Camp	'Other sites in proximity to rivers'
Island Covert	
Oldbury Camp	'Other sites in proximity to rivers'
Peckforton Mere	Lake Promontory Type
Salmonsbury Camp	
Skipwith	
Stonea Camp	
Sutton Common	
Tattershall Thorpe	River Type 2a
The Berth	
Wall Camp	
Wardy Hill	
Warham	River Type 2a
Y Werthyr	River Type 1 & Type 2a

Examination of these sites has revealed several further patterns of comparisons and differences. They highlight the range of different ways these sites interacted with and responded to their environments. The analysis of these has identified the classifications below. Though it was not the intention of the analysis and grouping, many categories have formed dichotomies. Sites were identified on islands or the edge of wetlands. Some face into the wetland, while others have their 'backs' against it. Some were associated with routes across the wetland, while others were associated with routes into the wetland, both physically and symbolically. These dichotomies have been accordingly labelled 'a' and 'b' for Types 1 to 3. Type 4 represents those sites with secondary enclosures or annexes. The application of these types is not intended to be exclusive, and elements of sites may belong to multiple categories. It is intended, however, that in their application, these new terms reflect the site-landscape relations with a greater degree of respect to their individual nuance and meaning than has previously been done.

Type 1a: Islands in the wetland

Several sites were identified on islands in the wetland: Athelney, Dinas Dinlle, Oldbury Camp, Sutton Common, The Berth and Wall Camp. Islands are commonly used locations throughout prehistory (Brown, 2003). They provide naturally defined enclosed spaces, sometimes substituting artificial boundaries altogether (Chapman and Gaydarska, 2006). Islands are typically viewed as isolated spaces which allow the control of access. They can require specialised means, i.e. boats, or access to artificial routes such as trackways, which are open to social control. In doing so, islands reaffirm social identity, differentiating between 'insiders' and 'outsiders'. However, islands can also be highly connected, with water transport facilitating networks and shared identities across the wider landscape (Rennell, 2010). Brown (2003: 10) discusses how the proximity of riverine islands to the domestic and agricultural sphere, whilst remaining separated, has contributed to these locations forming liminal spaces. While wetlands have been traditionally viewed as marginal spaces, far removed from the dryland, agricultural world, this is not always true (e.g. Van de Noort and O'Sullivan, 2006). Human activity shows networks of considerable interconnectivity between these two environments. While these marsh-forts are located on islands they are not isolated from the "dryland world". The excavation of Sutton Common revealed one such example. The masses of four-post structures, quern stones and preserved remains of grain suggest the site was connected to a large agricultural community (Section 4.2.1). Nonetheless, its island location represents a clear separation. The island is land but surrounded by wetland. In its natural enclosure it defines a social space within a landscape which is harder to curate than the dryland used for agriculture. It represents a transitional point between the two spheres of land and wetland, acting as a conduit for interactions of all natures: social, economic, as well as ritual and otherwise.

Sutton Common and The Berth provide two comparable architectural forms and a distinct relationship with wetlands, incorporating natural islands. Both have two enclosures: a small enclosure upon the edge of the adjacent dryland, connected by an artificial causeway to a larger enclosure occupying an island within a peat bog. Excavations of each have revealed the internal activity of each to be vastly different. Despite this, their double enclosure form and the use of an island reveal a similar engagement with the wetland environment. It is significant that despite the natural boundary afforded by the wetland enclosure, both sites have adopted artificial boundaries as well. While both islands are accessible by short causeways from the "mainland", the nature of the islands is such that unlike promontories, they are still cut off and surrounded by wetland on all sides. Both exhibit, at minimum, an artificial boundary around the circumference of most of each island. The only exemption to this is on the eastern side of The Berth. By constructing earthworks and palisades, the Iron Age communities duplicated the creation of enclosure and sought to formalise the sense of place, reaffirm identity and demonstrate power and ownership. The small enclosures and causeways curated and controlled access to the sites. In doing so, they enforced social conventions over how the island was reached. Furthermore, the decision to full encircle the islands with artificial boundaries may also have significance. Viewing the wetlands as other-worldly or supernatural (see Section 6.4.2), we might also interpret them as revered or potentially dangerous spaces. The islands on which the enclosures sit are not just physical features of the landscape but represent refuges, a small sanctuary of the living world amongst the wetland world connected to the spirits and the dead. Fully encircled, they may only be accessed via the determined route. At Sutton Common, the stake lines that follow the edges of the causeway serve to keep people from leaving the path, marking the edges physically and symbolically.

At Athelney, Dinas Dinlle, Oldbury Camp and Wall Camp, similar themes of enclosure can be identified. All of these sites were located on geological islands surrounded by wetland. Dinas Dinlle differs slightly in that the site was accessed by a narrow but natural geological raised causeway. Nonetheless, the site appears to have been otherwise surrounded by wetland, creating a sense of place comparable to the other sites where artificial causeways and trackways would have been required to enable access. As with Sutton Common and The Berth, all the islands were elaborated by artificial boundaries. They feature full circuits, allowing for similar interpretations to those mentioned above. That is, except for Athelney. The earthworks at Athelney have only been identified, forming an arc around the western end of the island, facing the closest point on the adjacent dryland, and likely the intended line of access. In doing so, it ties our interpretation of the island to the theme of directionality. Whether to defend or impress, it suggests that access to the island was most likely from the west, and it was here that the builders concentrated their efforts on construction. As with the River Type 1 site of Billie Mains, it suggests the wetland environment was primarily viewed as a natural obstacle.

As mentioned in the above section on 'other sites in proximity to rivers', Athelney and Oldbury Camp were cut off by rivers. They were, however, located in a large peat bog and an area of tidal flooding, respectively. In addition to Sutton Common which was located in a peat-filled palaeochannel, The Berth and Wall Camp in peat basins and Dinas Dinlle in a coastal marsh, these sites represent a large variety of wetland environments. Despite this, the intention behind the formalisation of spaces is recognisable across them all. Whether physical enclosures denoting social identities and meaning or symbolic refuges acting as conduits between the living and land, and the spiritual and wet, they represent a visible attempt by their builders to construct a sense of place and manage the relationship between these two opposing environments.

The naming of Island Covert might also suggest a clear fit within this type of site; however, analysis of the landscape reveals a unique setting. The site appears as a raised 'island' in a hollow at the end of a raised topographical promontory. The borehole survey carried out as part of this study, however, has only identified potential wetland on the southern side of the enclosure. These results contradict previously held assertions and poise the site as somewhat of a curiosity. One could argue that the site is topographically an island; it sits isolated off the edge of an area of higher elevation. The wetland between these two elevated areas forms a barrier. Nevertheless, the absence of wetland on the other side of the enclosure shows it was not cut off. Historic photos of flooding show that even after flooding in 2007, one of the worst floods to hit the area in recent decades, water was restricted to the former channel shown in the DTM and did not reach as far as the enclosure (Figure 52). The small-scale and localised nature of the 'wetland' in this hollow is curious, as is the decision to position the enclosure here. As previously mentioned, further work is undoubtedly needed to understand this site and its environment, and to establish a classification beyond its preliminary allocation here.

Type 1b: On the edge

In contradiction to those sites located on islands within the wetland, the other thirteen sites can be classified as on the wetland edge. Many of the functions applied to those on islands are equally relevant here. The construction of enclosures on the edge of dryland and wetland environments served to formalise and manage the interactions between them. There is some variety in the position of these sites "on the edge". Some were on the edges of large areas of wetland, while others occupied promontories extending into the wetland. Of these, the sites occupied different positions; some directly abutting the wetland margin, while others were set further back on the dryland and took advantage of other nearby landscape features. While they share some similarities, each variation equally necessitates individual interpretations of their site-landscape relations.

Type 1bi: Close-proximity "Marsh-side"

This type refers to sites on the edge of and directly abutting the wetland. Four sites fit this categorisation: Salmonsbury Camp, Stonea Camp, Wardy Hill and Warham. The close physical relationship between these enclosures and the wetland represents a similarly close engagement. The wetland was an unavoidable feature in the use of these enclosures. The wetlands may have provided essential resources for activities in the interior. Close proximity allowed direct access without the need to travel from the enclosure. In doing so, the location brings the wetland into the social space, integrating it in the identity of the enclosure.

The location of these sites on the edge of the wetland, unconstrained by natural boundaries such as those on the promontory types, raises the question of the significance of these specific places. It is impossible to recover every intangible motivation which may have influenced these decisions. Three of the four sites, however, have been connected to earlier monuments in the landscape. Salmonsbury is built upon the site of a causewayed enclosure. Stonea Camp is situated in a heavily occupied domestic and ritual landscape with many local Neolithic and Bronze Age monuments. Wardy Hill developed from earlier occupation and a field system. Whether Warham Camp has similar associations to pre-existing monuments and communities is unknown. The three sites where we do have such evidence, however, suggest the sites along the marsh edge may have at least partially been selected based on earlier activity. It suggests the longevity of social memory at these sites. Earlier monuments and landmarks signalled them as holding desirable economic resources or as special places, imbued with social and religious importance by generations, possibly centuries, of prior activity.

Type 1bii: Distant "Marsh-side"

By contrast, this type includes sites in similar landscape positions but set further back to avoid direct contact with the wetland. Belsar's Hill, Borough Fen, Skipwith and Tattershall Thorpe all fit this categorisation. These sites appear to have been selected for an elevated advantage over the wetland instead of a direct interaction. As a result, they are set further back from the wetland edge. By choosing these locations over direct contact, the enclosures represent an intention to show domination over their respective landscapes. Although not as pronounced as the typical examples of hillforts we might imagine, DTMs show that all four sites are slightly elevated. The subtleties of their topographic position result from the landscapes in which they are situated. It is likely that this subtlety was not lost on the people who built these enclosures and that they would have afforded substantial views in largely flat landscapes. The sites still maintain sufficient proximity to the wetland to enable engagement. However, their location represents a primary motivation to oversee and manage the landscape from a slightly removed perspective – or at least comparative to the closer, more involved management of dryland-wetland interactions represented by 'close-proximity marsh-side' enclosures.

Type 1biii: Close-proximity Promontory

While the two previous types were restricted to the edges of wetlands, promontory sites refer to those which extended into the wetland. Unlike islands in the wetland, these sites were still accessible via dryland in one direction. 'Close-proximity' differentiates those which had direct contact with the wetland. Only one site has been definitively ascribed to this categorisation: Holkham Camp. While Borough Hill and Peckforton Mere appear to have close proximity, they have been categorised as wide proximity due to the nature of the site-wetland relationship. Holkham Camp occupies the end of a narrow promontory extending from a sand bank into the marshland. The choice of the promontory represents a utilisation of a natural landform, incorporating the edges to create natural boundaries and a sense of enclosure similar to the aforementioned island type. Moreover, it uses this landform to place the site in the heart of the wetland. Although one side maintains a clear dryland access route, the promontory creates a sense of immersion within the wetland environment, similar to the island sites. The enclosure is directly connected to the wetland environment on three sides. Similar to Type 1bi enclosures, it represents an integration of the wetland into the identity and functioning of the space. Wetland not only helped to define the enclosure but also connected the site directly to the resources and phenomena of the environment.

Type 1biv: Distant Promontory

This category represents sites located on promontories extending into the wetland but which do not appear to have or be influenced by direct contact with the wetland environment. It comprises the remaining four sites of the thirteen: Boney's Island, Borough Hill, Peckforton Mere and Y Werthyr. The interior and immediate surroundings of Boney's Island have been substantially damaged by extensive quarrying. Nonetheless, the DTM suggests that the enclosure may have originally occupied a subtle rise in the topography. A similar pattern is more clearly identifiable at the other sites in this category. The location of these sites draws together the interpretations of Types 1bii and 1biii. They balance the immersive qualities of a promontory location with the choice to adopt local elevated positions to further the dominative properties of the enclosure earthworks over their landscape. At Boney's Island, this focus may also have resulted from other factors. The promontory it occupies is considerably wider than the site – too wide to enclose completely. Its hooked form also brings the pinnacle of the promontory closer to the edge of the dryland. In contrast, the more central location of the enclosure is comparatively deeper within the wetland (Figure 20). It is also possible that its site was chosen in response to other activities in the landscape, such as the trackway; though, with a lack of dating, it is equally possible that the trackway was built after and in response to the enclosure. While the other sites are closer to the wetland, they have been categorised as distant due to the lack of direct contact. None of these enclosures suggest their earthworks were shaped by direct interaction with the wetlands. While their proximity would have undoubtedly led to engagement with the wetland environment, each site has foremost been located in response to topographic situations.

Type 2a: Facing the wetland

An architectural focus towards the wetlands is a common feature of several sites examined in this thesis. Four sites have an obvious bias in their designs: Holkham Camp, Sutton Common, The Berth and Wall Camp. These four sites have wetland-facing entrances and additional vallation on these sides. Excavation at Sutton Common revealed a grand entrance structure facing the wetland with a stake-lined passageway extending into the wetland. This entrance was comparatively grander than the entrance through which access was gained from the dryland via the causeway (see Section 4.2.1). In addition, while there is only one earthwork on the dryland-facing side of the large enclosure, the side facing the wetland is multivallate. While the eastern wetland-facing entrance of The Berth has not been excavated, the earthworks on the surface suggest it once featured a similarly substantial entrance compared to the north-facing entrance, which connects to the causeway. At The Berth, the wetland entrance opens onto the wetland at the original northern extent of the Berth Pool and the deposition site of The Berth cauldron (see Section 4.2.30). At Wall Camp, access is gained from the dryland via a causeway from the south, but examination of the earthworks shows a second raised causeway facing north-east. At this point, there appears to be more vallation than on the dryland-facing side. Holkham also exhibits a similar feature, with bivallate earthworks facing the wetland to the south, contrasting the univallate earthworks on the east and north sides, the latter facing the dryland access along the promontory. There has been some suggestion, discussed above under Section 6.5.4, that the southern entrance to Holkham may have been accessible via water and, therefore, represents a legitimate access route. Nonetheless, the overall trend, as demonstrated unequivocally by the other three sites, reveals a clear directionality of the site architecture towards the wetland.

Van de Noort et al. (2007: 113) suggested that the eastern wetland-facing entrance at Sutton Common was constructed as a 'proper' requirement of Iron Age architecture. Cosmological and social conventions necessitated an eastern entrance to form a formal threshold to the site. This concept could equally be applied to The Berth. The interpretation is predicated upon perceptions of strict adherence to this convention within hillfort architecture. Evidence from other Iron Age sites certainly suggests the favourability of east-west alignments, particularly eastern-facing entrances (Hamilton and Manley, 2001: 11-12). By integrating our understanding of the wetland environment into our analysis of these sites, however, we begin to reveal deeper influencing principles. Lock (2011) has highlighted the importance of "symbolic warfare". Ritualised warfare and associated activities could be interpreted as 'the mediation of threats to social tranquillity but with "foes" being the imagined form of cosmic origin' (op. cit.: 359). An alternative explanation for this wetland-biased directionality could represent symbolic protection against the wetland. Wetlands were viewed as the realm of supernatural beings in the Iron Age (Wait, 1985; Cunliffe, 2005: 566-570). This is supported by a wealth of votive offerings in wetland locations. Depositional activity in the Iron Age is also commonly associated with the entrances and boundaries of hillforts. Such deposits have been interpreted as symbolic or religious, emphasising the importance of these boundaries for enforcing social identity and exclusivity (von Nicolai, 2014). The construction of enclosures facing wetland environments can be interpreted as a direct attempt to symbolically enforce the boundary between the wetland and dryland. Wetlands were 'magical', liminal places, connected with the 'other' world (Bradley, 1998). In constructing monumental earthworks and entrances, the marsh-forts served to formalise the liminality of the space, enforcing social management of the interaction between the "real" dryland and the "supernatural" and "otherly" wetland. Such symbolic defence against the supernatural forces in the wetlands may have also been realised through flooding "attacks" or climate deterioration (cf. Dark, 2006; Cunliffe, 2005: 27-29). These enclosures sought to manage relations with the natural/spiritual world just as deposition in liminal wetlands have been viewed as 'gifts for the gods' to protect against climatic deterioration, encroaching water levels and declining agricultural productivity (Menotti et al., 2014; Bell, 1995). Howsoever they operated, the directionality of these enclosures towards the wetland represents an attempt by Iron Age societies to manage and negotiate their interactions with the natural wetland environment and the supernatural spirits it embodied. As with the Type 1bi sites, it indicates a reverence to the wetland, bringing it within reach of the social sphere, while the boundaries maintained a physical and symbolic separation and liminality.

Similar but muted themes have also been identified at several other sites. Belsar's Hill, Borough Fen, Salmonsbury, Tattershall Thorpe, Wardy Hill and Warham all feature entrances facing towards the wetland. At Warham, this appears to be the sole entrance despite the potential for dryland access on the east side of the enclosure. These sites do not exhibit the same strength of directionality observed at the four sites above, as they lack any apparent bias in their earthworks. Wardy Hill and possibly Borough Fen may even exhibit a greater monumentality of their earthworks towards the dryland approach. Nonetheless, they are worth discussion here as their wetland-facing entrances represent a deliberate engagement between the enclosure and the wetland. At Belsar's Hill, Borough Fen and Tattershall Thorpe, all also Type 1bii enclosures, these entrances enabled a through-flow of movement. The enclosure, therefore, acts as a gateway, managing systems of exchange and social networking – a sort of Iron Age Customs Office. Warham, as noted above, is peculiar because its sole entrance faces directly into the wetland. Excavations outside this entrance (awaiting publication) may reveal more about the functioning of this site; however, all we may conclude for now is that the wetland represented an important element. Salmonsbury and Wardy Hill, both Type 1bi, have outworks and wetland entrances connecting the enclosures with the very edge of the wetland. The outworks will be discussed under Type 4, but this 'close-proximity' access to the wetland suggests that the wetland was a key part of the social space and identity of the sites and their communities.

Type 2b: Backs against the wetland

In contrast, some sites appear to have had an opposite directionality. These sites appear to direct the focus of their boundaries, entrances and activity towards the dryland approach. Interpreting the main access route as the front, we may suggest they have their "backs" against the wetland. These sites thereby follow a similar promontory style use of the landscape, comparable to the use of steep topography in upland hillforts or water in the “River Promontory” type sites mentioned in Section 6.5.4. The wetland is primarily viewed as inaccessible and forms a natural barrier, allowing construction efforts for more elaborate boundaries to be directed towards the dryland approach (cf. Garner, 2016: 266).

The clearest example of this type is Stonea Camp. The developed phases of the site show a single set of earthworks facing the wetland, while up to three were present facing inland. It appears that the site would have abutted the wetland, although the borehole survey carried out in this study was unable to confirm this (Section 5.2.10). Excavation of the site has suggested that the only entrances were located on the dryland side. Given the directionality of the overall architectural form, it appears that the dryland was conceived as the primary access route at the time of its construction. Effort was therefore concentrated in this direction to embellish the architecture and impress people approaching the site. This interpretation is also consistent with the evidence we have for activity in the area around Stonea Camp. An examination of archaeology in the surrounding landscape suggests the development of a long-lived domestic, agricultural and ritual landscape north-east of the enclosure on the dryland (see Section 4.2.27). The presence of an artificial boundary on the wetland site does demonstrate a desire to separate the enclosure. This barrier may have had multiple purposes, including but not limited to a symbolic division of social space or a more functional role in defence from people or flooding. However, as the site developed, the phasing of the site showed a clear bias in attention towards the dryland side of the landscape (Figure 65).

Peckforton Mere also fits this classification. The site is situated on a promontory against a lake to the west, with no earthworks facing the water. The site features univallate boundaries facing the wetland to the north and south and is bivallate to the east along the ridge of the dryland promontory. Coring has raised questions about the nature and seasonality of this wetland; nonetheless, from a slightly wider landscape perspective, there is a clear directionality of the earthworks away from both the lake and the wetland. The integration of the lake in this way contributed to its discussion in Section 6.5.4 as a “Lake Promontory” site. Nonetheless, the wetland around the lake would have been a significant feature of the landscape and warrants its own consideration. The decision to have a univallate boundary facing the wetland and none facing the water reflects the physically intermediate nature of wetland. It was viewed as more traversable than water but less so than land. Through this, we arrive at a somewhat functional perspective of water and wetland as natural barriers.

Wardy Hill has a similar directionality. The development of the earthworks shows a focus on magnitude and multivallation towards the dryland approach. The enclosure integrates and embellishes an existing linear ditch system to enforce the boundary. While the main site is fully enclosed on the wetland side by the third and fourth phases (see Section 4.2.32), the outer enclosed spaces created by the earlier ditch system remained only bounded on the dryland side. Wardy Hill exhibits additional features that suggest a greater symbolic engagement with the wetland than Stonea Camp and Peckforton Mere, for example, its wetland-facing entrance, as discussed in Type 2a above. Despite this, the directionality suggests that access was most common from the dryland. In this sense, the wetland entrance is possibly better viewed as an exit. The directionality of the enclosure demonstrates an attempt to restrict access to the wetland. This concept may also be evident at Borough Fen. Like Wardy Hill, the site has entrances facing both the dryland and the wetland but features a bias in its earthworks towards the dryland. On this side, it is bivallate, while it is limited to univallate on its wetland-facing side. These sites both utilise the wetland as a natural barrier, reducing the cost of construction while also enabling access to the wetland and thereby curating interactions between dryland communities and the wetland environment.

Athelney and Y Werthyr may also exhibit similar conventions in a more limited capacity. Athelney, although located on an island, features a similar directionality with earthworks facing the nearest dryland approach. Y Werthyr, conversely, appears to back onto the wetland, utilising it as a barrier on its eastern side that compliments the river to the north and west. In doing so, both sites appear to adopt the more functional use of their respective wetlands as natural barriers. The wetlands form part of the wider architecture of the sites, acting as a cost-reduction method or accentuating artificial boundaries.

Sites which do not fit the Type 2 dichotomy

Not all of the twenty sites show a tendency to either side of this dichotomy. These are: Belsar's Hill, Boney's Island, Borough Hill, Dinas Dinlle, Island Covert, Oldbury Camp, Skipwith and Tattershall Thorpe. These sites still had close connections with their respective wetlands; however, for differing reasons, they do not exhibit clear directionality either towards or away from the wetland to facilitate this interpretive classification. For some, this may represent a dual function incorporating interpretations of both Type 2a and Type 2b sites. For others, it is the result of poorly preserved archaeological remains that limit our application.

Type 3a: Routes across the wetland

The wetland entrances of several sites have highlighted the importance of Iron Age engagement with the wetland. Some of these sites took these interactions further, "guarding" routes across the wetland. Prehistoric wetlands were highly connected places with networks of trackways and causeways linking surrounding hills and islands (Brunning and McDermott, 2013). Evans (2003: 263-270) suggested that Wardy Hill may have been situated to control a causeway to Coveney. Belsar's Hill has similarly been connected to the Aldreth Causeway. This site was later used to defend passage into the fens during the Norman invasion; however, the origins of the causeway date back to the Late Bronze Age (see Section 4.2.4). The enclosure is connected to Arbury Camp and other sites by a known route from the south (Malim, 2000). The orientation of Belsar's Hill follows this route, connecting the network to the Aldreth Causeway to the Isle of Ely. As with Wardy Hill, this route would have played a considerable role in the function of the site, facilitating exchange networks and social interactions. Located at the end of the route, before it crossed into the wetland, the enclosure was situated to manage this transition.

Boney's Island may also have been associated with a trackway across the wetland. Excavation has not revealed the full extent of the Beccles Post Alignment, but it would likely have connected to dryland near the enclosure. Boney's Island does not appear to have an entrance or element of directionality directly linked to the route. Despite this, their proximity suggests the two sites would have been connected by human activity in the area. The trackway would have allowed occupants of the enclosure to access and cross the wetland. In turn, it seems plausible that a community based on Boney's Island would have been involved in the construction and management of the trackway.

The creation of enclosures near routes crossing the wetland appears to be a recurring theme. The enclosures formalised crossing points and restricted access. Moreover, Evans (2003: 266) has suggested that those crossing the fens may have used this location to pay a toll, either to the community living in the enclosure or to the gods/ spirits of the wetland for safe passage. These sites enforced boundaries, limiting access to the wetland and its resources to those within the community and those permitted to pass through. Ritual activities, within the enclosure and engaging with the wetland, facilitated the continued use of this resource, with votive offerings enabling exchange between people and the supernaturally governed natural environment. Entrances through the enclosures at Wardy Hill and Belsar's Hill acted as symbolic, as well as physical, gateways, enabling and curating passage between two distinctly different landscapes. Through this, Iron Age societies managed social networks between dryland and wetland communities and negotiated terms in their cosmology between the dualities of dry/wet, cultivated/wild, living/dead, and real/supernatural.

Type 3b: Routes into the wetland

The correlation of marsh-forts with prehistoric trackways across the wetland demonstrates how people negotiated movement into and through these landscapes. Some of the sites, however, suggest movement not so much across the wetland but into it. This is realised physically by "dead-end" routes and symbolically by engagement with the supernatural world. Similar distinctions of "across/into" can be seen in the discussion of prehistoric trackways and platforms (Brunning and McDermott, 2013: 367). Platforms have produced multiple interpretations, including uses for hunting (Coles, 1972) or ritual activity (Chapman and Gearey, 2006; Gearey and Chapman, 2011).

Borough Fen represents the physical side of this classification. The enclosure is at the start of a long promontory extending into the Iron Age fen (Figure 92). It is ideally positioned to control access to this route into the wetland. Waller's (1994) survey suggests the promontory ended close to the Iron Age coastline c. 600 BCE; however, the 200 CE model shows peat encroachment gradually pushed back the length of the promontory. In its earlier form, the promontory may have facilitated access to the sea for fishing or trade routes. It is plausible, however, to suggest that within generational memory, Iron Age communities witnessed landscape changes that gradually made such a connection more challenging to maintain. While it would still have allowed access to wetland resources, this access would have reduced as the fen expanded. Dating of the enclosure to between 361 cal BCE – 112 cal CE places it in this intermediary period of landscape change. The people building the site were witness to the expansion of the wetland. The creation of the enclosure may well have been in response to this issue. In light of this, the promontory may have gained additional symbolic significance. It offered a natural platform into the wetland to facilitate ritual engagement with gods/spirits inhabiting the fen.

Symbolic access "into" the wetland is a common theme among these sites. The theme also ties closely with the observations made for Type 2a and shares the same sites assigned to that category. Depositional activity such as The Berth cauldron demonstrates the perception of wetland as a medium for accessing the supernatural world. Iron production at The Berth was likely dependent on iron ore obtained from the bog. Coppiced alder from the wetland may have also provided a regenerative fuel supply for furnaces. As such, the deposition of the finished metal objects in return for raw material represents a bilateral system of exchange with the wetland. Iron Age belief systems were predicated on the existence of supernatural beings. These exchanges represent an exchange with these beings, with these marsh-forts acting as portals to enable the interaction.

Type 4: Secondary enclosures or annexes

The final considerable architectural-landscape pattern identified across these sites is the presence of secondary enclosures or outworks/annexes. These create additional enclosed space. The decision to build outside of the main enclosure rather than extending the core, however, represents the creation of a distinct space. While associated with the main enclosure, this space had its own social identity, rules and function.

Secondary enclosures have been identified at Sutton Common and The Berth. Historical records from Skipwith hint at the possibility of a second enclosure; however, due to the destruction of this site, it has not been possible to verify this. The secondary enclosures of Sutton Common and The Berth share multiple similarities. Both are the smaller half to a large enclosure on a wetland island. They are equally located on the edge of the dry "mainland" and connected to the large enclosures by artificial causeways. These two enclosures have two entrances separated so that the route through the enclosure to the causeway is doglegged. Excavation and geophysics have revealed that both lacked evidence of activity within the enclosed space. Instead, their primary function appears to have been controlling the path of movement into the large enclosure. As with examples at hillfort sites, these earthworks establish 'correct paths', hiding certain views and imposing longer journeys for symbolic purposes (Driver, 2013: 137). Driver has suggested such 'choreography' could be used to heighten the impact of monumental architecture or reinforce the terms on which access is permitted (ibid.). At Sutton Common, the enclosure acts as a funnel for direct access through the stake-lined causeway. At The Berth, it also guided passage to the causeway. Here, the causeway does not appear to have been as clearly lined, and the small enclosure acts as a marker to direct the safe and proper route to access the enclosure. The high earthworks of the enclosure may also have served to hide the eastern wetland-facing entrance from view when approaching the site, ensuring it could only be observed from the interior of the large enclosure. This design and layout enforced "proper" access to the wetland by using the enclosure as a supernatural portal.

As well as separate secondary enclosures, two sites also featured outworks or annexes. Wardy Hill has its north circuit, and Salmonsbury has an eastern open enclosure. The north circuit of Wardy Hill was formed by the integration of an earlier linear ditch system. It created a large open space north of the enclosure, unenclosed on its eastern side. The borehole survey suggested that this area was likely dryland, with the wetland forming the eastern boundary of the enclosed space (Section 5.2.11). A similar pattern is observed at Salmonsbury. The enclosure features two curvilinear banks extending from each end of the eastern side like pincers towards the wetland. The eastern side of this annexe is equally formed by the edge of the wetland. Unlike the secondary enclosures at Sutton Common and The Berth, these two sites required access through the main enclosure. The use of wetland in place of an artificial boundary echoes the promontory style enclosures. They may represent an attempt to gain extra space while reducing cost. The Wardy Hill site is particularly efficient in this regard, as it recycles pre-existing earthworks to create the north circuit. The interior of the north circuit was not included within the excavation area for the Wardy Hill investigations but showed no evidence of activity (Evans, 2003). At Salmonsbury, a significant proportion of the interior of this space has been destroyed by quarrying. Furthermore, a geophysical survey of the entire site shows a considerable drop in the density of potential archaeological features in this area compared to the interior, limited to a handful of undated small potential ditch sections or pits (GSB Prospection, 2004). While connected to the main enclosures, the outworks at each site appear relatively devoid of activity. These spaces would have provided convenient spaces for keeping livestock. An alternative explanation involves the use of these spaces as large open areas for gatherings and possibly the performance of ritual activities associated with the wetland. Depositional activity in the adjacent wetland at Salmonsbury Camp may support this interpretation (see Section 4.2.25).

6.5.6 Not just architecture and environment: what occurred within?

While this study has primarily focused on the relationship between site architecture and wetland landscapes, the investigation of these sites has also revealed some evidence of the activity that occurred within them. This interpretation has been largely omitted from the discussion due to the inherent bias that has resulted from varied levels of investigation. Some sites have been extensively excavated or subject to large-scale geophysical survey interpretations. In contrast, others have been largely ignored and shaped by the scope of work possible within this research project. Where evidence has been obtained, however, the sites reveal a considerable variety of functions (see Chapter 4).

Dinas Dinlle, Salmonsbury Camp and Wardy Hill all feature roundhouses suggesting domestic occupation. Similar activity is, however, not present elsewhere. Sutton Common shows extensive connections to agricultural production, but there is no evidence to suggest the enclosure was occupied. Similarly, excavations at The Berth have revealed metalworking but no settlement. As has been discussed in relation to the function of architectural elements, it appears that ritual performance would have been a fundamental part of many of these enclosures. Ultimately, this brief overview of interior evidence demonstrates the diversity of activity. These enclosures were multi-functional, operating across economic, social and ritual spheres.

6.5.7 Regional rationales: considering wider social, political and economic factors

This study has provided a re-assessment of 'marsh-forts' across the breadth of Britain. This has been necessary to address the previous issue with the misapplication of this classification. Pope (2022: 3) has argued for a local/regional analytical focus to provide a broader synthesis and allow us to better understand past people. Regional studies allow us to explore the deeper networks between sites, other sites and their landscapes. Such methods have been applied previously to some of these sites. Some of the sites in Cambridgeshire have been associated with Trinovantian/ Catuvellaunian and Icenian tribal territorial boundaries (Malim and McKenna, 1993: 60; Evans, 2003: 268). Investigations of some sites have also explored connections to contemporary sites in the local area, identifying the movement of people between sites, trade routes and settlement hierarchies (Evans, 2003: 266-268). By exploring the architecture of these enclosures in relation to comparable sites such as hillforts, it has also been possible to identify regional styles and influences beyond the wider patterns identified here (Driver, 2013; Garner, 2016). In identifying the types within this study, this thesis serves as a starting point for future regional exploration, which can add further nuance to these interpretive classifications. In doing so, we can, as Pope argues, hope to better understand the Iron Age people who built these enclosures and inhabited these wetland environments.

Environs around Isle of Ely Regional Case Study

While this thesis has focused on these individual sites and their immediate landscapes, they do not exist in isolation. Rather, they are part of networks spanning much wider landscapes featuring many different types of sites spanning varying chronologies. While the size of this thesis has limited the scope to explore all of the associated prehistoric activity in the landscapes around these sites, the following brief case study has been developed, focusing on the Isle of Ely, to demonstrate how these sites and their newly proposed classifications fit within the wider landscape narrative.

The case study presented here is focused on the Isle of Ely, in Cambridgeshire, the surrounding fen, other islands and activity on the neighbouring dryland (Figure 119). This area includes two 'marsh-forts': Belsar's Hill and Wardy Hill. Belsar's Hill has been attributed to the categories: 1bii, 2a/ non-directional, 3a/3b (symbolic). Wardy Hill has been attributed to the following: 1bi, 2a/2b, 3a, 4 (annexe). The two function in relation to their physical landscapes in different ways and this is reflected in the interactions with the cultural landscape as well.

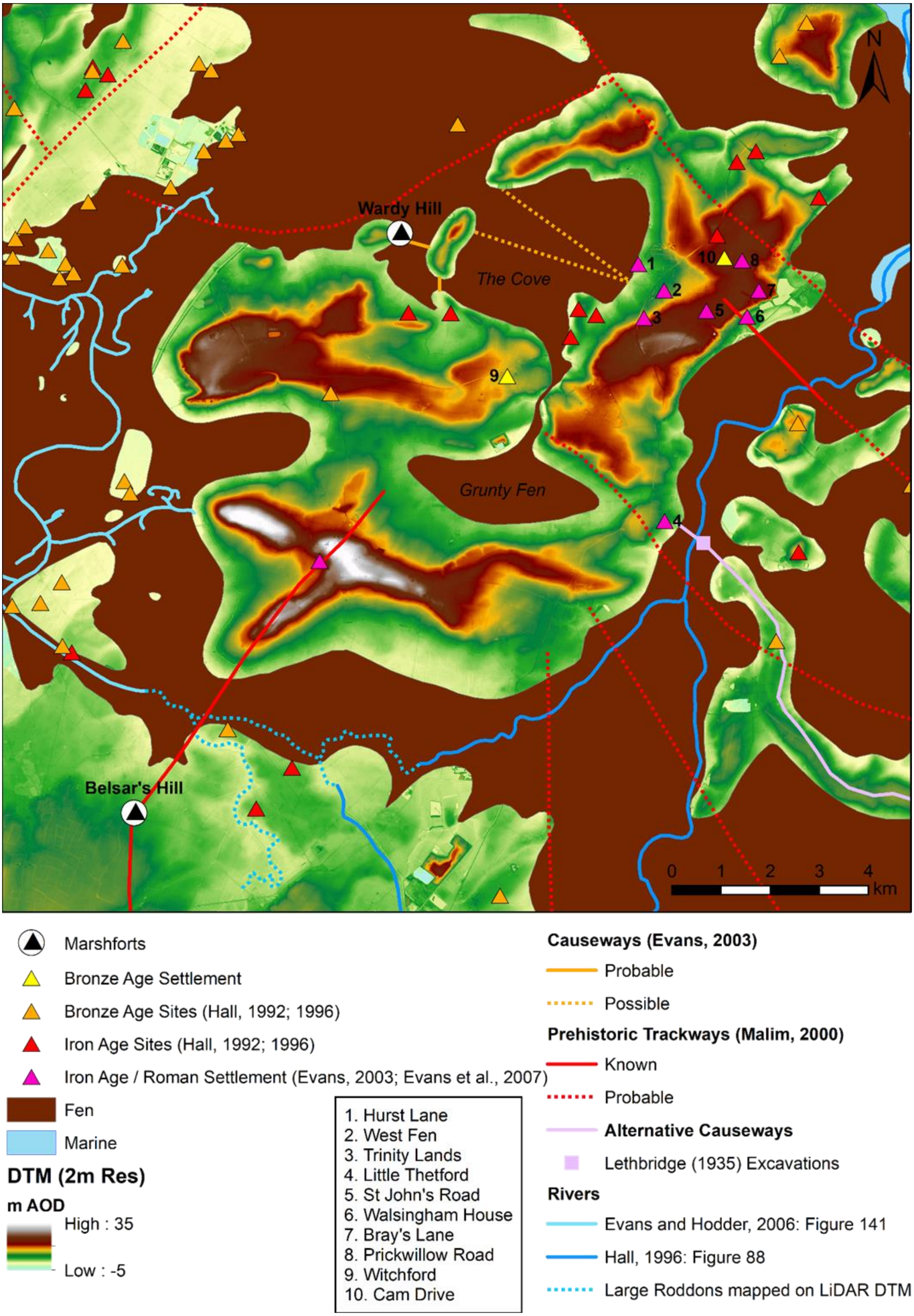


FIGURE 119. LATER PREHISTORIC ELY.

Pre-Iron Age activity around the Isle of Ely has traditionally been viewed as relatively sparse. The extensive Fenland Survey identified few monuments from this period (Hall, 1996) and Evans (2003: 252) suggested that activity in this period may have been limited to seasonal visitation, though he notes how biases in survival and discovery may have contributed to this interpretation. The Scheduled Monuments list appears to support this absence, with only eight monument list entries attributed to the Neolithic or Bronze Age. These comprise twelve monuments, all funerary: three long barrows, six bowl barrows, one oval barrow and two round barrows (SAMs 1009994, 1019982, 1019983, 1019984, 1019985, 1019986, 1019988, 1020398). Of these, the bowl barrows belong to the Haddenham barrow cemetery located on a dryland area in the Lower Delphs. The remainder are equally clustered on an apparent fen island at Hill Row Doles, north of the Haddenham cemetery. Both island-based barrow clusters are located west of Ely, between the larger island and the dryland at what is now Earith. Hall (1992: 98) noted the separation of Bronze Age barrows from settlement activity, with barrows concentrated on the fen edge. The association of these burials with the wetland may be connected to routes through the wetland and notions of visibility (Malim, 2001: 17; Cooper, 2016) or alternatively, reflect the emergence of deeper symbolic meaning in wetland landscapes (e.g. Bradley, 1998). The Cambridgeshire HER records a handful of flint artefacts and a burnt mount within a 1km radius of Wardy Hill and no pre-Iron Age activity within a similar radius of Belsar's Hill.

More recent development-led work, however, has begun to alter these perceptions. Notably, a Bronze Age settlement at Field End, Witchford has challenged the perception of seasonal visitation (Phillips and Blackbourn, 2019; Figure 119). The site comprised a Late Bronze Age unenclosed settlement characterised by scattered pits, four- and six-post structures and small wells, with some evidence of continuity into the Early Iron Age. The discovery of this settlement is significant in demonstrating activity on the Isle of Ely extended beyond seasonal visitation and highlights the potential for further such sites. Further tentative evidence of Bronze Age occupation has been found in the form of a pit and shallow ditch, interpreted as the possible remains of a Neolithic or Early Bronze Age house at Bray's Lane (Hunter, 1992b), two ditches and a hollow with Late Bronze Age pottery at Trinity Lands (Evans et al., 2007: 66), and a large sub-rectangular Middle Bronze Age enclosure with several possible post-built structures, pits and a well/waterhole at Cam Drive (Phillips and Morgan, 2015; Phillips and Billington, 2019; Figure 119).

Nonetheless, there continues to be an imbalance between the levels of settlement evidence between the Bronze Age and Iron Age, and in this context, the settlement and field system at Wardy Hill appears to be a rare and prominent feature of the pre-Iron Age island. Moreover, Wardy Hill appears distinctive in its position at the fen-edge, while the Witchford and Cam Drive settlements are located on the higher claylands of Ely. Although the discovery of new Bronze Age sites on Ely has called into question earlier views, Malim (2001: 21) had previously suggested that Bronze Age communities in Cambridgeshire typically preferred to avoid the fens in favour of rivers and other communication routes. Evans (2003: 252) proposed that the orientation of the Bronze Age field system at Wardy Hill may relate to a postulated causeway to Coveney, and it is perhaps the significance of this route which encouraged the Bronze Age community who established Wardy Hill to ignore the traditional attitudes which Malim identified.

Malim (2000) suggested the possibility of several causeways connecting the Isle of Ely to the mainland, as well as to other parts of the Fen. Many of these are suggested as probable routes, although there is more concrete evidence for some. Three main causeways appear to connect Ely to the mainland (Barrowclough, 2013). As already mentioned in Section 4.2.4, the island is connected to the mainland to the south via the Aldreth Causeway. This causeway passes through Belsar's Hill on the fen-edge, continuing south to Arbury Camp and connecting to other large enclosures such as Littlebury, Sawston (Borough Hill), Wandlebury and War Ditches (Malim, 2000). One other notable causeway was identified by Lethbridge (1935) connecting Little Thetford to Fordey/Barway (Fordey is no longer visible on modern mapping but identified as Old Fordey Farm to the south of Barway – this is validated by Lethbridge and O'Reilly, 1936, comments on its straightness; Figure 119). This broadly corresponds with one of the routes of a 'probable' causeway determined by Malim (2000). Lethbridge's publication of the excavation sadly does not feature a map and is dependent on a written description to locate the site. Differing interpretations of the location or limitations of transcribing Malim's map into the GIS for Figure 119 may have resulted in the discrepancy, though the same layout has been republished more recently (Malim, 2015). A third causeway is identified further north connecting Stuntney directly to the location of the city of Ely. This was the main Medieval route to Ely but is believed to have had Bronze Age origins (Lethbridge and O'Reilly, 1936; Malim, 2015). Iron Age settlements developed on the Isle of Ely around both of the eastern causeways.

Late Iron Age settlements were discovered at Little Thetford (Lucas and Hinman, 1996; Lucas, 1998) corresponding to the discovery of the causeway at Fordey, and similarly at West Fen Road (Gibson, 1996; Mortimer, 2000; Regan, 2001), Hurst Lane (Evans et al., 2007), St John's Road (Abrams, 2000), Walsingham House (Hunter, 1992a), Bray's Lane (Hunter, 1992b) and Prickwillow Road (Atkins and Mudd, 2003) within the city of Ely which appear to concentrate around the causeway from Stuntney (Figure 119). The development of these later settlements suggests a continuity of networks through the landscape. Many of these routes may have been influenced by geographical influences (i.e. the shortest route across wetlands – the majority of the routes plotted by Malim, 2000 appear to support this), however, given the discovery of deposition along many of the fen routes (e.g. Barrowclough, 2013), we cannot discount that these routes may have held symbolic meanings which spanned multiple generations. Such meanings may have evolved over time, while the routes and places they passed through held on to an enduring significance, possibly ancestral heritage. Evans (2003: 266) has further postulated that the settlement at West Fen Road is connected via a causeway to either Coveney or Downham (the latter deemed more likely by Evans). A route to Coveney would enable a connection to the causeway further westwards, connecting the settlements on the east of The Cove to Wardy Hill. The route to Downham, however, would appear to break from the apparent tendency to take the shortest route, as the Fenland survey by Waller (1994) would suggest an alternative route could have been taken around the fen-edge, without the need to construct a trackway or causeway across the fen.

Iron Age settlements and activity on the Isle of Ely appear to be concentrated on the east side of the Cove where the causeways connect the island to the mainland (Hall, 1992; 1996; Evans, 2003). There is likely a bias caused by development in the city of Ely and an associated density of commercial investigations. Nonetheless, Wardy Hill appears distinct from other sites in its location at the far edge of the island. It has been suggested that the enclosure may have been located to manage the entrance to The Cove from the fen (Section 4.2.32). Logboats found throughout the fenland raise the possibility of waterborne travel (Malim, 2000; Markoulaki, 2014), however, the enclosure appears to have been orientated around the network of causeways. The notion of a fort guarding The Cove, equally risks associations with later, historical military traditions. Such comparisons must be treated with due caution as we continue to dispute and decolonise earlier hillfort interpretations (cf. Section 2.1.1).

As suggested in Section 6.5.5, Wardy Hill appears to be a close-proximity ‘marsh-side’ enclosure (Type 1bi) with multi-directionality (Types 2a and 2b), associated with routes across the wetland (Type 3a) and features a secondary space (Type 4 – annexe). The site has a direct interface with the wetland landscape and while the earthworks appear to be concentrated towards the dryland, the wetland forms more than just a natural obstacle. Entrances, whether via a causeway or the open-sided annexe, suggest the fen formed a key role in the function of the site, and equally the site played a role in governing social interaction with the fen landscape. Whether, as Evans postulated, this was by guarding waterborne access to The Cove, or by managing routes across the causeway network, Wardy Hill was designed to formalise interactions with the landscape.

Belsar’s Hill has similarities to Wardy Hill in its management of wetland-dryland human engagement, but also several distinctions. In accordance with Section 6.5.5, Belsar’s Hill is a distant ‘marsh-side’ enclosure (Type 1bii), an overall non-directional architecture (Type 2a/ non-directional), and associations with both routes across the wetland (Type 3a). In managing the flow of movement into the wetland via the Aldreth causeway, the site also has elements of facing the wetland and symbolic routes into the wetland (Types 2a and 3b – symbolic; see Section 6.5.5). The over-arching design, however, appears to suggest a sense of architectural symmetry. While the architecture of Wardy Hill is designed around formalising the entrance into the wetland, Belsar’s Hill appears to take a more neutral role. Set back from the wetland while still overlooking the fen-edge landscape, Belsar’s Hill seems likely to have developed as a stopping point along the route. While this may be associated with territorial control, on a day-to-day basis the site may have operated as a meeting place for interaction between people travelling to or from the island.

While Wardy Hill has been extensively excavated and has a clear multi-phase and well-evidenced chronology, Belsar’s Hill has unfortunately not received the same level of attention (Sections 4.2.4 and 4.2.32). Given the Bronze Age origins of activity at Wardy Hill and Belsar’s Hill by proxy of the Aldreth causeway, there seems a likelihood that the two sites were in use contemporarily. They fit within a pattern of increased settlement activity in the Middle to Late Iron Age which builds upon earlier, more seasonal activity and networks of movement through the Fens and across the Fen islands. It is perhaps interesting that this appears to be happening against a backdrop of climate change, with the landscape becoming wetter and fen encroachment upon the islands (cf. Waller, 1994). Given the apparent continued use of Bronze Age routes well into the Iron Age and beyond, we are able to suggest their importance to the groups living in and acting within this landscape. The development of settlements, particularly those with monumental earthworks, around these routes may suggest a correlated increase in the social importance of these routes as the landscape became wetter and other routes fell out of use. Sites such as Wardy Hill and Belsar's Hill acted to formalise the routes, indicating safe routes to travel both physically and symbolically. They monumentalised long-held ancestral belief systems and meaning imbued in the routes, enforcing social networks and rules which may have previously existed in a more individual and informal capacity (e.g. through acts of wetland deposition along the routes). These sites governed the interaction between the more formal dryland activity featuring settlements and field systems arranged on an established axis and the more natural wetlands. In doing so they sought to facilitate the interaction of two distinctly different landscapes and the varying social activities which took place in each.

6.6 Combining patterns to find multi-factor categories

The analysis carried out in Section 6.5.5 has identified several patterns among the site-landscape relationships of marsh-forts. These form new interpretive classifications that reflect how these places functioned and would have been regarded by past communities. The types are not intended to be exclusive. This is to allow for a better representation of their complexities. By recognising that sites may exhibit characteristics of multiple classifications, this system overcomes previous issues in dealing with large data analysis whereby anomalous data is ignored or 'cleaned' before classification. Nonetheless, the analysis has revealed certain trends across types. The table below sets out comparisons across multiple categories and allows us to draw further conclusions.

TABLE 33. DISTRIBUTION OF SITES ACROSS NEW MARSH-FORT CLASSIFICATIONS.

	1a Islands in the Wetland	1bi On the edge Close-proximity "Marsh-side"	1bii On the edge Distant "Marsh-side"	1biii On the edge Close-proximity Promontory	1biv On the edge Distant Promontory
Non-directional	Dinas Dinlle Oldbury Camp		Skipwith Belsar's Hill Tattershall Thorpe		Boney's Island Borough Hill Island Covert?
2a Facing the wetland	**Sutton Common** **The Berth** Wall Camp	Salmonsbury Camp Warham Camp		Holkham Camp	
2b Backs against the wetland	Athelney	Wardy Hill Stonea Camp	Borough Fen		Peckforton Mere Y Werthyr

Green text	Type 3a
Blue text	Type 3b (physical)
Purple text	Type 3b (symbolic)
Bold text	Type 4 (secondary enclosures)
Underlining	Type 4 (annexes)
Shaded	"Marsh-forts" – see below

This table shows that Type 1a enclosures (built on islands) interact with the wetland environment in various ways. There appears to be a slight tendency towards island sites facing the wetland and acting as conduits for ritual interactions. Compared with Type biii enclosures (close-proximity promontory), this may represent a trend; however, further work is needed to test this hypothesis. Type 1biii is comparable due to the immersive nature of the location within wetland. It acts similarly to island sites, with the access along the promontory acting as a natural causeway to the enclosure. The table reveals a clear distinction between Type 1biii and Type 1biv (distant promontory) enclosures. The proximity of the former equates to a closer level of engagement through wetland-facing directionality. Meanwhile, those set further back from the wetland tend to exhibit no evidence for directionality or use the wetland in a hillfort promontory style as a natural boundary. It represents a more functional, arguably defensive perception and use of the wetland.

There does not appear to be a correlation between the location or directionality of marsh-forts associated with routes across the wetland (Type 3a). There is, however, an understandably clear inference that sites facing the wetland (Type 2a) were viewed as symbolically enabling access into the wetlands (Type 3b).

The table and the preceding analysis demonstrate the broad complexity of marsh-forts. Sites exhibit multiple features representing a range of functions. In a broad overview, however, it is possible to distinguish between two overarching themes. These can be termed 'marsh-forts' and 'forts in marshes'. The former represents the central, shaded group in Table 33. Loosely associated with Type 2a sites, 'marsh-forts' were used to manage the relationship between dryland and wetland. This included symbolic and ritual interactions, as well as the management of economic and social networks and movement between these two landscapes. By contrast, 'forts in marshes' adopted a more functional approach to the use of wetlands. They were viewed as nearby resources or natural barriers to restrict access.

7. Conclusions

7.1 Impact and Significance

The analysis and conclusions of this thesis have contributed significantly to multiple fields of research. The re-assessment of individual sites has corroborated, where necessary, corrected and elsewhere created new data, drastically expanding our understanding of these sites. Some sites included in this study have been intensively excavated and published. The Sutton Common publication, which has formed part of the foundation of this study, provides one such example. For other sites, such as Hetha Burn West or Tharston, this represents the first study beyond their initial identification. This thesis has generated a large volume of new data through a combination of desk-based analysis, field analysis and borehole surveys, which will be fed into the Historic Environment Record (HER) to the benefit of future work.

The results of this study have differentiated a multitude of new marsh-fort types, which have revolutionised our understanding of not only these enclosures but prehistoric wetlands and the way past people interacted with the environment. These new types demonstrate the nuance and complexity of these sites. They allow us to engage directly with past conceptions, motivations and functions. Through this understanding, they have also developed a better system for communicating meaning. It brings this meaning away from large-scale data-driven analyses and creates a more immersive system of recognisable site identity.

By recognising the functional identity of these sites, we are able to establish better integrations of site and landscape understanding for the management of heritage assets. The integration of this information has already started to be realised but has the potential for much wider adoption. Acting as a case study for this benefit, the results of the borehole survey at Athelney have fed into discussions with Somerset Wildlands, a rewilding project that owns land around the enclosure. They have highlighted the importance of managing the wetland as both an archaeological and natural resource. Preserving the natural environment has been crucial to understanding our heritage. Likewise, an understanding of past activity in these landscapes can have a direct impact on how we conserve the natural environment. This research demonstrates existing issues with existing approaches to classification and identifies the need to reshape national frameworks such as the Historic England/ NHLE (National Heritage List England) classifications. New systems and classifications should be designed to reflect the intrinsic interdependence of natural and historic environments. In doing so, it addresses Historic England's research agenda to:

Table 34. Historic England Research Agenda (HERA) aims.

HERA50	recognise and understand new settlement or monument types.
HERA32-35	develop our understanding of the distribution, character and value of wetland archaeology.
HERA94	understand past responses to environmental change.
HERA91, 92 & 119	determine the relevance of wetlands to current discussions around climate change, including rewilding and wetland restoration.

7.1.1 Implementing a new classification strategy

The establishment of this new classificatory framework is dependent on its ability to integrate with existing heritage management systems. A review of the classifications assigned to each of the thirty-four sites explored within this thesis by their respective HERs and scheduling bodies demonstrates the lack of consistency inherent within heritage management in the UK (see Appendix 7). With regard to each of the national Scheduled Monument Lists, each responsible body has adopted a different approach. Historic England uses a more descriptive model, attempting to tailor each entry to the individual site with a bipartite approach comprising the significance of the monument type and a site-specific description. The records do not explicitly designate a general category for the monument but instead, attempt to capture nuance through this method of more expansive discussion. The site names associated with each record do not appear to have a consistent format, ranging from basic location names to varied use of descriptive hillfort terminology (e.g. multivallate hillfort) to settlements or earthworks. This variation likely stems from the original 'old county number' (OCN) scheduling records of the sites, with many entries noting full details are not yet available. Cadw's Welsh scheduled monuments list features a similar summary description and expanded reason for the designation. The system differs from Historic England, however, in the inclusion of short categories: Broad Class (e.g. Defence), Site Type (e.g. Promontory Fort) and Period (e.g.

Prehistoric). In doing so, they attempt to balance the advantages of searchability provided by shorter classifications with the nuance which can be expressed in expanded textual descriptions. Historic Environment Scotland lists a bipartite shorter Site Type classification. This is similar to the approach adopted by Cadw, with the Period and Broad Class, followed by a Site Type (e.g. Prehistoric domestic and defensive: fort (includes hill fort and promontory fort)). The various local and regional HERs, accessed through Heritage Gateway, equally feature substantial variation in their designation of sites.

The significant inconsistencies demonstrated across the various heritage management systems present a substantial challenge for establishing the proposed classificatory framework for marsh-forts at both national and local levels. The term 'marsh-fort' does appear within the list of terms used by Heritage Gateway to classify site type but has only been applied to two of the sites investigated within this thesis. These are both in Shropshire (The Berth and Wall Camp; see Appendix 7) and perhaps reflect a greater awareness of the category within the Shropshire HER than elsewhere. It is also notable that despite the close association of Sutton Common with the category, the HER does not list the site as such. Instead, the site is classified as an 'Enclosed Settlement' or 'Enclosure', the former despite no evidence of occupation (see Section 4.2.1).

Establishing a system with generalised terms is key to producing an interoperable and accessible heritage database (cf. Carlisle and Lee, 2016; Illsley, 2019). Despite this, we must remain vigilant to the problems which arise from 'pigeon-holing' data (see Section 6.2). In establishing a more interpretive model of classification, the proposed model for marsh-forts attempts to overcome some of the inherent tensions which exist between attempts to advocate easily communicable and searchable terminology while preserving nuance and meaning. It is intended that this new approach to classification will encourage a review of existing classifications and overcome existing inconsistencies in the application of 'Site Types'. A more consistent and meaningful system will promote interoperability facilitate new connections between data and allow the development of further understanding of archaeological and natural heritage. Such an approach will help to bridge the gap between theoretical-based academic research and the data-rich commercial heritage industry, to the benefit of all.

7.2 Summary

This project set out to achieve two aims: to revise our understanding and classification of marsh-forts and, in doing so, to evaluate the current framework for classifying archaeological sites. Prior to this study, 'marsh-forts' was used as a simple description applied to Iron Age enclosures located near wetland. The applied definition of 'wetland' was equally vague, encompassing a range of landscapes and ground conditions from peat bogs and floodplains to areas of poor drainage. This application has resulted in a wide variety of sites being classified as 'marsh-forts', which do not appear comparable but instead have been grouped as a product of not conforming to typical 'hillfort' typologies.

Past analyses of large numbers of hillforts, such as the Atlas of Hillforts, have determined categories using descriptive 'tick-box' focused terminology, encouraging the quantification of archaeological data. They focus on the hectarage of the interior, the number of concentric earthworks and topographic advantage. This approach has stemmed from the antiquated perception of hillforts as defensive structures. While hillfort studies have since progressed to include a wider appreciation for the function of hillforts, these preunderstandings have become so entrenched in the approach to classification that they continue, subliminally, to shape our interpretation. In quantifying data, interpretation is extracted and not introduced until the end of the process. Data is fundamentally treated as 'givens' (Huggett, 2020: S9). Data, however, is lost in the drive to establish large databases of quantifiable information. Engagement is minimised, and so interpretive input is lost. Without these fundamental interactions, the archaeological material loses meaning. The interpretive framework put forward in this study, however, seeks to reintroduce the fundamentally important process of engagement and interpretation, reinstating meaning to the archaeological record. In doing so, these new classifications improve our understanding of the past.

This study has compiled a detailed gazetteer of thirty-four possible Iron Age enclosures with wetland associations, which have previously been categorised as 'marsh-forts' in previous literature. In order to assess these sites, this thesis has produced a series of detailed summaries of our existing knowledge drawn from intensive desk-based assessments. A critical interrogation of this data and interpretations was complemented by GIS landscape analysis, field observations and geoarchaeological borehole surveys. The combined methods of investigation identified several gaps or errors in previous and long-held ‘truths’ about these sites. Through the compilation and expansion of data, the project has validated, amended and expanded our understanding of their form and function. These individual studies (Chapters 4 and 5) have integrated interpretations of each site's cultural and natural environments to identify a series of relationships between site architecture and the surrounding landscape.

An examination recognising the economic, social and cosmological significance of Iron Age enclosures and wetlands has revealed several key (and interconnected) themes through which we can build interpretation. *Directionality* represents one of the most informative. Boundaries were highly symbolic structures during the Iron Age (von Nicolai, 2014), and by examining bias in the directionality of earthwork structures, we can infer meaning about the relationships between site and landscape. Through directionality, we can identify the intention of display towards specific parts of the surrounding landscape. This ties into the theme of *visibility*. Through a combination of site architecture and multi-factor landscape analysis (geological, topographical and palaeoenvironmental), we can determine how past societies created ‘correct paths’ which choreographed lines of sight and movement through the landscape (Driver, 2013: 137). The control of movement and *accessibility* through the landscape by both artificial means and natural constraints shows how people may have reinforced social identity but also responded to the environment and its own agency. Iron Age belief systems were strongly focused on relationships with the natural world, and only by examining these *connections to the wider landscape* can we begin to understand and communicate the functioning of sites and associated communities. The natural world should not be dismissed as separate or relegated to an “add-on” description of the setting. The cultural environment is entwined with and part of the natural environment. In recognising this, we also recognise that the natural environment is inherently part of the social space we, as archaeologists, study. In doing so, we develop a concept of “whole space”, which allows us to identify and interpret the theme of *spatial segregation*. This includes both the act of enclosure and patterns of division within, and it represents the identity of space, linking to social activities and constructions of symbolic meaning.

By applying these themes, this study noted several patterns of commonality across the case study sites. This resulted in the distinction of new types of sites associated with rivers or level terrain land. These sites were previously grouped with marsh-forts but warrant recognition and their own thorough examination to gauge deeper meaning and their role in Iron Age society. Recognition of alternative groups enabled the refinement of the marsh-fort category to produce a more precise gazetteer. Further examination, however, identified further distinctions. While meeting the base criteria for marsh-forts, the twenty sites recognised in Section 6.5.5 represented a wide variety of relationships between enclosure and wider landscape engagement. The interpretive classifications that emerged do not match the simple descriptive types that can be quantified but instead reveal a depth of meaning embodying the spirit of the site, what it meant to the people that built it and how they used these enclosures to interpret and manage their place in the world. This study argues for the recognition that sites may cross multiple categories and should not be pigeon-holed with anomalous data dismissed (see Section 6.2.3). In doing so, it supports a system better equipped to preserve the nuance of individual sites and, therefore, the individuality of past people.

This analysis has differentiated between 'marsh-forts', where there is a greater social and symbolic engagement with the wetland environment, and 'forts in marshes', which have adopted more functional approaches to the use of wetlands. The former represents a wide variety of nuances. It includes sites which seem to have served primarily ritual functions, acting as conduits for interactions with gods and spirits inhabiting wetlands. Such interactions involved systems of exchange where Iron Age people attempted to negotiate with nature for resources, as exemplified by the deposition of a cauldron in return for raw materials for iron production at The Berth or for supernatural support against climate change and wetland encroachment. The importance of this interaction became formalised through the construction of monumental enclosures facing the wetland. In other cases, sites had wetland and dryland entrances but lacked the monumental directionality. The combined examination of architecture and landscape has suggested that these sites were two-directional. They acted to manage the interactions between the dryland and wetland. Their function may have been economic as trade hubs or toll points, socially as central places on the borders between landscapes, or ritually and symbolically as liminal places designed to curate the movement and transition between social space and identity. By contrast, 'forts in marshes' used wetlands as natural barriers or for functional access to resources on the wetland margin. Wetlands were utilised as natural barriers to reduce the cost/labour of enclosure and/or to accentuate artificial boundaries. These enclosures focused on control of the landscape and adopted functional approaches to exploiting wetland resources.

While the majority of the text of this thesis appears concerned with developing our understanding of marsh-forts, the second aim of evaluating current models of classification has been addressed throughout. This study has explored how 'marsh-forts' originated as a descriptive, etic classification grounded in inherent preunderstandings within hillfort studies. As a case study, the new interpretive, emic approach presented in this thesis has demonstrated the importance of integrating cultural and natural environmental factors to represent the individuality of archaeological sites better. This alternative model is better equipped to communicate the function and meaning of sites and facilitate future research, improving our understanding of past people. It highlights the importance of an applied posthumanist perspective to heritage interpretation and the importance of regarding nature as part of social space for conservation management. Humanity does not exist outside of nature; historic (and prehistoric) cultural and natural environments are the same.

7.3 Reflections and avenues for future work

The application of these conclusions enables a wide range of future avenues for research. On a lower level, it sets out a new framework from which other sites can be analysed, interpreted and categorised in ways that better represent and communicate historical meaning. Previous discussions of some of the case study sites have included comparisons with other sites (e.g. Evans, 2003). These discussions have been limited, however, by a lack of accurate terminology to communicate these comparisons. Simply put, they have commonly been recognised as like hillforts, but not hillforts. Establishing a more nuanced definition of marsh-forts and various sub-types, as well as alternative site classifications, will provide the terminology that will enable more widespread application. This will enable new sites to fit within the new framework, resulting in a greater recognition of comparable sites and allowing us to develop a more complete understanding of sites and social networks.

The process of compiling and connecting this research has also identified several questions that the scope of this thesis was not able to include. These provide opportunities for the expansion of this theoretical discussion and the potential for further refinement of the framework. Possible avenues for expansion include a more detailed examination of different types of wetlands (e.g. biogenic and minerogenic) and how they relate to marsh-forts. The research has identified other types of sites, such as riverside/river promontory forts and level terrain dryland enclosures, as well as several outliers that do not appear to fit any existing or new classifications. The new alternative types warrant further discussion to understand their role in past landscapes and site networks, but as Boozer (2015) highlighted, we must also examine the outliers.

In order to produce a more comprehensive understanding of the environmental factors, alternative geoarchaeological methods to the more simplified approach adopted by this research are required (Section 3.3). Such an approach would entail more extensive programme of boreholes. Deposits may be recorded using the Troels-Smith (1955; cf. Schnurrenberger et al., 2003 for application to lacustrine deposits; in line with industry guidance –Campbell et al., 2011; Historic England, 2015) systems of sediment classification which describes main and secondary components as well as key physical properties such as darkness, stratification, elasticity, dryness and the sharpness of the upper sediment boundary. This may be supplemented by the Von Post Scale (Gearey and Chapman, 2023: 77) for classifying peat humification, where present. The data collected through these methods would allow a more detailed interrogation of the palaeoenvironmental deposits and greater opportunities for the data to be integrated into heritage management strategies (e.g. water monitoring for preservation potential). Deposit modelling software (e.g. RockWorks or Leapfrog Geo) could also be used to produce 3-dimensional deposit models which better represent the relation and extent of deposits. This would produce a more detailed context for palaeoenvironmental sampling and analysis to be carried out. Sampling using a Russian Auger to retrieve intact sequences would enable more specific sub-sampling in laboratory conditions. This includes the potential for more precise retrieval of samples for radiocarbon dating, producing a more concise environmental history. Sub-sampling also enables the potential retrieval for palaeoenvironmental analysis including but not limited to pollen, insects, plant macrofossils and wood species identification (see Campbell et al., 2011; Gearey and Chapman, 2023: 78-103).

Lastly, this work has highlighted the importance and benefits of an interpretive classificatory framework. It has revealed shortcomings in the current system and demonstrated the need to integrate our understanding of cultural and natural landscapes. Urgent work is required to integrate this approach into national frameworks so that we may apply it to a wider range of archaeological sites to enhance our interpretation and management of cultural and natural heritage.

Appendices

Appendix 1: Gazetteer of Marsh-forts

Site	County	Site Code	Atlas of Hillforts	Sutton Common	
Arbury Camp	Cambridgeshire	ACCC		•	
Athelney	Somerset	AHBS		?	
Belsars Hill	Cambridgeshire	BHWC	•		
Billie Mains	Scottish Borders	AMSB	•		
Bomere Wood	Shropshire	BWSS	•		
Boney's Island	Suffolk	BBCS		?	
Borough Fen	Cambridgeshire	BFPC	•	•	
Borough Hill	Cambridgeshire	BHSC			WF
Bryn Maen Caerau	Ceredigion	BMCC	•		
Bullsdown Camp	Hampshire	BBGH	•		
Burgh	Suffolk	BCGS		•	
Cash Mill	Fife	CMDF	•		
Cherbury Camp	Oxfordshire	CCBO	•		
Clare Camp	Suffolk	CCSS		•	
Dinas Dinlle	Gwynedd	DDLG		•	
Green Island	Dumfries and Galloway	GMLD	•		
Hetha Burn West	Northumberland	HBWN	•		
Holkham Camp	Norfolk	HBDN	•	•	
Island Covert	Worcestershire	ICLW	•		
Narborough Camp	Norfolk	NKLN		•	
Oakmere	Cheshire West and Chester	OMNC	•		
Oldbury Camp	Gloucestershire	TTOG	•		
Peckforton Mere	Cheshire West and Chester	PMBC	•		
Salmonsbury Camp	Gloucestershire	SCBG	•		
Skipwith	North Yorkshire	SSNY		•	
Stonea Camp	Cambridgeshire	SCWC	•	•	
Sutton Common	South Yorkshire	SCDY	•	•	
Tattershall Thorpe	Lincolnshire	TTCL		•	
Tharston	Norfolk	THHN	•		
The Berth	Shropshire	TBS	•	•	
Wall Camp	Shropshire	WCKS	•	•	
Wardy Hill	Cambridgeshire	WHCC	•	•	
Warham Camp	Norfolk	WWSN		•	
Y Werthyr	Isle of Anglesey	YWBA	•		

? = Source is uncertain but proposes site as a possible marsh-fort

WF = Pers. Comm. Will Fletcher (2020)

Appendix 2: Borehole Survey Site Selection Rationales

Name	Selected	Rationale	Summary
Arbury Camp	N	The DBA review of potential wetland here was inconclusive, however coring is not possible as the site has been destroyed and is now built over.	Site destroyed.
Athelney	Y	Coring was undertaken to confirm historical accounts of wetland and to retrieve dateable samples to determine the presence of wetland in the Iron Age.	**Selected** to determine nature, condition and dating.
Belsars Hill	Y	Historical accounts of the relationship between the site and wetland, as well as interpretations drawn from LiDAR analysis do not appear to match BGS mapping. Coring was undertaken to evaluate deposits in close proximity to the enclosure and to determine the relationship between the site and wetland landscape.	**Selected** to determine extent of wetland deposits in Iron Age.
Billie Mains	N	Alluvial deposits recorded over the site with potential for geoarchaeological investigation, but watercourses appear the dominant feature. Further work also required to determine function and dating of the enclosure.	Dating of site uncertain. Wetland not primary feature.
Bomere Wood	N	Evidence for presence of an enclosure is uncertain.	Possible no site.
Boney's Island	Y	GIS landscape analysis and literature review has confirmed wetland location but proximity to and relationship with the enclosure is uncertain.	**Selected** to determine extent of wetland deposits and dating.
Borough Fen	Y	BGS shows alluvium deposited in the Roman period extending over the site. Coring is required to determine the buried pre-Roman landscape and the extent of the wetland contemporary to the enclosure in the Iron Age.	**Selected** to determine extent of wetland deposits in Iron Age.
Borough Hill	N	Wetland deposits appear limited to margins of the river with the watercourse being the prominent landscape feature for interpretations.	Wetland not primary feature.
Bryn Maen Caerau	N	Wetland deposits appear limited to margins of the river with the watercourse being the prominent landscape feature for interpretations.	Wetland not primary feature.
Bullsdown Camp	Y	While wetland deposits appeared limited to margins of the watercourse, site visits confirmed the ground surface was boggy and coring was undertaken to determine the nature of the palaeoenvironment, its extent and, if possible, dating.	**Selected** to determine nature, extent and dating of wetland deposits.
Burgh	N	Wetland deposits appear limited to margins of the river with the watercourse being the	Wetland not primary feature.

		prominent landscape feature for interpretations.	
Cash Mill	N	Further work is required to determine the nature and dating of the enclosure before landscape analysis can be carried out.	Dating of site uncertain.
Cherbury Camp	Y	The DBA identified contradictory evidence for alternative access routes of significant importance to the interpretation of the site. Coring was undertaken to identify the presence and extent of wetland deposits and retrieve dating evidence, so as to inform discussions about access.	**Selected** to determine nature of environment in relation to access routes into the enclosure.
Clare Camp	N	The land between enclosure and watercourse now extensively built over, restricting access and likely having damaged or destroyed depositional sequences.	Site built over.
Dinas Dinlle	Y	The landscape has been significantly altered by coastal erosion. Coring was required to determine the nature of the wetland environment in the Iron Age and its relation to the enclosure.	**Selected** to determine nature and extent of wetland environment in the Iron Age.
Green Island	N	The site is located on a promontory extending into a lake, with the body of water the prominent landscape feature. Dating of the enclosure is also uncertain.	Dating of site uncertain. Wetland not primary feature.
Hetha Burn West	N	The watercourse at the base of the hillslope appeared to be the only evidence for water or wetland. There were also restrictions on accessing the site.	No discernible wetland. Access restricted.
Holkham Camp	N	The landscape has been significantly transformed since the Iron Age and a borehole survey was deemed essential to understanding the landscape. Initially selected but works were not carried out due to delays with Natural England granting SSSI permissions.	Not possible to carry out survey due to permissions.
Island Covert	Y	Coring was carried out to investigate the reports of wetland within previous works which were not apparent in any mapping.	**Selected** to confirm the presence of wetland deposits.
Narborough Camp	N	LiDAR and OS mapping hinted that wetland may have extended closer to the enclosure than depicted on BGS mapping, and the site was initially proposed for coring. However, changes in land ownership at the time of this phase of fieldwork prevented access to the site.	Access restricted.
Oakmere	N	The site is located on a promontory extending into a lake, with the body of water the prominent landscape feature.	Wetland not primary feature.
Oldbury Camp	N	GIS based analysis suggested the enclosure was on an island, cut-off by alluvial wetland deposits. This site was proposed for coring to determine the nature and extent of these	Access restricted. Partially built over.

		deposits, however, due to the land being partially built over and sub-divided into many small plots of mixed residential and agricultural ownership, it was not deemed feasible to arrange sufficient access within the scope of this project's timeframe.	
Peckforton Mere	Y	This site was selected for coring to understand the extent of the wetland around the mere and its relationship with the enclosure.	**Selected** to determine extent of wetland.
Salmonsbury Camp	N	Any former wetland deposits have been destroyed by quarrying.	Wetland destroyed.
Skipwith	N	The site and landscape surroundings have been built over by the RAF Riccall airfield. Work is required first to confirm the survival and precise location of the enclosure.	Site built over, possibly destroyed.
Stonea Camp	Y	Coring was carried out to determine the nature and extent of the wetland in the Iron Age, to aid in the interpretation of the wetland as a potential barrier to access.	**Selected** to determine the nature and extent of wetland.
Sutton Common	N	Coring was previously carried out (Parker Pearson and Sydes, 1997; Van de Noort et al., 2007) and there was sufficient data for examination in the DBA stage.	Previously investigated.
Tattershall Thorpe	N	Any former wetland deposits have been destroyed by quarrying.	Wetland destroyed.
Tharston	N	The presence of an enclosure is unconfirmed. In addition, access was not granted.	Access restricted.
The Berth	N	Coring was previously carried out (Norton, 2021) and there was sufficient data for examination in the DBA stage.	Previously investigated.
Wall Camp	N	Coring was previously carried out (Norton, 2013) and there was sufficient data for examination in the DBA stage.	Previously investigated.
Wardy Hill	Y	The DBA identified conflicting accounts of the extent of wetland, particularly within the area enclosed by the northern curvilinear bank. Coring was undertaken to determine the extent of the wetland and how the morphology of the enclosure functioned in relation to this. An extensive borehole survey had been previously undertaken (Ellis, in Evans, 2003: 10-15) but was not published or archived.	**Selected** to determine nature of palaeoenvironment and extent of wetland in the Iron Age.
Warham Camp	Y	Coring was carried out to determine the nature and extent of the wetland in the Iron Age, and how this related to the probable wetland-facing entrance. Other investigations had been carried out but were not known about or reported until after this survey was conducted (Speck, 2022; Keyworth, 2022).	**Selected** to determine nature and extent of wetland environment in the Iron Age.

Y Werthyr	Y	The extent of the wetland deposits mapped by the BGS did not match with observations during the site visit. As a result, coring was conducted to determine the extent of the wetland in the Iron Age and its relation to the enclosure.	**Selected** to determine the extent of wetland environment in the Iron Age.

Appendix 3.1: Athelney Borehole Stratigraphic Descriptions

BH#	Top (m)	Base (m)	Summary	Description
	(**NGR:** 334161.06, 129083.60 **Elevation:** 5.59m AOD)			
BH1	0	0.14	Soil	Mid greyish brown clayey silt. Diffuse boundary into:
	0.14	0.23	Silt	Mid brownish grey clayey silt. Fine powdery texture. Diffuse boundary into:
	0.23	0.85	Clay	Light brownish grey fine powdery silty clay. Sharp boundary into:
	0.85	1.06	Clay	Mid orange mottled brownish grey clay. Diffuse boundary into:
	1.06	1.18	Clay	Light grey clay with occasional dark grey and orange mottling. Sharp boundary into:
	1.18	1.20	-	Black organic deposit ◊ Sharp boundary into:
	1.20	1.40	Clay	Mid greyish brown silty clay with grey and orange mottling. Diffuse boundary into:
	1.40	1.45	Peat	Dark reddish brown silty peat. ◊ Sharp boundary into:
	1.45	1.47+	Clay	Dark grey clay.
	(**NGR:** 334160.08, 129083.63 **Elevation:** 5.59m AOD)			
BH2	0	0.13	Soil	Mid greyish brown clayey silt. Diffuse boundary into:
	0.13	0.23	Silt	Mid brownish grey clayey silt. Fine powdery texture. Diffuse boundary into:
	0.23	0.91	Clay	Light brownish grey fine powdery silty clay. Sharp boundary into:
	0.91	1.10	Clay	Mid orange mottled brownish grey clay. Diffuse boundary into:
	1.10	1.20	Clay	Light grey clay with occasional dark grey and orange mottling. Diffuse boundary into:
	1.20	1.35	Clay	Dark grey (wet) clay. Sharp boundary into:
	1.35	2.20	Peat	Peat. ◊ Sharp boundary into:
	2.20	2.54+	Clay	Mid greyish blue clay with rare small wood inclusions.
	(**NGR:** 334156.04, 129029.71 **Elevation:** 4.69m AOD)			
BH3	0	0.10	Soil	Mid brownish grey silty clay. Diffuse boundary into:
	0.10	0.76	Clay	Mid orange mottled mid grey clay. Sharp boundary into:
	0.76	1.14	Peat	Greyish brown peat. ◊ Sharp boundary into:
	1.14	1.40	Clay	Mid blueish grey clay. Sharp boundary into:
	1.40	1.55	Peat	Reddish brown peat. ◊ Sharp boundary into:
	1.55	3.56	Clay	Deep greyish blue clay. Sharp boundary into:
	3.56	3.90+	Clay	Greyish brown clay.
	(**NGR:** 334146.79, 128973.39 **Elevation:** 4.61m AOD)			
BH4	0	0.09	Soil	Mid brownish grey silty clay. Diffuse boundary into:
	0.09	0.49	Clay	Mid orange mottled mid grey clay. Becomes more orange towards bottom of deposit. Sharp boundary into:
	0.49	0.68	Peat	Greyish brown peat. ◊ Diffuse boundary into:
	0.68	0.91	Clay	Mid brownish grey clay. Sharp boundary into:
	0.91	1.65	Peat	Reddish brown peat. ◊ Sharp boundary into:
	1.65	2.95+	Clay	Deep greyish blue clay with brownish grey clay and small rare wood inclusions. ◊

Appendix 3.2: Belsar's Hill Borehole Stratigraphic Descriptions

BH#	Top (m)	Base (m)	Summary	Description
	(**NGR:** 542405.03, 270436.13 **Elevation:** 4.26m AOD)			
BH1	0	0.41	Soil	Mid greyish brown clay. Sharp boundary into:
	0.41	0.56	Clay	Mid orange brown mottled mid grey brown fine sandy clay with rare very small stones. Sharp boundary into:
	0.56	0.61	Clay	Mid yellowish brown clay with occasional small and moderate very small angular stones. Diffuse boundary into:
	0.61	0.83	Clay	Marbled mid yellowish brown and mid blueish grey clay with occasional very small angular stones. Diffuse boundary into:
	0.83	1.50+	Clay	Mid blueish grey clay with occasional very small angular stones. From ~1.10m BGL, becomes a bit crumbly with white marl inclusions and very small occasional mid brownish orange coarse clayey sand inclusions. From ~1.20m BGL, becomes continuously more crumbly.
	(**NGR:** 542424.39, 270491.52 **Elevation:** 3.85m AOD)			
BH2	0	0.29	Soil	Mid greyish brown clay. Sharp boundary into:
	0.29	0.64	Clay	Mid yellowish brown clay with occasional very small stones. Diffuse boundary into:
	0.64	1.24+	Clay	Mid blueish grey clay with moderate very small stones.
	(**NGR:** 542442.73, 270544.15 **Elevation:** 3.76m AOD)			
BH3	0	0.38	Soil	Mid greyish brown clay. Diffuse boundary into:
	0.38	0.60	Clay	Mid yellowish brown clay with occasional very small stones. Sharp boundary into:
	0.60	0.75	Clay	Orange marbled mid brownish grey clay with moderate very small stones. From ~0.70m BGL, small stone inclusions with patches of powdery marl and gravel. Diffuse boundary into:
	0.75	0.85	Clay	Mid orange mottled mid blueish grey clay with white marl. Diffuse boundary into:
	0.85	1.05	Clay	Mid blueish grey clay. Sharp boundary into:
	1.05	1.10	Clay	Mid blueish grey clay with small white marl inclusions. Sharp boundary into:
	1.10	1.26+	Clay	Mid blueish grey clay with orange inclusions.
	(**NGR:** 542461.41, 270598.97 **Elevation:** 3.63m AOD)			
BH4	0	0.35	Soil	Mid greyish brown clay. Sharp boundary into:
	0.35	0.57	Clay	Mid yellowish brown clay with occasional very small stones. Diffuse boundary into:
	0.57	1.45	Clay	Mid blueish grey clay with moderate very small stones. Sharp boundary into:
	1.45	1.64	Marl	White and grey clayey marl. Sharp boundary into:
	1.64	2.00	Clay	Mid blueish grey clay. Sharp boundary into:
	2.00	2.15	Clay	Crumbly mid brown clay. Sharp boundary into:
	2.15	2.38+	Clay	Mid blueish grey clay with yellowish small sandstone inclusions.
	(**NGR:** 542479.93, 270652.89 **Elevation:** 3.62m AOD)			
BH5	0	0.40	Soil	Mid greyish brown clay. Diffuse boundary across 0.36-0.45m BGL into:

	0.40	0.65	Clay	Mid yellowish brown clay with occasional very small stones. Diffuse boundary into:
	0.65	0.92	Clay	Marbled light grey and light orange brown clay with patches of light grey very small stone grit. Sharp boundary into:
	0.92	1.22+	Clay	Mid blueish grey clay with occasional patches of gravel. From ~1.05m BGL, white marl inclusions.
	(**NGR:** 542498.62, 270710.07 **Elevation:** 3.44m AOD)			
BH6	0	0.39	Soil	Mid greyish brown clay. Diffuse boundary into:
	0.39	0.50	Clay	Orange mottled mid yellowish brown and mid grey marbled clay. Sharp boundary into:
	0.50	0.62	Clay	Mid blueish grey clay with slight light orange marbling. Diffuse boundary into:
	0.62	1.30+	Clay	Mid blueish grey clay. From 1.00-1.20m BGL, occasional small stone inclusions.

Appendix 3.3: Boney's Island Borehole Stratigraphic Descriptions

BH#	Top (m)	Base (m)	Summary	Description
	(**NGR:** 643014.11, 290830.39 **Elevation:** 2.00m AOD)			
BH1	0	0.19	Soil	Mid greyish brown coarse sandy silt. Sharp boundary into:
	0.19	0.69	Sand	Mid reddish brown fine silty sand. Diffuse boundary into:
	0.69	0.90+	Sand	Mid brownish orange coarse sand with occasional small angular stones and gravel. From 0.87m BGL, gravel becomes more frequent within deposit.
	(**NGR:** 642994.63, 290795.46 **Elevation:** 2.07m AOD)			
BH2	0	0.12	Soil	Mid greyish brown coarse sandy silt. Diffuse boundary into:
	0.12	0.53	Sand	Mid reddish brown fine silty sand. Sharp boundary into:
	0.53	1.40	Sand	Mid brownish orange coarse sand with occasional small angular stones and gravel. Sharp boundary into:
	1.40	2.72+	Sand	Light yellowish brown coarse sand.
	(**NGR:** 642975.09, 290760.42 **Elevation:** 1.97m AOD)			
BH3	0	0.08	Soil	Mid greyish brown coarse sandy silt. Diffuse boundary into:
	0.08	1.38	Sand	Mid reddish brown fine silty sand. Sharp boundary into:
	1.38	1.65	Sand	Light brownish grey coarse sand. Sharp boundary into:
	1.65	2.44+	Sand	Light yellowish brown coarse sand.
	(**NGR:** 642955.52, 290725.51 **Elevation:** 0.57m AOD)			
BH4	0	0.40	Soil	Mid greyish brown coarse sandy silt. Sharp boundary into:
	0.40	0.55	Clay	Mid greyish brown silty clay with occasional small stones. Sharp boundary into:
	0.55	0.87	Peat	Dark grey peat. ◊ Sharp boundary into:
	0.87	1.25	Organic Silt	Mid reddish brown coarse sandy silt, wet, with small wood fragments between 1.00-1.25m BGL. ◊ Diffuse boundary into:
	1.25	1.42+	Sand	Light brownish grey coarse sand.
	(**NGR:** 642936.06, 290690.72 **Elevation:** 0.16m AOD)			
BH5	0	0.15	Soil	Mid greyish brown coarse sandy silt. Diffuse boundary into:
	0.15	0.32	Clay	Orange mottled mid grey clay with grit. Sharp boundary into:
	0.32	0.69	Peat	Dark greyish brown peat. ◊ Diffuse boundary into:
	0.69	2.57	Peat	Dark reddish brown peat. ◊ Sharp boundary into:
	2.57	3.17	Organic Silt	Dark brownish grey clayey silt, organic ◊ Diffuse boundary into:
	3.17	3.54+	Silt	Dark grey sandy silt with rare small stones.
	(**NGR:** 643359.61, 290871.76 **Elevation:** 2.73m AOD)			
BH6	0	0.10	Soil	Mid greyish brown coarse sandy silt. Sharp boundary into:
	0.10	0.65	Sand	Mid reddish brown fine silty sand. Sharp boundary into:

0.65	0.98	Sand	Mid brownish orange coarse sand with occasional small angular stones and gravel. Diffuse boundary into:
0.98	1.07+	Sand	Light yellowish brown coarse sand.

Appendix 3.4: Borough Fen Borehole Stratigraphic Descriptions

BH#	Top (m)	Base (m)	Summary	Description
	(**NGR:** 519230.26, 307254.32 **Elevation:** 3.01m AOD)			
BH1	0	0.25	Soil	Mid greyish brown silty clay. Diffuse boundary into:
	0.25	0.40	Clay	Mid yellowish brown, more compact, silty clay with rare red, possibly iron precipitate inclusions. Sharp boundary into:
	0.40	0.57	Clay	Orange mottled mid brownish grey clay. Sharp boundary into:
	0.57	0.69	Sand	Mid yellowish grey coarse sand. Sharp boundary into:
	0.69	1.92+	Clay	Light blueish grey clay with light orange brown bands and rare small rounded stones becoming occasional towards lower end of deposit.
	(**NGR:** 519287.18, 307248.43 **Elevation:** 3.08m AOD)			
BH2	0	0.30	Soil	Mid greyish brown silty clay. Diffuse boundary into:
	0.30	0.41	Clay	Orange mottled mid brownish grey clay. Sharp boundary into:
	0.41	0.66	Clay	Orange mottled mid brownish grey coarse sandy clay. Diffuse boundary into:
	0.66	0.80	Sand	Mid brownish orange clayey coarse sand. Sharp boundary into:
	0.80	2.00	Clay	Light blueish grey clay with light orange brown bands and rare small rounded stones. Sharp boundary into:
	2.00	2.61	Clay	Mid yellowish brown coarse sandy clay with occasional small stones, gradually turning to clayey coarse sand. Sharp boundary into:
	2.61	2.76+	Clay	Mid blueish grey clay.
	(**NGR:** 519404.97, 307235.04 **Elevation:** 3.41m AOD)			
BH3	0	0.36	Soil	Mid greyish brown silty clay with moderate stones. Sharp boundary into:
	0.36	0.90	Clay	Mid yellowish brown clay. Diffuse boundary into:
	0.90	1.57+	Clay	Mid brownish grey clay with occasional medium chalk inclusions and rare medium stones.
	(**NGR:** 519376.36, 306985.56 **Elevation:** 2.52m AOD)			
BH4	0	0.52	Soil	Mid greyish brown silty clay. Sharp boundary into:
	0.52	0.69	Peat	Mid reddish brown peat. ◊ Sharp boundary into:
	0.69	1.46+	Sand	Orange mottled, mid yellowish brown clayey coarse sand with occasional small stones. Small patch of isolated grey clay at ~1.20m BGL.
	(**NGR:** 519365.35, 306886.87 **Elevation:** 2.41m AOD)			
BH5	0	0.33	Soil	Mid greyish brown silty clay. Diffuse boundary into:
	0.33	0.47	Clay	Peaty clay. Diffuse boundary into:
	0.47	0.65	Peat	Dark brown peat. ◊ Sharp boundary into:
	0.65	0.70	Clay	Orange mottled, mid brownish grey fine sandy clay. Diffuse boundary into:
	0.70	1.65+	Sand	Mid yellowish brown clayey sand.
	(**NGR:** 519614.12, 307212.23 **Elevation:** 2.64m AOD)			
BH6	0	0.44	Soil	Mid greyish brown silty clay. Diffuse boundary into:
	0.44	0.69	Clay	Orange mottled, mid yellowish brown sandy clay. Diffuse boundary into:
	0.69	0.73	Sand	Mid orange brown clayey coarse sand. Sharp boundary into:

	0.73	1.00	Sand	Mid orange brown sand. Diffuse boundary into:
	1.00	1.10	Clay	Mid yellowish brown sandy clay. Sharp boundary into:
	1.10	1.60	Sand	Mid orange brown sand. Sharp boundary into:
	1.60	1.72	Clay	Mid yellowish brown sandy clay with moderate small rounded stones. Diffuse boundary into:
	1.72	1.91+	Sand	Mid orange brown sand with occasional small rounded stones.
	(**NGR:** 519752.96, 307195.63 **Elevation:** 1.59m AOD)			
BH7	0	0.28	Soil	Mid greyish brown silty clay. Sharp boundary into:
	0.28	0.53	Peat	Mid reddish brown peat. ◊ Sharp boundary into:
	0.53	0.67	Clay	Orange mottled, mid brownish grey sandy clay with occasional small stones. Sharp boundary into:
	0.67	1.00	Clay	Mid brownish yellow very fine sandy clay. Sharp boundary into:
	1.00	1.17+	Sand	Mid brownish yellow clayey coarse sand and gravel.
	(**NGR:** 519565.49, 306865.25 **Elevation:** 1.55m AOD)			
BH8	0	0.36	Soil	Mid greyish brown silty clay. Sharp boundary into:
	0.36	0.62	Clay	Mid yellowish brown coarse sandy clay. Diffuse boundary into:
	0.62	0.73+	Sand	Mid yellowish brown clayey coarse sand.
	(**NGR:** 519725.38, 306948.15 **Elevation:** 1.33m AOD)			
BH9	0	0.29	Soil	Mid greyish brown silty clay. Sharp boundary into:
	0.29	0.38	Clay	Orange mottled, mid brownish grey fine sandy clay with occasional small stones. Sharp boundary into:
	0.38	0.74+	Clay	Mid yellowish brown fine sandy clay with occasional gravel and rare medium rounded stones. Deposit became more predominantly coarse sand and with less stone inclusions lower down.
	(**NGR:** 519714.61, 306848.84 **Elevation:** 1.47m AOD)			
BH10	0	0.28	Soil	Mid greyish brown silty clay. Sharp boundary into:
	0.28	0.45	Peat	Dark reddish brown peat. ◊ Sharp boundary into:
	0.45	0.53	Peat	Dark greyish brown peat. ◊ Sharp boundary into:
	0.53	0.60	Clay	Orange mottled, mid brownish grey fine sandy clay with rare medium rounded stones. Sharp boundary into:
	0.60	0.74	Clay	Mid yellowish brown fine, becoming gradually coarser, sandy clay. Sharp boundary into:
	0.74	0.82+	Sand	Mid yellowish brown coarse sand and gravel.

Appendix 3.5: Bullsdown Camp Borehole Stratigraphic Descriptions

BH#	Top (m)	Base (m)	Summary	Description
	(**NGR:** 467570.04, 158341.40 **Elevation:** 55.24m AOD)			
BH1	0	0.32	Soil	Mid brown fine sandy clay with rare small rounded stones. Diffuse boundary into:
	0.32	0.92	Clay	Mid yellowish brown fine sandy clay with rare small rounded stones and rare grit. Becomes more yellow from 0.66m BGL. Patch of light orange and yellowish grey marbling between 0.73 and 0.84m BGL. Inclusion of moderate medium angular stones from ~0.84m BGL. Diffuse boundary into:
	0.92	1.08+	Clay	Light grey fine sandy clay with orange mottling and moderate small to medium stones.
	(**NGR:** 467520.07, 158360.91 **Elevation:** 57.32m AOD)			
BH2	0	0.25	Soil	Mid brown fine sandy clay with rare small rounded stones. Sharp boundary into:
	0.25	1.50+	Clay	Mid yellowish brown fine sandy clay with rare small rounded stones. Light orange and yellowish grey marbling from 0.65m BGL.
	(**NGR:** 467614.64, 158325.60 **Elevation:** 53.18m AOD)			
BH3	0	0.08	Soil	Mid brown fine sandy clay with rare small rounded stones. Sharp boundary into:
	0.08	0.29	Clay	Very orange mottled dark grey stiff clay with some blueish grey patches. Diffuse boundary into:
	0.29	0.48	Clay	Lighter grey clay with less frequent orange mottling. Diffuse boundary into:
	0.48	1.14+	Clay	Mid yellowish brown fine sandy clay with occasional orange mottling. From ~0.60m BGL, reverts to light grey clay above - Banded.
	(**NGR:** 467270.67, 158165.07 **Elevation:** 60.57m AOD)			
BH4	0	0.23	Soil	Mid brown fine sandy clay with rare small rounded stones. Diffuse boundary into:
	0.23	0.80	Clay	Light greyish brown fine sandy clay with occasional small rounded stones. From 0.63m BGL, deposit becomes slightly orangeish. Small patch of manganese precipitate ~0.70m BGL. Diffuse boundary into:
	0.80	1.62+	Clay	Light grey mottled light brownish orange clay.

Appendix 3.6: Cherbury Camp Borehole Stratigraphic Descriptions

BH#	Top (m)	Base (m)	Summary	Description
	(**NGR:** 437588.65, 196296.16 **Elevation:** 67.96m AOD)			
BH1	0	0.23	Soil	Dark brown silty sand with small stones. Sharp boundary into:
	0.23	0.35+	Sand	Mid yellow grey coarse sand with small stones.
	(**NGR:** 437588.02, 196285.74 **Elevation:** 67.81m AOD)			
BH2	0	0.27	Soil	Dark brown silty sand with small stones. Sharp boundary into:
	0.27	0.30+	Sand	Mid yellow grey coarse sand with small stones.
	(**NGR:** 437587.02, 196275.59 **Elevation:** 67.75m AOD)			
BH3	0	0.26	Soil	Dark brown silty sand with small stones. Sharp boundary into:
	0.26	0.30+	Sand	Mid yellow grey coarse sand with small stones.
	(**NGR:** 437586.77, 196266.07 **Elevation:** 67.70m AOD)			
BH4	0	0.26	Soil	Dark brown silty sand with small stones. Sharp boundary into:
	0.26	0.30+	Sand	Mid yellow grey coarse sand with small stones.
	(**NGR:** 437585.92, 196255.54 **Elevation:** 67.67m AOD)			
BH5	0	0.24	Soil	Dark brown silty sand with small stones. Sharp boundary into:
	0.24	0.30+	Sand	Mid yellow grey coarse sand with small stones.
	(**NGR:** 437585.32, 196244.77 **Elevation:** 67.58m AOD)			
BH6	0	0.25	Soil	Dark brown silty sand with small stones. Sharp boundary into:
	0.25	0.30+	Sand	Mid yellow grey coarse sand with small stones.
	(**NGR:** 437437.25, 196047.84 **Elevation:** 67.07m AOD)			
BH7	0	0.21	Soil	Dark brown silty sand with small stones. Sharp boundary into:
	0.21	0.25+	Sand	Mid yellow grey coarse sand with small stones.

Appendix 3.7: Dinas Dinlle Borehole Stratigraphic Descriptions

BH#	Top (m)	Base (m)	Summary	Description
	(**NGR:** 243958.59, 356041.95 **Elevation:** 4.23m AOD)			
BH1	0	0.30	Soil	Mid reddish brown fine sandy clay with rare small stones. Sharp boundary into:
	0.30	0.50+*	Clay	Light brown grey fine sandy clay with small stones. Gritty.
	(**NGR:** 243933.19, 356011.35 **Elevation:** 4.88m AOD)			
BH2	0	0.27	Soil	Mid reddish brown fine sandy clay with rare small stones. Sharp boundary into:
	0.27	0.50+*	Clay	Light brown grey fine sandy clay with medium stones. Gritty.
	(**NGR:** 243877.76, 355939.59 **Elevation:** 5.06m AOD)			
BH3	0	0.30	Soil	Mid reddish brown fine sandy clay with rare small stones. Sharp boundary into:
	0.30	0.50+*	Clay	Mid brownish orange fine sandy clay with small stones.
	(**NGR:** 243983.27, 355814.30 **Elevation:** 4.40m AOD)			
BH4	0	0.22	Soil	Mid greyish brown silty clay. Sharp boundary into:
	0.22	0.27+*	Sand	Mid brownish yellow clayey fine sand. Very gritty.
	(**NGR:** 243802.65, 355886.51 **Elevation:** 3.69m AOD)			
BH5	0	0.19	Soil	Mid greyish brown fine sandy clay. Diffuse boundary into:
	0.19	0.36+*	Sand	Mid greyish brown clayey fine sand. Slightly darker than above deposit.
	(**NGR:** 243806.41, 355887.33 **Elevation:** 3.57m AOD)			
BH6	0	0.19	Soil	Mid reddish brown fine sandy clay with rare small stones. Sharp boundary into:
	0.19	0.33+*	Sand	Mottled dark orange brown, mid greyish brown and light brown grey fine sand.
	(**NGR:** 243954.19, 356056.20 **Elevation:** 4.50m AOD)			
BH7	0	0.26	Soil	Mid grey brown clayey sand. Diffuse boundary into:
	0.26	0.38+*	Sand	Mid brown mottled, mid brownish orange clayey sand with rare small manganese inclusions.

Appendix 3.8: Island Covert Borehole Stratigraphic Descriptions

BH#	Top (m)	Base (m)	Summary	Description
	(**NGR:** 384362.90, 238570.27 **Elevation:** 18.46m AOD)			
BH1	0	0.37	Soil	Leaf litter. Diffuse boundary into:
	0.37	0.45	Soil	Leaf litter with increased clay; dark brown silty clay with occasional small angular stones. Sharp boundary into:
	0.45	0.55	Clay	Blue-grey clay with occasional small stones. Sharp boundary into:
	0.55	0.75	Clay	Orange clay. Diffuse boundary into:
	0.75	1.00+	Clay	Slightly drier orange clay with silt and fine sand.
	(**NGR:** 384356.98, 238575.49 **Elevation:** 19.18m AOD)			
BH2	0	0.17	Soil	Leaf litter. Sharp boundary into:
	0.17	0.25+	Sand	Mid grey 3-part coarse sand, 1-part clay with occasional small stones. Orange clay on the bottom of core suggesting laminated with sediment at the base of C1.
	(**NGR:** 384397.31, 238536.12 **Elevation:** 18.41m AOD)			
BH3	0	0.17	Soil	Similar to leaf litter in C1 and C2, but with inclusion of dark brown clay soil. Sharp boundary into:
	0.17	0.34	Clay	Mid greyish brown organic clay, wet/plastic. Sharp boundary into:
	0.34	1.41	Clay	Orange mottled, light blue-grey clay. Diffuse boundary into:
	1.41	1.56+	Clay	Orange clay with fine sand. Grey again at base of core suggesting laminated.
	(**NGR:** 384400.21, 238537.37 **Elevation:** 16.14m AOD)			
BH4	0	0.17	Soil	Leaf litter with clay soil inclusion, same as C3. Diffuse boundary into:
	0.17	0.45	Clay	Mid greyish brown organic clay. Sharp boundary into:
	0.45	0.73	Clay	Orange mottled, light blue-grey clay. Diffuse boundary into:
	0.73	0.77+	Sand	Mid grey fine sand with some silt. Laminated with orange clay below.
	(**NGR:** 384400.24, 238536.49 **Elevation:** 25.22m AOD)			
BH5	0	0.48	Soil	Leaf litter. Diffuse boundary into:
	0.48	0.58	Clay	Blue-grey clay with leaf litter and roots. Diffuse boundary into:
	0.58	0.70	Clay	Blue-grey clay, wet. Sharp boundary into:
	0.70	0.75	Clay	Orange sandy clay. Sharp boundary into:
	0.75	0.79	Sand	Mid grey fine sand with some silt. Diffuse boundary with:
	0.79	0.83+	Sand	Orange clay rich sand.
	(**NGR:** 384401.68, 238535.45 **Elevation:** 22.47m AOD)			
BH6	0	0.16	Soil	Leaf litter. Diffuse boundary into:
	0.16	0.23	Clay	Blue-grey clay with leaf litter and roots. Sharp boundary into:
	0.23	0.25+	Sand	Mid grey fine sand with some silt.

	(**NGR:** 384403.95, 238533.34 **Elevation:** 22.09m AOD)			
BH7	0	0.29	Soil	Leaf litter. Diffuse boundary into:
	0.29	0.44	Clay	Blue-grey clay with leaf litter and roots. Sharp boundary into:
	0.44	0.45+	Clay	Orange clay.
	(**NGR:** 384417.09, 238529.27 **Elevation:** 20.21m AOD)			
BH8	0	0.12	Soil	Leaf litter. Diffuse boundary into:
	0.12	0.16	Clay	Blue-grey clay with leaf litter and roots. Sharp boundary into:
	0.16	0.40+	Clay	Orange sandy clay, sandier below 0.36m.

Appendix 3.9: Peckforton Mere Borehole Stratigraphic Descriptions

BH#	Top (m)	Base (m)	Summary	Description
	(**NGR:** 354254.80, 357613.88 **Elevation:** 74.00m AOD)			
BH1	0	0.48	Soil	Dark brown silty sand with rare small stones. Sharp boundary into:
	0.48	0.55	Sand	Dark brownish orange coarse sand. Diffuse boundary into:
	0.55	0.58	Sand	Yellowish grey coarse sand with rare small stones. Diffuse boundary into:
	0.58	0.73	Sand	Compact yellowish grey with mottled orange clayey sand. Sharp boundary into:
	0.73	0.80+	Sand	Mid greyish yellow very coarse sand.
	(**NGR:** 354251.26, 357602.84 **Elevation:** 73.71m AOD)			
BH2	0	0.34	Soil	Dark brown silty sand with rare small stones. Sharp boundary into:
	0.34	0.53	Sand	Dark brownish orange coarse sand. Diffuse boundary into:
	0.53	0.88	Sand	Yellowish grey coarse sand with rare small stones. Diffuse boundary into:
	0.88	1.14+	Sand	Similar deposit but with small clay inclusions.
	(**NGR:** 354249.68, 357591.12 **Elevation:** 72.94m AOD)			
BH3	0	0.28	Soil	Dark brown silty sand with rare small stones. Sharp boundary into:
	0.28	0.38	Sand	Mid yellowish brown fine sand. Sharp boundary into:
	0.38	0.66	Clay	Mid brown sandy clay. Sharp boundary into:
	0.66	0.74+	Sand	Mid yellowish grey coarse sand.
	(**NGR:** 354246.14, 357580.68 **Elevation:** 72.66m AOD)			
BH4	0	0.32	Soil	Dark brown silty sand with rare small stones. Sharp boundary into:
	0.32	0.87+	Sand	Mid yellowish grey coarse sand.
	(**NGR:** 354242.31, 357569.64 **Elevation:** 72.94m AOD)			
BH5	0	0.29	Soil	Dark brown silty sand with rare small stones. Sharp boundary into:
	0.29	0.55	Sand	Mid yellowish brown with dark brown mottling, coarse sand. Diffuse boundary into:
	0.55	0.93+*	Sand	Mid yellow grey coarse sand. (Hit water table at 0.68m BGL).
	(**NGR:** 354326.92, 357612.85 **Elevation:** 73.13m AOD)			
BH6	0	0.32	Soil	Dark brown silty sand with rare small stones. Sharp boundary into:
	0.32	0.43	Sand	Mid yellowish grey with brown mottling, fine sand. Diffuse boundary into:
	0.43	0.50	Sand	Mid brown fine sand. Diffuse boundary into:
	0.50	1.00+	Sand	Mid yellowish grey with brown mottling, fine sand. Similar to deposit 2.
	(**NGR:** 354329.14, 357601.63 **Elevation:** 72.93m AOD)			
BH7	0	0.31	Soil	Dark brown silty sand with rare small stones. Sharp boundary into:
	0.31	0.56	Sand	Mid orange brown coarse sand. Sharp boundary into:
	0.56	0.64	Sand	Mid yellowish grey with light brown mottling, fine sand. Diffuse boundary into:
	0.64	0.80	Clay	Mid brownish grey sandy clay. Diffuse boundary into:

	0.80	1.00+	Sand	Mid yellowish grey with light brown mottling, fine sand. Similar to deposit 3.
	(**NGR:** 354331.22, 357590.37 **Elevation:** 72.74m AOD)			
BH8	0	0.29	Soil	Dark brown silty sand with rare small stones. Sharp boundary into:
	0.29	0.60	Sand	Mid orange coarse sand. Diffuse boundary into:
	0.60	0.75	Sand	Mid yellowish grey fine sand. Sharp boundary into:
	0.75	0.83	Clay	Mid brown sandy clay. Sharp boundary into:
	0.83	1.00+	Sand	Mid yellowish grey fine sand. Similar to deposit 3.
	(**NGR:** 354333.57, 357578.79 **Elevation:** 72.56m AOD)			
BH9	0	0.26	Soil	Dark brown silty sand with rare small stones. Diffuse boundary into:
	0.26	0.49	Sand	Mid brown with orangish brown mottling, silty sand. Diffuse boundary into:
	0.49	1.00+	Sand	Mid yellowish grey fine sand with small stones.
	(**NGR:** 354335.36, 357568.33 **Elevation:** 69.22m AOD)			
BH10	0	0.38	Soil	Dark brown silty sand with rare small stones. Sharp boundary into:
	0.38	0.70+*	Sand	Mid yellowish grey fine sand.
	(**NGR:** 354336.68, 357558.570 **Elevation:** 70.07m AOD)			
BH11	0	0.34	Soil	Dark brown silty sand with rare small stones. Sharp boundary into:
	0.34	0.50+*	Sand	Mid yellowish grey fine sand.
	(**NGR:** 354267.21, 357611.64 **Elevation:** 70.99m AOD)			
BH12	0	0.40	Soil	Dark brown silty sand with rare small stones. Sharp boundary into:
	0.40	0.60	Sand	Dark brownish orange with brown mottling, clayey sand. Sharp boundary into:
	0.60	1.00+	Sand	Light orange brown fine sand.
	(**NGR:** 354276.52, 357609.01 **Elevation:** 71.55m AOD)			
BH13	0	0.35	Soil	Dark brown silty sand with rare small stones. Sharp boundary into:
	0.35	1.00+	Sand	Mid yellowish grey fine sand with mid orange clay mottling/inclusions.

Appendix 3.10: Stonea Camp Borehole Stratigraphic Descriptions

BH#	Top (m)	Base (m)	Summary	Description
	(**NGR:** 544701.11, 292994.85 **Elevation:** 1.26m AOD)			
BH1	0	0.41	Soil	Dark reddish brown silty clay with occasional small fragments of degraded wood and rare medium sub-angular stones. Sharp boundary into:
	0.41	0.98	Clay	Mid brownish orange mottled mid yellowish grey clay with rare small rounded stones and belemnite. Diffuse into: from 0.72m BGL, frequent very small stones and occasional small stones with deposit becoming slightly more yellow. Sharp boundary into:
	0.98	1.06	Sand	Mid greyish yellow clayey coarse sand with rare very small stones. Sharp boundary into:
	1.06	1.17	Sand	Mid orange brown coarse sand with occasional small stones. Becomes gradually more light yellowish brown from ~1.10m BGL. Sharp boundary into:
	1.17	1.49	Clay	Mid grey clay with frequent very small stones. From ~1.30m BGL, some occasional small bits of white marl. Diffuse boundary into:
	1.49	1.53+	Marl	White marl, fine powdery with moderate small lumps.
	(**NGR:** 544695.74, 292985.04 **Elevation:** 1.16m AOD)			
BH2	0	0.44	Soil	Dark reddish brown silty clay with occasional small fragments of degraded wood and rare medium sub-angular stones. Sharp boundary into:
	0.44	0.47	Clay	As above, more compact layer. Sharp boundary into:
	0.47	0.59	Clay	Mid brownish orange mottled mid yellowish grey clay with rare small rounded stones. Sharp boundary into:
	0.59	0.66	Sand	Mid greyish yellow clayey coarse sand with rare very small stones. Sharp boundary into:
	0.66	1.80+	Sand	Mid orange brown coarse sand with occasional small stones.
	(**NGR:** 544690.54, 292975.73 **Elevation:** 1.09m AOD)			
BH3	0	0.59	Soil	Dark reddish brown silty clay with occasional small fragments of degraded wood and rare medium sub-angular stones. Diffuse boundary into:
	0.59	0.67	Clay	Orange mottled mid brown grey, very dry crumbly, silty clay with rare sub-angular small stones. Sharp boundary into:
	0.67	1.06	Clay	Mid brownish orange mottled mid yellowish grey clay with rare small rounded stones. Diffuse colour change from 0.87m BGL, becoming more orange and then yellowish brown. Sharp boundary into:
	1.06	1.13	Sand	Mid greyish yellow clayey coarse sand with rare very small stones. Sharp boundary into:
	1.13	1.52	Sand	Mid orange brown coarse sand with occasional small stones. Sharp boundary into:
	1.52	1.88+	Clay	Mid grey clay with frequent very small stones.
	(**NGR:** 544685.25, 292966.33 **Elevation:** 1.34m AOD)			
BH4	0	0.39	Soil	Dark reddish brown silty clay with occasional small fragments of degraded wood and rare medium sub-angular stones. Sharp boundary into:

	0.39	0.60	Sand	Orange mottled mid brownish grey very fine sand. Diffuse into:
	0.60	0.68	Clay	Mid brownish orange mottled mid yellowish grey clay with rare small rounded stones. Sharp boundary into:
	0.68	0.90	Sand	Light yellowish brown coarse sand. Sharp boundary into:
	0.90	1.09	Clay	Orange mottled dark reddish brown clay. Diffuse boundary into:
	1.09	1.90+	Clay	Mid brownish orange mottled mid yellowish grey clay.
	(**NGR:** 544679.89, 292956.74 **Elevation:** 1.37m AOD)			
BH5	0	0.39	Soil	Dark reddish brown silty clay with occasional small fragments of degraded wood and rare medium sub-angular stones. Sharp boundary into:
	0.39	0.66	Sand	Orange mottled mid greyish brown clayey very fine sand. Predominantly very fine sand from 0.50m BGL. Diffuse boundary into:
	0.66	0.89	Sand	Orange mottled light yellowish grey very fine sand. Sharp boundary into:
	0.89	0.95	Clay	Mid brownish orange mottled mid yellowish grey clay with rare small rounded stones. Sharp boundary into:
	0.95	1.04	Silt	Dark brown clayey silt. Diffuse boundary into:
	1.04	1.48	Clay	Dark greyish brown clay. Diffuse boundary across 1.10-1.48m BGL into:
	1.48	1.52	Clay	Mid brownish orange mottled mid yellowish grey clay with rare small rounded stones. Diffuse boundary across 1.52-1.62m BGL into:
	1.52	1.75	Sand	Orange mottled light yellowish grey very fine sand. Sharp boundary into:
	1.75	1.82+	Clay	Mid brownish orange mottled mid yellowish grey clay.
	(**NGR:** 544642.83, 292894.40 **Elevation:** 1.25m AOD)			
BH6	0	0.38	Soil	Dark reddish brown silty clay with occasional small fragments of degraded wood and rare medium sub-angular stones. Sharp boundary into:
	0.38	0.45	Clay	Mid brownish orange mottled mid yellowish grey clay with rare small rounded stones. Diffuse boundary into:
	0.45	0.78	Sand	Orange mottled mid brownish grey very fine sand. Sharp boundary into:
	0.78	1.01	Clay	Orange mottled mid brown grey, very dry crumbly, silty clay with rare sub-angular small stones. Sharp boundary into:
	1.01	1.34+	Clay	Mid brownish orange mottled mid yellowish grey, compact, clay.

Appendix 3.11: Wardy Hill Borehole Stratigraphic Descriptions

BH#	Top (m)	Base (m)	Summary	Description
	(**NGR:** 547812.97, 282106.10 **Elevation:** 1.43m AOD)			
BH1	0	0.25	Soil	Dark greyish brown silty clay. Sharp boundary into:
	0.25	0.92	Clay	Mid yellowish brown clay. Diffuse boundary across 0.86-0.92m BGL into:
	0.92	1.30	Clay	Mid blueish grey clay. Diffuse boundary into:
	1.30	1.56	Clay	Mid blueish grey clay with small pockets of coarse sand. Diffuse boundary into:
	1.56	1.76+	Clay	Mid grey clay.
	(**NGR:** 547836.41, 282101.43 **Elevation:** 1.40m AOD)			
BH2	0	0.28	Soil	Dark greyish brown silty clay. Sharp boundary into:
	0.28	0.67	Clay	Mid yellowish brown clay. Diffuse boundary into:
	0.67	1.30+	Clay	Mid blueish grey clay.
	(**NGR:** 547879.03, 282093.10 **Elevation:** 1.39m AOD)			
BH3	0	0.48	Soil	Dark greyish brown silty clay. Sharp boundary into:
	0.48	1.00	Clay	Mid yellowish brown clay. Diffuse boundary into:
	1.00	1.39+	Clay	Mid blueish grey clay.
	(**NGR:** 547902.18, 282088.70 **Elevation:** 1.11m AOD)			
BH4	0	0.24	Soil	Dark greyish brown silty clay. Sharp boundary into:
	0.24	0.50	Clay	Mid yellowish brown mottled brownish grey clay. Diffuse boundary into:
	0.50	0.65	Clay	Mid yellowish brown clay. Diffuse boundary into:
	0.65	0.85	Clay	Mid brownish grey clay. Diffuse boundary into:
	0.85	2.46+	Clay	Mid blueish grey clay with orange inclusions and occasional small rounded stones gradually turning into mid blueish grey clay.
	(**NGR:** 548035.25, 282373.52 **Elevation:** 1.55m AOD)			
BH5	0	0.20	Soil	Dark greyish brown silty clay. Sharp boundary into:
	0.20	0.30	Clay	Mid yellowish brown clay. Sharp boundary into:
	0.30	0.64	Clay	Mid brownish orange mottled mid grey clay with patches of orange, more crumbly clay. From ~0.50m BGL, deposit becomes gradually pale brown mixed with mid grey clay. Sharp boundary into:
	0.64	1.10+	Marl	Mid yellow mottled light grey marl.
	(**NGR:** 547963.87, 281928.30 **Elevation:** 0.33m AOD)			
BH6	0	0.52	Soil	Dark brown clayey silt, very rich organic soil. Sharp boundary into:
	0.52	0.97	Clay	Mid orange mottled mid greyish brown clay, becoming gradually yellowish brown and grey ~0.80m BGL. Sharp boundary into:
	0.97	1.05	Sand	Mid yellowish brown clayey coarse sand and frequent pea gravel. Sharp boundary into:
	1.05	1.09	Sand	Mixed light grey and mid orange brown clayey sand. Diffuse boundary into:
	1.09	1.34+	Clay	Mid grey clay.
	(**NGR:** 547791.31, 282272.88 **Elevation:** 0.97m AOD)			
BH7	0	0.37	Soil	Dark grey brown silty clay. Diffuse boundary across 0.35-0.39m BGL into:
	0.37	0.90	Clay	Mid orange mottled mid greyish brown clay, becoming brownish grey ~0.65m BGL. Patch of clayey sand 0.74-0.84m BGL. Diffuse boundary into:

0.90	1.32+	Clay	Mid blueish grey clay.

Appendix 3.12: Warham Camp Borehole Stratigraphic Descriptions

BH#	Top (m)	Base (m)	Summary	Description
	(**NGR:** 594339.94, 340754.28 **Elevation:** 7.41m AOD)			
BH1	0	0.40	Soil	Mid greyish brown clayey silt. Diffuse boundary into:
	0.40	0.50	Sand	Mid brownish grey silty coarse sand. Sharp boundary into:
	0.50	0.60	Sand	Mid brownish yellow coarse sand. Sharp boundary into:
	0.60	0.73	Gravel	Mid brownish yellow fine gravel. Sharp boundary into:
	0.73	0.78	Sand	Burnt orange gravelly coarse sand. Sharp boundary into:
	0.78	0.85	Clay	Mid brownish grey coarse sandy clay. Sharp boundary into:
	0.85	1.36	Peat	Dark brownish grey and brownish red peat. ◊ Sharp boundary into:
	1.36	1.50+	Sand	Mid grey coarse sand with frequent medium angular stones.
	(**NGR:** 594314.31, 340708.66 **Elevation:** 6.78m AOD)			
BH2	0	0.36	Soil	Mid greyish brown clayey silt. Diffuse boundary into:
	0.36	0.50	Sand	Mid brownish grey silty coarse sand. Sharp boundary into:
	0.50	1.72	Peat	Dark brownish grey and brownish red peat. ◊ Sharp boundary into:
	1.72	1.89+	Clay	Dark grey sandy clay.
	(**NGR:** 594290.36, 340665.04 **Elevation:** 6.95m AOD)			
BH3	0	0.21	Soil	Mid greyish brown clayey silt. Diffuse boundary into:
	0.21	0.36	Sand	Mid brownish grey silty coarse sand. Diffuse boundary into:
	0.36	1.00	Peat	Dark brownish grey and brownish red peat. ◊ Sharp boundary into:
	1.00	1.51	Clay	Mid brownish grey sandy clay. Sharp boundary into:
	1.51	2.58	Peat	Dark greyish brown peat. ◊ Sharp boundary into:
	2.58	2.78+	Sand	Mid grey clayey coarse sand.
	(**NGR:** 594266.76, 340617.28 **Elevation:** 6.91m AOD)			
BH4	0	0.27	Soil	Mid greyish brown clayey silt. Diffuse boundary into:
	0.27	0.56	Clay	Mid brownish grey sandy clay. Diffuse boundary into:
	0.56	0.78	Clay	Dark greyish brown silty clay. Sharp boundary into:
	0.78	1.03	Clay	Mid grey sandy clay. Gradually blueish towards lower end of deposit. Diffuse boundary into:
	1.03	1.30	Clay	Mid reddish brown silty clay. Sharp boundary into:
	1.30	1.69+	Sand	Mid brownish grey clayey coarse sand, very gritty.

Appendix 3.13: Y Werthyr Borehole Stratigraphic Descriptions

BH#	Top (m)	Base (m)	Summary	Description
	(**NGR:** 237346.53, 378364.94 **Elevation:** 36.27m AOD)			
BH1	0	0.18	Soil	Mid yellowish brown clayey silt. Diffuse boundary into:
	0.18	0.37	Clay	Orange mottled, mid brownish grey silty clay with rare small stones. Diffuse boundary into:
	0.37	0.43	Clay	Mid brownish grey silty clay. Diffuse boundary into:
	0.43	0.54	Clay	Mid greyish brown silty clay. Sharp boundary into:
	0.54	0.68	Clay	Dark blueish grey clay. Sharp boundary into:
	0.68	0.91	Sand	Orange mottled, mid brownish grey clayey coarse sand, stained by above deposit. Sharp boundary into:
	0.91	1.06	Clay	Dark grey moist silty clay. Diffuse boundary into:
	1.06	1.16	Clay	Mid brownish grey coarse sandy clay with grit inclusions. Sharp boundary into:
	1.16	1.24+	Clay	Mid brownish yellow fine sandy clay, very gritty.
	(**NGR:** 237358.46, 378370.20 **Elevation:** 36.52m AOD)			
BH2	0	0.21	Soil	Mid yellowish brown clayey silt with small stones. Sharp boundary into:
	0.21	0.48	Sand	Black manganese (up to 1cm) mottled, mid yellowish brown gritty clayey coarse sand. Sharp boundary into:
	0.48	0.56+	Clay	Light grey mottled yellow clay.
	(**NGR:** 237353.51, 378368.07 **Elevation:** 36.42m AOD)			
BH3	0	0.24	Soil	Mid yellow brown clayey silt with small stones. Diffuse boundary into:
	0.24	0.46	Sand	Black manganese and orange mottled, grey brown clayey sand with small to medium stones. Diffuse boundary across 0.44-0.48m BGL into:
	0.46	0.70	Clay	Grey and orange coarse sandy clay. Sharp boundary into:
	0.70	0.86	Sand	Mid grey clayey coarse sand. Diffuse boundary into:
	0.86	0.92+	Clay	Mid blue grey clay.
	(**NGR:** 237394.83, 378385.13 **Elevation:** 36.48m AOD)			
BH4	0	0.24	Soil	Mid greyish brown clayey silt. Sharp boundary into:
	0.24	0.43	Clay	Mid greyish brown silty clay with manganese and iron precipitate. Sharp boundary into:
	0.43	0.77+	Silt	Dark greyish brown coarse sandy clay silt.
	(**NGR:** 237350.70, 378349.28 **Elevation:** 36.58m AOD)			
BH5	0	0.37	Soil	Mid yellowish brown clayey silt. Diffuse boundary into:
	0.37	0.80+	Clay	Mid brownish orange and light grey clay with bits of grit.
	(**NGR:** 237588.10, 378268.41 **Elevation:** 38.40m AOD)			
BH6	0	0.37	Soil	Mid yellowish brown clayey silt. Sharp boundary into:
	0.37	0.80+	Clay	Light orange and grey clay.

Appendix 4: Borehole Samples

Site Code	Sample #	Borehole #	Deposit	Description	RC
AHBS	001	1	6	Charred layer	
AHBS	002	1	8	Dark reddish brown silty peat	
AHBS	003	2	7	Peat (1.35-1.55m BGL)	
AHBS	004	2	7	Peat (1.55-1.75m BGL)	
AHBS	005	2	7	Peat (1.75-1.95m BGL) with wood	
AHBS	006	2	7	Peat (1.95-2.20m BGL)	Y
AHBS	007	3	3	Greyish brown peat (0.76-1.06m BGL)	
AHBS	008	3	3	Greyish brown peat (1.06-1.14m BGL)	
AHBS	009	3	5	Reddish brown peat	
AHBS	010	4	3	Greyish brown peat	Y
AHBS	011	4	5	Reddish brown peat (0.91-1.25m BGL)	
AHBS	012	4	5	Reddish brown peat (1.25-1.41m BGL)	
AHBS	013	4	5	Reddish brown peat (1.41-1.85m BGL)	Y
AHBS	014	4	6	Greyish blue clay with wood	
BBCS	001	4	4	Reddish brown sandy silt	
BBCS	002	5	3	Greyish brown peat	Y
BBCS	003	5	4	Reddish brown peat (0.69-1.00m BGL)	
BBCS	004	5	4	Reddish brown peat (1.00-1.30m BGL)	
BBCS	005	5	4	Reddish brown peat (1.30-1.70m BGL)	
BBCS	006	5	4	Reddish brown peat (1.70-2.10m BGL)	
BBCS	007	5	4	Reddish brown peat (2.10-2.57m BGL)	
BBCS	008	5	5	Brownish grey clayey silt	Y
BBCS	009	4	3	Greyish brown peat	
BFPC	001	4	2	Reddish brown peat	
BFPC	002	5	3	Dark brown peat	Y
BFPC	003	7	2	Reddish brown peat	
BFPC	004	10	2	Reddish brown peat	
BFPC	005	10	3	Greyish brown peat	
WWSN	001	1	6	Brownish grey and red peat (top)	
WWSN	002	1	6	Brownish grey and red peat (base)	
WWSN	003	2	3	Peat (top)	
WWSN	004	2	3	Peat (middle)	
WWSN	005	2	3	Peat (base)	
WWSN	006	3	3	Peat	Y
WWSN	007	3	5	Greyish brown peat (top)	
WWSN	008	3	5	Greyish brown peat (base)	Y

Appendix 5.1: Athelney Radiocarbon Dating Results

Scottish Universities Environmental Research Centre
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Director: Professor F M Stuart Tel: +44 (0)1355 223332 www.glasgow.ac.uk/suerc

RADIOCARBON DATING CERTIFICATE
25 July 2023

Laboratory Code	SUERC-111361 (GU64639)
Submitter	Theodore Reeves Classics, Ancient History and Archaeology University of Birmingham Edgbaston Birmingham B15 2TT
Site Reference	Athelney Hill - AHBS
Context Reference	BH2: 1.95-2.20m BGL
Sample Reference	AHBS-006
Material	sediment : humic acid dated
$\delta^{13}C$ relative to VPDB	-28.5 ‰
Radiocarbon Age BP	3396 ± 24

N.B. The above ^{14}C age is quoted in conventional years BP (before 1950 AD) and requires calibration to the calendar timescale. The error, expressed at the one sigma level of confidence, includes components from the counting statistics on the sample, modern reference standard and blank and the random machine error.

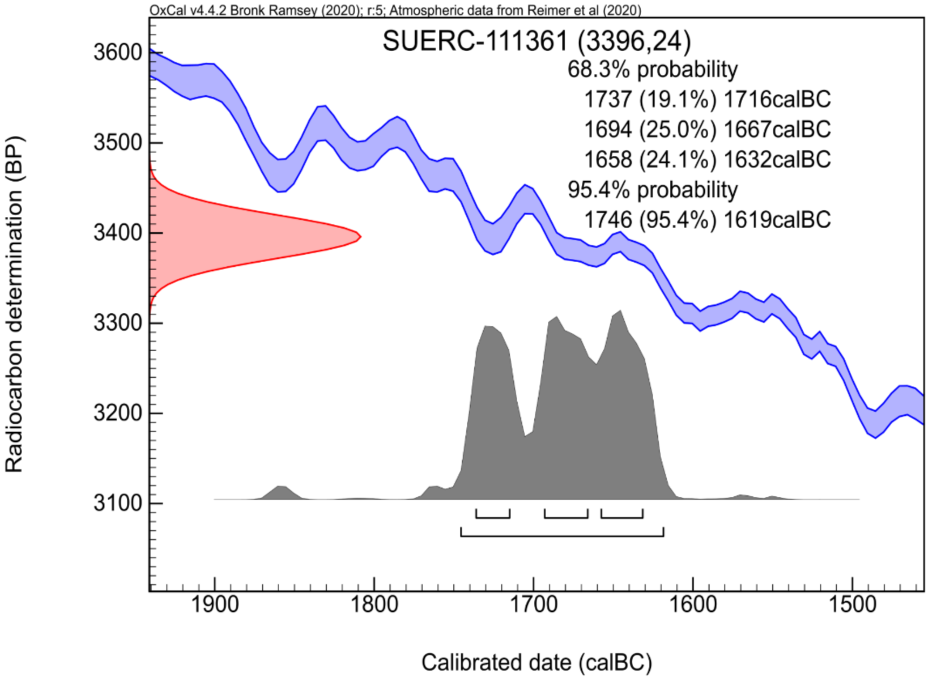
Samples with a SUERC coding are measured at the Scottish Universities Environmental Research Centre AMS Laboratory and should be quoted as such in any reports within the scientific literature. The laboratory GU coding should also be given in parentheses after the SUERC code.

Detailed descriptions of the methods employed by the SUERC Radiocarbon Laboratory can be found in Dunbar et al. (2016) *Radiocarbon 58(1) pp.9-23.*

For any queries relating to this certificate, the laboratory can be contacted at suerc-c14lab@glasgow.ac.uk.

Conventional age and calibration age ranges calculated by :

Checked and signed off by :



The radiocarbon age given overleaf is calibrated to the calendar timescale using the Oxford Radiocarbon Accelerator Unit calibration program OxCal 4.*

The above date ranges have been calibrated using the IntCal20 atmospheric calibration curve.†

Please contact the laboratory if you wish to discuss this further.

* Bronk Ramsey (2009) *Radiocarbon 51(1) pp.337-60*
† Reimer et al. (2020) *Radiocarbon 62(4) pp.725-57*

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RADIOCARBON DATING CERTIFICATE
25 July 2023

Laboratory Code	SUERC-111362 (GU64640)
Submitter	Theodore Reeves Classics, Ancient History and Archaeology University of Birmingham Edgbaston Birmingham B15 2TT
Site Reference	Athelney Hill - AHBS
Context Reference	BH4: 0.49-0.68m BGL
Sample Reference	AHBS-010
Material	sediment : humic acid dated
$\delta^{13}C$ relative to VPDB	-29.0 ‰
Radiocarbon Age BP	1592 ± 21

N.B. The above ^{14}C age is quoted in conventional years BP (before 1950 AD) and requires calibration to the calendar timescale. The error, expressed at the one sigma level of confidence, includes components from the counting statistics on the sample, modern reference standard and blank and the random machine error.

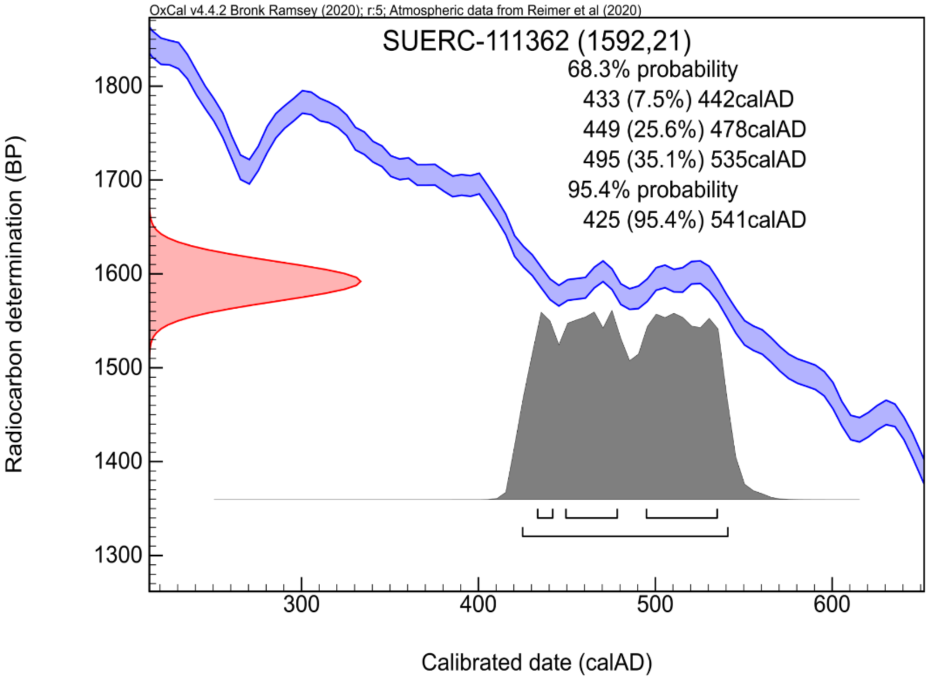
Samples with a SUERC coding are measured at the Scottish Universities Environmental Research Centre AMS Laboratory and should be quoted as such in any reports within the scientific literature. The laboratory GU coding should also be given in parentheses after the SUERC code.

Detailed descriptions of the methods employed by the SUERC Radiocarbon Laboratory can be found in Dunbar et al. (2016) *Radiocarbon 58(1) pp.9-23.*

For any queries relating to this certificate, the laboratory can be contacted at suerc-c14lab@glasgow.ac.uk.

Conventional age and calibration age ranges calculated by :

Checked and signed off by :



The radiocarbon age given overleaf is calibrated to the calendar timescale using the Oxford Radiocarbon Accelerator Unit calibration program OxCal 4.*

The above date ranges have been calibrated using the IntCal20 atmospheric calibration curve.†

Please contact the laboratory if you wish to discuss this further.

* Bronk Ramsey (2009) *Radiocarbon 51(1) pp.337-60*
† Reimer et al. (2020) *Radiocarbon 62(4) pp.725-57*

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RADIOCARBON DATING CERTIFICATE
25 July 2023

Laboratory Code	SUERC-111363 (GU64641)
Submitter	Theodore Reeves Classics, Ancient History and Archaeology University of Birmingham Edgbaston Birmingham B15 2TT
Site Reference	Athelney Hill - AHBS
Context Reference	BH4: 1.41-1.85m BGL
Sample Reference	AHBS-013
Material	sediment : humic acid dated
δ^{13}C relative to VPDB	-29.8 ‰
Radiocarbon Age BP	3610 ± 24

N.B. The above ^{14}C age is quoted in conventional years BP (before 1950 AD) and requires calibration to the calendar timescale. The error, expressed at the one sigma level of confidence, includes components from the counting statistics on the sample, modern reference standard and blank and the random machine error.

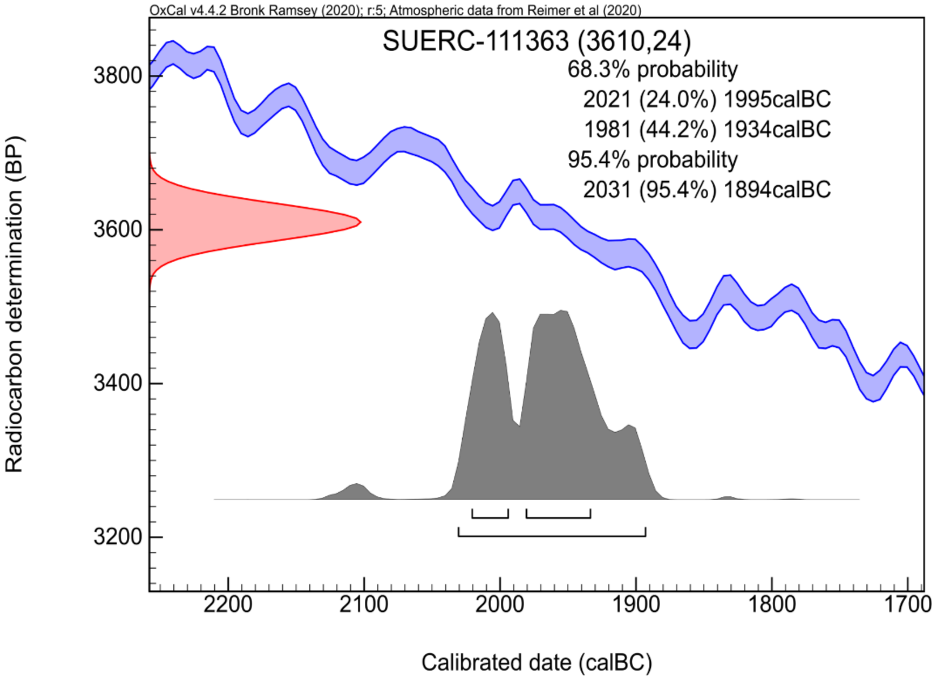
Samples with a SUERC coding are measured at the Scottish Universities Environmental Research Centre AMS Laboratory and should be quoted as such in any reports within the scientific literature. The laboratory GU coding should also be given in parentheses after the SUERC code.

Detailed descriptions of the methods employed by the SUERC Radiocarbon Laboratory can be found in Dunbar et al. (2016) *Radiocarbon 58(1) pp.9-23.*

For any queries relating to this certificate, the laboratory can be contacted at suerc-c14lab@glasgow.ac.uk.

Conventional age and calibration age ranges calculated by :

Checked and signed off by :



The radiocarbon age given overleaf is calibrated to the calendar timescale using the Oxford Radiocarbon Accelerator Unit calibration program OxCal 4.*

The above date ranges have been calibrated using the IntCal20 atmospheric calibration curve.†

Please contact the laboratory if you wish to discuss this further.

* Bronk Ramsey (2009) *Radiocarbon 51(1) pp.337-60*
† Reimer et al. (2020) *Radiocarbon 62(4) pp.725-57*

Appendix 5.2: Boney's Island Radiocarbon Dating Results

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RADIOCARBON DATING CERTIFICATE
25 July 2023

Laboratory Code	SUERC-111364 (GU64642)
Submitter	Theodore Reeves Classics, Ancient History and Archaeology University of Birmingham Edgbaston Birmingham B15 2TT
Site Reference	Boney's Island - BBCS
Context Reference	BH5: 0.32-0.69m BGL
Sample Reference	BBCS-002
Material	sediment : humic acid dated
$\delta^{13}C$ relative to VPDB	-30.0 ‰
Radiocarbon Age BP	2468 ± 21

N.B. The above ^{14}C age is quoted in conventional years BP (before 1950 AD) and requires calibration to the calendar timescale. The error, expressed at the one sigma level of confidence, includes components from the counting statistics on the sample, modern reference standard and blank and the random machine error.

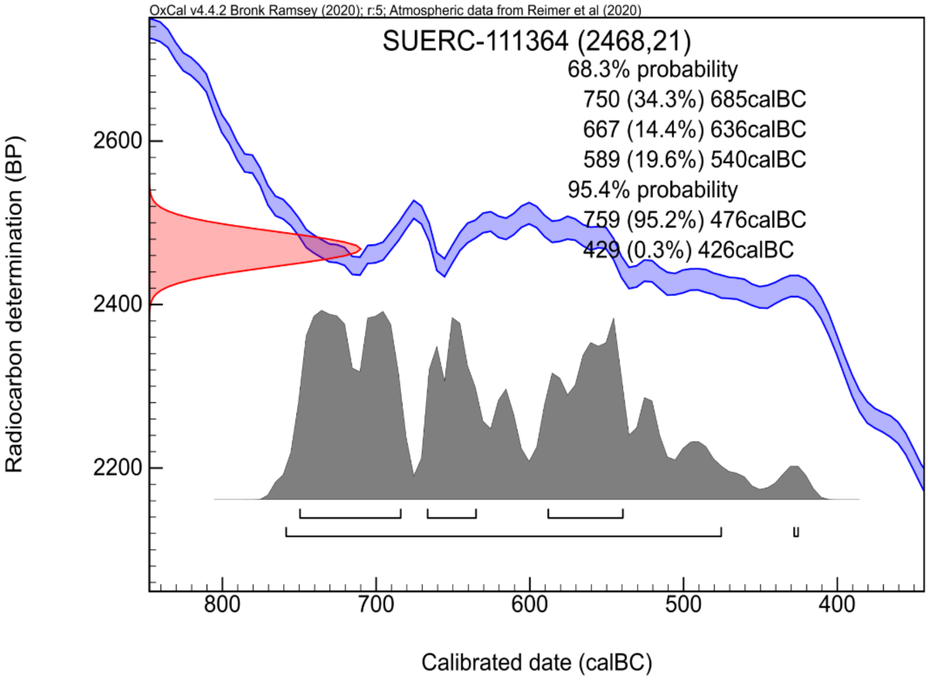
Samples with a SUERC coding are measured at the Scottish Universities Environmental Research Centre AMS Laboratory and should be quoted as such in any reports within the scientific literature. The laboratory GU coding should also be given in parentheses after the SUERC code.

Detailed descriptions of the methods employed by the SUERC Radiocarbon Laboratory can be found in Dunbar et al. (2016) *Radiocarbon 58(1) pp.9-23.*

For any queries relating to this certificate, the laboratory can be contacted at suerc-c14lab@glasgow.ac.uk.

Conventional age and calibration age ranges calculated by :

Checked and signed off by :



The radiocarbon age given overleaf is calibrated to the calendar timescale using the Oxford Radiocarbon Accelerator Unit calibration program OxCal 4.*

The above date ranges have been calibrated using the IntCal20 atmospheric calibration curve.†

Please contact the laboratory if you wish to discuss this further.

* Bronk Ramsey (2009) *Radiocarbon 51(1) pp.337-60*
† Reimer et al. (2020) *Radiocarbon 62(4) pp.725-57*

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RADIOCARBON DATING CERTIFICATE
25 July 2023

Laboratory Code	SUERC-111365 (GU64643)
Submitter	Theodore Reeves Classics, Ancient History and Archaeology University of Birmingham Edgbaston Birmingham B15 2TT
Site Reference	Boney's Island - BBCS
Context Reference	BH5: 2.57-3.17m BGL
Sample Reference	BBCS-008
Material	sediment : humic acid dated
$\delta^{13}C$ relative to VPDB	-28.2 ‰
Radiocarbon Age BP	6060 ± 21

N.B. The above ^{14}C age is quoted in conventional years BP (before 1950 AD) and requires calibration to the calendar timescale. The error, expressed at the one sigma level of confidence, includes components from the counting statistics on the sample, modern reference standard and blank and the random machine error.

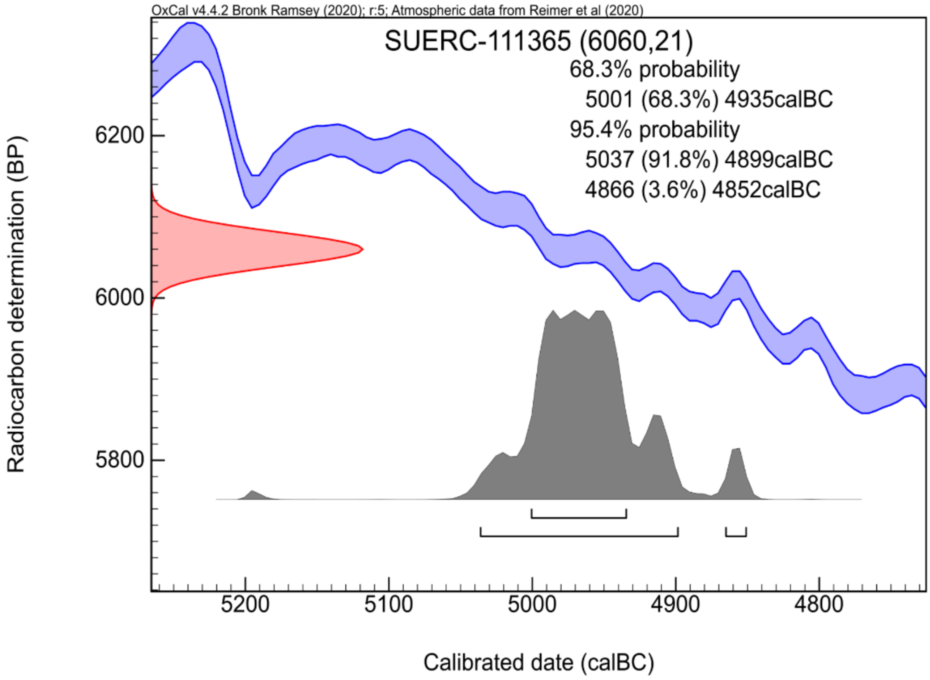
Samples with a SUERC coding are measured at the Scottish Universities Environmental Research Centre AMS Laboratory and should be quoted as such in any reports within the scientific literature. The laboratory GU coding should also be given in parentheses after the SUERC code.

Detailed descriptions of the methods employed by the SUERC Radiocarbon Laboratory can be found in Dunbar et al. (2016) *Radiocarbon 58(1) pp.9-23.*

For any queries relating to this certificate, the laboratory can be contacted at suerc-c14lab@glasgow.ac.uk.

Conventional age and calibration age ranges calculated by :

Checked and signed off by :



The radiocarbon age given overleaf is calibrated to the calendar timescale using the Oxford Radiocarbon Accelerator Unit calibration program OxCal 4.*

The above date ranges have been calibrated using the IntCal20 atmospheric calibration curve.†

Please contact the laboratory if you wish to discuss this further.

* Bronk Ramsey (2009) *Radiocarbon 51(1) pp.337-60*
† Reimer et al. (2020) *Radiocarbon 62(4) pp.725-57*

Appendix 5.3: Borough Fen Radiocarbon Dating Results

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Director: Professor F M Stuart Tel: +44 (0)1355 223332 www.glasgow.ac.uk/suerc

RADIOCARBON DATING CERTIFICATE
25 July 2023

Laboratory Code	SUERC-111366 (GU64644)
Submitter	Theodore Reeves Classics, Ancient History and Archaeology University of Birmingham Edgbaston Birmingham B15 2TT
Site Reference	Borough Fen - BFPC
Context Reference	BH5: 0.47-0.65m BGL
Sample Reference	BFPC-002
Material	sediment : humic acid dated
$\delta^{13}C$ relative to VPDB	-28.1 ‰
Radiocarbon Age BP	2522 ± 24

N.B. The above ^{14}C age is quoted in conventional years BP (before 1950 AD) and requires calibration to the calendar timescale. The error, expressed at the one sigma level of confidence, includes components from the counting statistics on the sample, modern reference standard and blank and the random machine error.

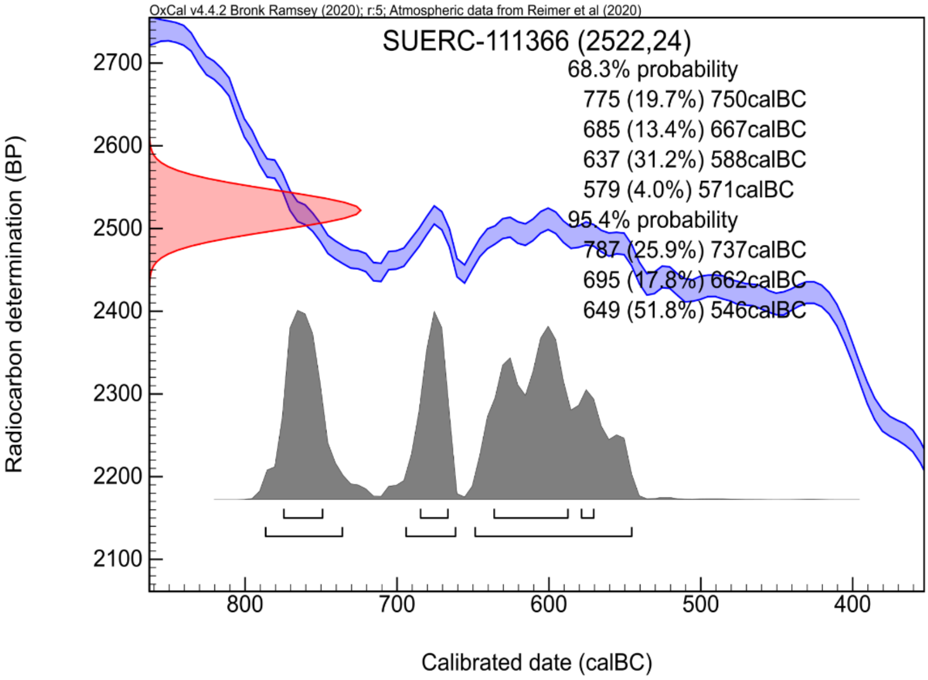
Samples with a SUERC coding are measured at the Scottish Universities Environmental Research Centre AMS Laboratory and should be quoted as such in any reports within the scientific literature. The laboratory GU coding should also be given in parentheses after the SUERC code.

Detailed descriptions of the methods employed by the SUERC Radiocarbon Laboratory can be found in Dunbar et al. (2016) *Radiocarbon 58(1) pp.9-23.*

For any queries relating to this certificate, the laboratory can be contacted at suerc-c14lab@glasgow.ac.uk.

Conventional age and calibration age ranges calculated by :

Checked and signed off by :



The radiocarbon age given overleaf is calibrated to the calendar timescale using the Oxford Radiocarbon Accelerator Unit calibration program OxCal 4.*

The above date ranges have been calibrated using the IntCal20 atmospheric calibration curve.†

Please contact the laboratory if you wish to discuss this further.

* Bronk Ramsey (2009) *Radiocarbon 51(1) pp.337-60*
† Reimer et al. (2020) *Radiocarbon 62(4) pp.725-57*

Appendix 5.4: Warham Camp Radiocarbon Dating Results

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RADIOCARBON DATING CERTIFICATE
25 July 2023

Laboratory Code	SUERC-111370 (GU64645)
Submitter	Theodore Reeves Classics, Ancient History and Archaeology University of Birmingham Edgbaston Birmingham B15 2TT
Site Reference	Warham Camp -WWSN
Context Reference	BH3: 0.36-1.00m BGL
Sample Reference	WWSN-006
Material	sediment : humic acid dated
$\delta^{13}C$ relative to VPDB	-29.3 ‰
Radiocarbon Age BP	1581 ± 24

N.B. The above ^{14}C age is quoted in conventional years BP (before 1950 AD) and requires calibration to the calendar timescale. The error, expressed at the one sigma level of confidence, includes components from the counting statistics on the sample, modern reference standard and blank and the random machine error.

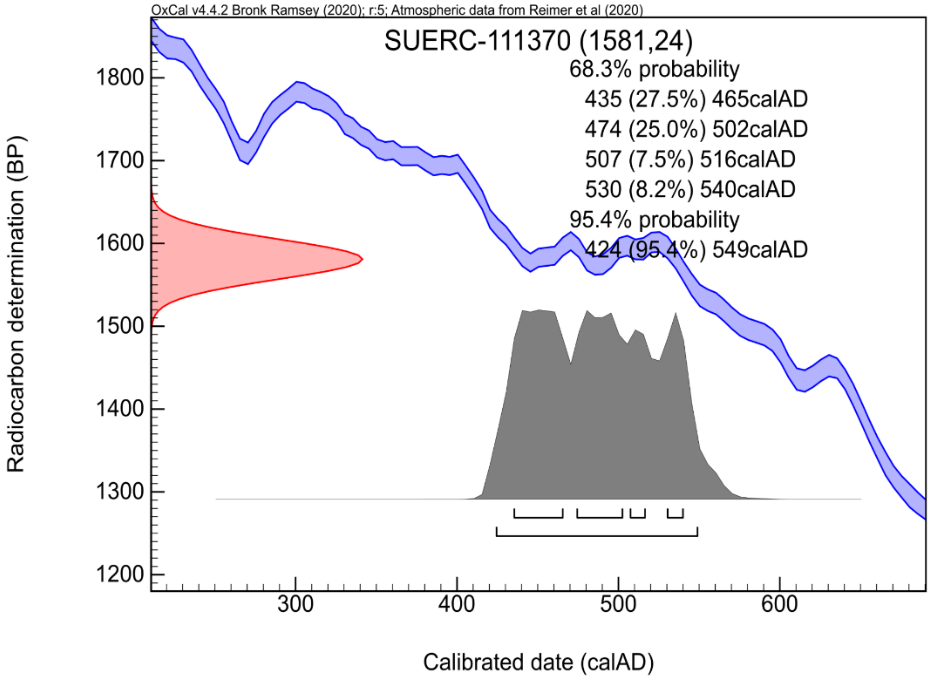
Samples with a SUERC coding are measured at the Scottish Universities Environmental Research Centre AMS Laboratory and should be quoted as such in any reports within the scientific literature. The laboratory GU coding should also be given in parentheses after the SUERC code.

Detailed descriptions of the methods employed by the SUERC Radiocarbon Laboratory can be found in Dunbar et al. (2016) *Radiocarbon 58(1) pp.9-23.*

For any queries relating to this certificate, the laboratory can be contacted at suerc-c14lab@glasgow.ac.uk.

Conventional age and calibration age ranges calculated by :

Checked and signed off by :



The radiocarbon age given overleaf is calibrated to the calendar timescale using the Oxford Radiocarbon Accelerator Unit calibration program OxCal 4.*

The above date ranges have been calibrated using the IntCal20 atmospheric calibration curve.†

Please contact the laboratory if you wish to discuss this further.

* Bronk Ramsey (2009) *Radiocarbon 51(1) pp.337-60*
† Reimer et al. (2020) *Radiocarbon 62(4) pp.725-57*

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Director: Professor F M Stuart Tel: +44 (0)1355 223332 www.glasgow.ac.uk/suerc

RADIOCARBON DATING CERTIFICATE
25 July 2023

Laboratory Code	SUERC-111371 (GU64646)
Submitter	Theodore Reeves Classics, Ancient History and Archaeology University of Birmingham Edgbaston Birmingham B15 2TT
Site Reference	Warham Camp -WWSN
Context Reference	BH3: 2.10-2.58m BGL
Sample Reference	WWSN-008
Material	sediment : humic acid dated
$\delta^{13}C$ relative to VPDB	-29.4 ‰
Radiocarbon Age BP	9626 ± 23

N.B. The above ^{14}C age is quoted in conventional years BP (before 1950 AD) and requires calibration to the calendar timescale. The error, expressed at the one sigma level of confidence, includes components from the counting statistics on the sample, modern reference standard and blank and the random machine error.

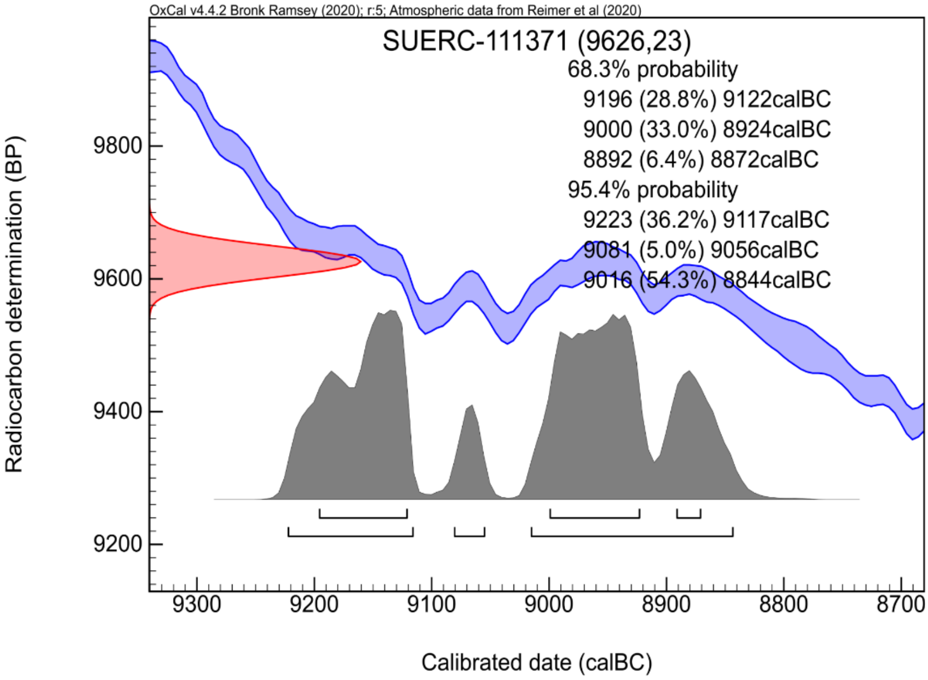
Samples with a SUERC coding are measured at the Scottish Universities Environmental Research Centre AMS Laboratory and should be quoted as such in any reports within the scientific literature. The laboratory GU coding should also be given in parentheses after the SUERC code.

Detailed descriptions of the methods employed by the SUERC Radiocarbon Laboratory can be found in Dunbar et al. (2016) *Radiocarbon 58(1) pp.9-23.*

For any queries relating to this certificate, the laboratory can be contacted at suerc-c14lab@glasgow.ac.uk.

Conventional age and calibration age ranges calculated by :

Checked and signed off by :



The radiocarbon age given overleaf is calibrated to the calendar timescale using the Oxford Radiocarbon Accelerator Unit calibration program OxCal 4.*

The above date ranges have been calibrated using the IntCal20 atmospheric calibration curve.†

Please contact the laboratory if you wish to discuss this further.

* Bronk Ramsey (2009) *Radiocarbon 51(1) pp.337-60*
† Reimer et al. (2020) *Radiocarbon 62(4) pp.725-57*

Appendix 6: Descriptive Categories Data

Name	Total Enclosed Area (ha)	Vallation	Hillfort Type	Topographic Position
Arbury Camp	5.6	*Univallate*	Partial Contour Fort	Lowland
Athelney	6.8	Partial Univallate	Partial Contour Fort; Marsh Fort	Knoll/ Hillock/ Outcrop
Belsars Hill	2.57	Univallate	Level Terrain Fort; Marsh Fort	Lowland
Billie Mains	0.6	*Bivallate/ partial multivallate*	Promontory Fort; Marsh Fort	Inland Promontory; Valley Bottom
Bomere Wood	2.3	*Partial Univallate*	Marsh Fort	Knoll/ Hillock/ Outcrop
Boney's Island	2.7	Univallate	Level Terrain Fort; Marsh Fort	Lowland
Borough Fen	3.8	Bivallate	Level Terrain Fort; Marsh Fort	Lowland
Borough Hill	8	*Bivallate*	Partial Contour Fort	Inland Promontory
Bryn Maen Caerau	0.8	Univallate	Marsh Fort	Lowland
Bullsdown Camp	4	*Multivallate*	Contour Fort; Marsh Fort	Hilltop
Burgh	7	Bivallate	Hillslope Fort	Hillslope
Cash Mill	0.1	*Multivallate*	Marsh Fort	Lowland
Cherbury Camp	4.6	*Multivallate*	Marsh Fort	Valley Bottom
Clare Camp	3.9	*Partial univallate/* partial bivallate	Hillslope Fort	Hillslope
Dinas Dinlle	1.6	*Bivallate*	Contour Fort	Knoll/ Hillock/ Outcrop
Green Island	0.12	Univallate	Marsh Fort	Inland Promontory
Hetha Burn West	0.2	Bivallate	Hillslope Fort; Marsh Fort	Valley Bottom; Hillslope
Holkham Camp	2.5	Partial univallate/ *partial bivallate*	Marsh Fort	Cliff/ Plateau-edge/ Scarp
Island Covert	0.6	Univallate	Marsh Fort	Lowland
Narborough Camp	1.6	*Univallate*	Partial Contour Fort	Hillslope
Oakmere	0.9	Partial Univallate	Promontory Fort; Marsh Fort	Inland Promontory
Oldbury Camp	4	*Bivallate*	Marsh Fort	Lowland
Peckforton Mere	0.35	Partial univallate/ *partial bivallate*	Promontory Fort; Marsh Fort	Inland Promontory
Salmonsbury Camp	23	*Bivallate*	Level Terrain Fort; Marsh Fort	Valley Bottom; Lowland
Skipwith	1.6	Multivallate	Level Terrain Fort	Lowland

Stonea Camp	9.6	*Partial univallate/* partial multivallate	Level Terrain Fort; Marsh Fort	Lowland
Sutton Common	2.5	*Multivallate*	Level Terrain Fort; Marsh Fort	Lowland
Tattershall Thorpe	5	Bivallate	Level Terrain Fort	Lowland
Tharston	8.7	*Univallate*	Marsh Fort	Lowland
The Berth	3.6	*Partial univallate/ partial bivallate*	Marsh Fort	Lowland
Wall Camp	12	*Multivallate*	Marsh Fort	Knoll/ Hillock/ Outcrop; Lowland
Wardy Hill	0.6	*Bivallate/* partial multivallate	Partial Contour Fort; Marsh Fort	Spur
Warham Camp	1.4	Bivallate	Hillslope Fort	Hillslope
Y Werthyr	3.7	*Multivallate*	Marsh Fort	Knoll/ Hillock/ Outcrop

(Lock and Ralston, 2017; shaded cells = data added; italics = data amended from Atlas of Hillfort classifications)

Appendix 7: Scheduled Monument and HER Site Types

Name	HER (/Scotland: Canmore ID	Site Name	Site Type	SAM No. (separate lists: Eng/Scot/Wal)	Site Name	Site Type (/England: Reason for Designation)
Arbury Camp	Cambridgeshire HER 08479	Arbury Camp Iron Age ringwork	ENCLOSURE (Iron Age - 800 BC to 42 AD) HILLFORT (Iron Age - 800 BC to 42 AD) DITCH (Iron Age - 800 BC to 42 AD)	*Not scheduled*	-	-
Athelney	Somerset HER 11117	Athelney Abbey and earlier settlement, Lyng	Abbey, Benedictine monastery, Fort, Settlement (6th century, 9th century, Iron age, Medieval)	1019099	Anglo-Saxon occupation site and site of Athelney Abbey on Athelney Hill	Abbey
Belsars Hill	Cambridgeshire HER 01770 & 01770a	Belsar's Hill	CASTLE (Medieval - 1066 AD to 1539 AD) RINGWORK (Medieval - 1066 AD to 1539 AD) DITCH (Medieval - 1066 AD to 1539 AD) FORT (Medieval - 1066 AD to 1539 AD)	1010368	Belsar's Hill ringwork	Medieval ringwork
Billie Mains	Canmore 59657	Billie Mains	Linear Feature (Prehistoric) Settlement (Prehistoric)	SM5219	Auchencrow Mains,enclosure and ditches	Prehistoric domestic and defensive: enclosure (domestic or defensive, rather than ritual or funerary); linear earthwork
Bomere Wood	Shropshire HER 00059	Earthworks (possible hillfort) in Bomere Wood	UNIVALLATE HILLFORT? (Iron Age - 800 BC? to 43 AD?)	1006251	Iron Age settlement site in Bomere Wood	*No reason for designation currently available.*
Boney's Island	Suffolk HER BCC023	-	BANK (EARTHWORK) (Unknown date) DITCH (Unknown date) OVAL ENCLOSURE (Unknown date) Text in summary: 'Possible IA '**Marsh Fort**'.'	*Not scheduled*	-	-
Borough Fen	Peterborough HER 591 Peterborough HER 50517	Borough Fen Enclosure, (also Peakirk Moor): aerial photographs Borough Fen Enclosure, Peakirk	BANK (EARTHWORK) (Middle Iron Age - 400 BC to 101 BC) DITCH (Middle Iron Age - 400 BC to 101 BC) ENCLOSED SETTLEMENT (Middle Iron Age - 400 BC to 101 BC) SUB CIRCULAR ENCLOSURE (Middle Iron Age - 400 BC to 101 BC) BANK (EARTHWORK) (Iron Age - 800 BC to 42 AD) BIVALLATE HILLFORT (Iron Age - 800 BC to 42 AD)	1006811	Earthwork enclosure at Peakirk Moor	*No reason for designation currently available.*

	Peterborough HER 51313	Moor: dyke survey Borough Fen Enclosure, Peakirk Moor: measured survey (Decoy Road and Redcow Drain)	DITCH (Iron Age - 800 BC to 42 AD) BANK (EARTHWORK) (Iron Age - 800 BC to 42 AD) BIVALLATE HILLFORT (Iron Age - 800 BC to 42 AD) DITCH (Iron Age - 800 BC to 42 AD)			
Borough Hill	Cambridgeshire HER 09742	Borough Hill, Sawston	MULTIVALLATE HILLFORT (Iron Age - 800 BC to 42 AD) FEATURE (Early Neolithic to 5th century Roman - 4000 BC? to 409 AD) ENCLOSURE (Early Neolithic to 5th century Roman - 4000 BC? to 409 AD) RECTILINEAR ENCLOSURE (Early Neolithic to 5th century Roman - 4000 BC? to 409 AD) CURVILINEAR ENCLOSURE (Early Neolithic to 5th century Roman - 4000 BC? to 409 AD) LINEAR FEATURE (Early Neolithic to 5th century Roman - 4000 BC? to 409 AD)	1009396	Borough Hill: a large multivallate hillfort	Large multivallate hillfort
Bryn Maen Caerau	Dyfed HER 786	Bryn Maen Caerau	Iron Age Defended Enclosure / Iron Age Defended Enclosure	*Not scheduled*	-	-
Bullsdown Camp	Hampshire HER 20768	Bullsdown Hillfort	Multivallate hillfort (800 BC-42 AD)	1001944	Bulls Down camp	Small multivallate hillfort
Burgh	Suffolk HER BUG002	Settlement Site around St Botolph's Church	HILLFORT (Late Iron Age - 100 BC to 42 AD) METAL WORKING SITE (Late Iron Age - 100 BC to 42 AD) MULTIPLE DITCHED ENCLOSURE (Late Iron Age - 100 BC to 42 AD) RECTILINEAR ENCLOSURE (Late Iron Age - 100 BC to 42 AD) SETTLEMENT (Late Iron Age - 100 BC to 42 AD)	1006035		
Cash Mill	Canmore 30290	Cash Mill	Earthwork (Period Unassigned)	SM809	Dunshelt Plantation, earthwork	Prehistoric domestic and defensive: fort (includes hill fort and promontory fort)

Cherbury Camp	Oxfordshire HER 4943	Cherbury Camp	MULTIVALLATE HILLFORT (Iron Age - 800 BC to 42 AD)	1006296	Cherbury camp	*No reason for designation currently available.*
Clare Camp	Suffolk HER CLA010	Earthwork on Lower Common	ENCLOSURE (Unknown date) HILLFORT (Unknown date)	1006046	Earthwork on Lower Common	*No reason for designation currently available.*
Dinas Dinlle	Gwynedd HER 1570	Dinas Dinlle Hillfort, Llandwrog	IRON AGE HILLFORT / ROMAN HILLFORT	CN048	Dinas Dinlle Camp	Promontory Fort - coastal
Green Island	Dumfries and Galloway HER MDG5482 / Canmore 65045	Green Island, Milton Loch	Fort (Period Unassigned)	SM1074	Green Island, fort, Milton Loch	Prehistoric domestic and defensive: fort (includes hill fort and promontory fort)
Hetha Burn West	Northumberland HER 637	Hetha Burn defended settlement (Kirknewton)	ENCLOSED SETTLEMENT (Iron Age) CAMP (Iron Age) SETTLEMENT (Iron Age) Text in Summary: 'An Iron Age multivallate hillslope enclosure surviving as an earthwork.'	1014497	Hetha Burn defended settlement, Roman period native enclosed settlement and associated trackways	Iron Age defensive settlement
Holkham Camp	Norfolk HER 1776	Holkham Iron Age fort and possible Mesolithic to Neolithic occupation site	OCCUPATION SITE? (Mesolithic - 10000 BC to 4001 BC) OCCUPATION SITE? (Neolithic - 4000 BC to 2351 BC) HILLFORT (Iron Age - 800 BC to 42 AD)	1018014	Iron Age fort 900m north east of Dale Hole Cottage	Slight univallate hillfort in a lowland setting
Island Covert	Worcestershire HER MWR2015/ WSM05929	Island Covert Enclosure, Upton upon Severn	FORT (IRON AGE - 800 BC to 42 AD) **MARSH** (EARLY IRON AGE to 21ST CENTURY AD - 800 BC to 2050 AD)	*Not scheduled*	-	-
Narborough Camp	Norfolk HER 3975	Narborough Camp Iron Age hillfort	HILLFORT (Iron Age - 800 BC to 42 AD)	1004035	Camphill	*No reason for designation currently available.*
Oakmere	Cheshire HER MCH8240	Oakmere promontory fort	BANK (EARTHWORK) (Iron Age - 800 BC to 42 AD) DITCH (Iron Age - 800 BC to 42 AD) HILLFORT (Iron Age - 800 BC to 42 AD) SETTLEMENT (Iron Age - 800 BC to 42 AD)	1013291	Oakmere promontory fort on the east bank of Oakmere 300m north west of Corner Farm	Promontory fort
Oldbury Camp	South Gloucestershire 2334/HER 1586	Oldbury Camp Iron Age Hillfort, Oldbury on Severn	-	1013187	Oldbury Camp: an Iron Age fort at Oldbury-on-Severn	Hillfort; important because of its unusual character and lowland setting

Peckforton Mere	Cheshire HER 314/ MCH5784	Promontory Fort East of Peckforton Mere	DITCH (Enclosure-ditched, Iron Age - 800 BC? to 42 AD?) EARTHWORK (Enclosure-ditched, Iron Age - 800 BC? to 42 AD?) PROMONTORY FORT (Enclosure-ditched, Iron Age - 800 BC? to 42 AD?)	1013481	Promontory fort east of Peckforton Mere	Promontory fort
Salmonsbury Camp	Gloucestershire HER 342	A scheduled Iron Age bivallate hillfort (with evidence for Saxon and Roman occupation) known as Salmonsbury Camp, Bourton-on-the-Water.	BIVALLATE HILLFORT(IRON AGE)	1017340	Iron Age fortified enclosure known as Salmonsbury Camp	Large multivallate hillfort
Skipwith	*Undetermined*	-	-	*Not scheduled*	-	-
Stonea Camp	Cambridgeshire HER 6033	Stonea Camp Iron Age hillfort	MULTIVALLATE HILLFORT (Iron Age - 800 BC to 42 AD) DITCH (Iron Age - 800 BC to 42 AD)	1012539	Stonea Camp: a multivallate hillfort at Latches Fen	Large multivallate hillfort
Sutton Common	South Yorkshire HER 00133/01	Iron Age Enclosures on Sutton Common, Norton	CAUSEWAY (Middle Iron Age to Late Iron Age - 372 BC to 100 BC) ENCLOSED SETTLEMENT (Middle Iron Age to Late Iron Age - 372 BC to 100 BC) ENCLOSURE (Middle Iron Age to Late Iron Age - 372 BC to 100 BC) + Sci.Date PALISADE (Middle Iron Age to Late Iron Age - 372 BC to 100 BC) + Sci.Date POST BUILT STRUCTURE (Middle Iron Age to Late Iron Age - 372 BC to 100 BC)	1004816	Earthworks on Sutton Common	*No reason for designation currently available.*
Tattershall Thorpe	Lincolnshire HER MLI43556	Small multivallate enclosure, 340m south of North Road Farm, Tattershall Thorpe	ENCLOSURE (Undated) DITCH (Iron Age - 800 BC to 42 AD) HILLFORT (Iron Age - 800 BC to 42 AD)	1018353	Small multivallate hillfort 340m south east of North Road Farm	Small multivallate hillfort
Tharston	Norfolk HER 9989	Possible Iron Age hillfort and Roman coins	BANK (EARTHWORK) (Unknown date) DITCH (Unknown date) TRACKWAY (Unknown date) HILLFORT? (Iron Age - 800 BC to 42 AD)	*Not scheduled*	-	-

The Berth	Shropshire HER 00129	The Berth 'hillfort', Baschurch	**Marsh Fort** (Iron Age - 800 BC to 43 AD) UNIVALLATE HILLFORT (Early Iron Age to Mid Saxon - 800 BC to 800 AD?)	1004770	The Berth	*No reason for designation currently available.*
Wall Camp	Shropshire HER 01108	Wall Camp, Kynnersley	**Marsh Fort** (Iron Age - 800 BC to 43 AD) MULTIVALLATE HILLFORT (Iron Age - 800 BC to 43 AD) + Sci.Date	1020282	Wall Camp in the Weald Moors: a large low-lying multivallate hillfort	Low-lying multivallate hillfort
Wardy Hill	Cambridgeshire HER 09497	Wardy Hill Iron Age ringwork	ENCLOSURE (Iron Age - 800 BC to 42 AD) DITCH (Iron Age - 800 BC to 42 AD) RINGWORK (Iron Age - 800 BC to 42 AD)	*Not scheduled*	-	-
Warham Camp	Norfolk HER 1828	Warham Camp Iron Age Fort	HILLFORT (Iron Age - 800 BC to 42 AD)	1018015	Warham Camp small multivallate fort	Small multivallate hillfort
Y Werthyr	Gwynedd HER 3505	Y Werthyr Hillfort, Bryngwran	PREHISTORIC HILLFORT	AN042	Y Werthyr Hillfort	Hillfort

Appendix 8: Publications and outputs directly related to the project

Some of the research carried out as part of this PhD thesis has already been published. This includes:

Articles

Reeves, T. 2024. 'A re-assessment of Island Covert, Worcestershire', Transactions of the Worcestershire Archaeological Society 29, 77-90.

Reeves, T. 2024. 'Peckforton Mere Enclosure: Rotate to Locate?', Journal of the Chester Archaeological Society 94, 27-39.

Book Reviews

Reeves, T. 2022. 'Shelagh Norton. Assessing Iron Age Marsh-forts: With Reference to the Stratigraphy and Palaeoenvironment Surrounding The Berth, North Shropshire. Oxford: Archaeopress, 2021.', Rosetta 27. 101-105. Available online at: http://www.rosetta.bham.ac.uk/issue27/Reeves.pdf

Conference Papers

Reeves, T. 2020. 'Iron Age Marsh-forts as a distinct category of archaeological site', Royal Archaeological Institute Lecture Series (Online: 11 November 2020).

Reeves, T. 2021. 'Using GIS to categorise archaeological sites' [e-Poster], M4C Research Festival (Online: 7-10 June 2021).

Reeves, T. 2022. 'Descriptive vs Interpretative: a new model for categorising Iron Age marsh-forts', CAHA Colloquium (University of Birmingham: 18 May 2022).

Reeves, T. 2023. '"Low-fort" invisibility and expressions of Iron Age power and identity', SHaC PGR Conference (University of Birmingham: 5 May 2023).

Reeves, T. 2023. 'Investigating Iron Age Marsh-forts' [Poster], M4C Research Festival (IET Birmingham: 4 October 2023).

Reeves, T. 2023. 'A Great British Marsh-fort Programme? How interpretive categorisations can benefit our understanding of Iron Age wetland enclosures', TAG44 Conference (University of East Anglia: 20 December 2023).

Reeves, T. 2024. 'Marsh-forts: a re-introduction', Prehistoric Society Europa Conference (Augustine United Church, Edinburgh: 15 June 2024).

Magazine Articles and Blogs

Reeves, T. 2023. 'What do you call a hillfort that isn't defensive or on a hill?', Epoch 11. Available online at: https://www.epoch-magazine.com/post/what-do-you-call-a-hillfort-that-isn-t-defensive-or-on-a-hill

Reeves, T. 2023. 'Iron Age marsh forts', Somerset Wildlands Blog. Available online at: https://www.somersetwildlands.org/news/archaeology1

Grey Literature Reports

Reeves, T. 2024. *Athelney, Somerset: Small-scale Hand Auger Survey*. Unpublished Report, University of Birmingham. (Produced separately for the Environment Agency and Wessex Archaeology)

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DiGMapGB-10 [SHAPE geospatial data], Scale 1:10000, Updated: 1 November 2013, BGS, Using: EDINA Geology Digimap Service, https://digimap.edina.ac.uk

Ordnance Survey and LiDAR data tiles featured in illustrations within this thesis are listed below:

Arbury Camp	Lidar Composite Digital Terrain Model England 1m resolution [ASC geospatial data], Scale 1:4000, Tiles: tl4261, tl4260, tl4359, tl4360, tl4459, tl4460, tl4262, tl4259, tl4263, tl4362, tl4361, tl4363, tl4461, tl4463, tl4462, tl4559, tl4560, tl4659, tl4660, tl4759, tl4761, tl4561, tl4562, tl4563, tl4663, tl4662, tl4661, tl4760, tl4762, tl4763, Updated: 5 January 2016, Open Government Licence, Using: EDINA LIDAR Digimap Service, <https://digimap.edina.ac.uk>, Downloaded: 14 October 2020.
Athelney	OS VectorMap® Local [TIFF geospatial data], Scale 1:10000, Tiles: st32ne, st32nw, st33se, st33sw, Updated: 1 October 2020, Ordnance Survey (GB), Using: EDINA Digimap Ordnance Survey Service, <https://digimap.edina.ac.uk>, Downloaded: 18 February 2021. Lidar Composite Digital Terrain Model England 1m resolution [ASC geospatial data], Scale 1:4000, Tiles: st2925, st2926, st2927, st2929, st2928, st2930, st2931, st2932, st3025, st3125, st3225, st3325, st3426, st3425, st3026, st3027, st3028, st3029, st3031, st3126, st3127, st3130, st3128, st3129, st3227, st3226, st3228, st3229, st3230, st3326, st3327, st3328, st3329, st3330, st3427, st3429, st3431, st3430, st3032, st3030, st3132, st3131, st3231, st3232, st3331, st3332, st3428, st3432, st3527, st3625, st3725, st3826, st3925, st3525, st3526, st3528, st3529, st3532, st3627, st3626, st3628, st3629, st3630, st3727, st3729, st3726, st3728, st3731, st3825, st3827, st3828, st3829, st3831, st3926, st3928, st3927, st3929, st3931, st3531, st3530, st3631, st3632, st3730, st3732, st3830, st3832, st3932, st3930, Updated: 5 January 2016, Open Government Licence, Using: EDINA LIDAR Digimap Service, <https://digimap.edina.ac.uk>, Downloaded: 18 February 2021.
Belsar’s Hill	OS VectorMap® Local [TIFF geospatial data], Scale 1:10000, Tiles: tl46nw, tl47sw, Updated: 1 January 2021, Ordnance Survey (GB), Using: EDINA

	Digimap Ordnance Survey Service, <https://digimap.edina.ac.uk>, Downloaded: 7 August 2021. Lidar Composite Digital Terrain Model England 1m resolution [ASC geospatial data], Scale 1:4000, Tiles: tl4069, tl4070, tl4071, tl4169, tl4170, tl4171, tl4269, tl4270, tl4271, tl4369, tl4370, tl4371, tl4469, tl4470, tl4471, Updated: 5 January 2016, Open Government Licence, Using: EDINA LIDAR Digimap Service, <https://digimap.edina.ac.uk>, Downloaded: 7 August 2021. OS Terrain 50 [ASC geospatial data], Scale 1:50000, Tiles: tl25, tl26, tl27, tl28, tl29, tl35, tl36, tl37, tl38, tl39, tl45, tl46, tl47, tl48, tl49, tl55, tl56, tl57, tl58, tl59, tl65, tl66, tl67, tl68, tl69, tl75, tl76, tl77, tl78, tl79, Updated: 23 May 2023, Ordnance Survey (GB), Using: EDINA Digimap Ordnance Survey Service, <https://digimap.edina.ac.uk>, Downloaded: 24 April 2024.
Billie Mains	Lidar Composite Digital Terrain Model Scotland (Phase3) 50cm resolution [ASC geospatial data], Scale 1:2000, Tiles: nt85ne, nt85nw, nt86se, nt86sw, Updated: 31 December 2019, Open Government Licence, Using: EDINA LIDAR Digimap Service, <https://digimap.edina.ac.uk>, Downloaded: 2 August 2021.
Bomere Wood	Lidar Composite Digital Terrain Model England 1m resolution [TIFF geospatial data], Scale 1:5000, Tiles: sj40ne, sj50nw, Updated: 5 May 2022, Open Government Licence, Using: EDINA LIDAR Digimap Service, <https://digimap.edina.ac.uk>, Downloaded: 25 April 2024.
Boney's Island	OS VectorMap® Local [TIFF geospatial data], Scale 1:10000, Tiles: tm48ne, tm48nw, tm49se, tm49sw, Updated: 1 January 2021, Ordnance Survey (GB), Using: EDINA Digimap Ordnance Survey Service, <https://digimap.edina.ac.uk>, Downloaded: 7 August 2021. Lidar Composite Digital Terrain Model England 1m resolution [ASC geospatial data], Scale 1:4000, Tiles: tm4089, tm4090, tm4091, tm4092, tm4189, tm4190, tm4191, tm4192, tm4289, tm4290, tm4291, tm4292, tm4389, tm4390, tm4391, tm4392, tm4489, tm4490, tm4491, tm4492, tm4589, tm4590, tm4591, tm4592, Updated: 5 January 2016, Open Government Licence, Using: EDINA LIDAR Digimap Service, <https://digimap.edina.ac.uk>, Downloaded: 7 August 2021.
Borough Fen	OS VectorMap® Local [TIFF geospatial data], Scale 1:10000, Tiles: tf10ne, tf20nw, Updated: 1 January 2021, Ordnance Survey (GB), Using: EDINA Digimap Ordnance Survey Service, <https://digimap.edina.ac.uk>, Downloaded: 7 August 2021. Lidar Composite Digital Terrain Model England 1m resolution [TIFF geospatial data], Scale 1:5000, Tiles: tf10ne, tf10nw, tf10se, tf10sw, tf11se, tf11sw, tf20ne, tf20nw, tf20se, tf20sw, tf21se, tf21sw, Updated: 5 May 2022, Open Government Licence, Using: EDINA LIDAR Digimap Service, <https://digimap.edina.ac.uk>, Downloaded: 29 April 2024. OS Terrain 50 [ASC geospatial data], Scale 1:50000 (see Belsar's Hill)
Borough Hill	Lidar Composite Digital Terrain Model England 1m resolution [ASC geospatial data], Scale 1:4000, Tiles: tl4548, tl4549, tl4550, tl4648, tl4649, tl4650, tl4748, tl4749, tl4750, tl4848, tl4849, tl4850, Updated: 5 January 2016, Open Government Licence, Using: EDINA LIDAR Digimap Service, <https://digimap.edina.ac.uk>, Downloaded: 7 August 2021.
Bryn Maen Caerau	Lidar Composite Digital Terrain Model Wales 1m resolution [ASC geospatial data], Scale 1:4000, Tiles: sn5847, sn5848, sn5849, sn5947, sn5948, sn5949, sn6047, sn6048, sn6049, Updated: 6 May 2016, Open Government Licence,

	Using: EDINA LIDAR Digimap Service, <https://digimap.edina.ac.uk>, Downloaded: 27 July 2021.
Bullsdown Camp	OS VectorMap® Local [TIFF geospatial data], Scale 1:10000, Tiles: su65ne, Updated: 1 July 2020, Ordnance Survey (GB), Using: EDINA Digimap Ordnance Survey Service, <https://digimap.edina.ac.uk>, Downloaded: 19 November 2020. Lidar Composite Digital Terrain Model England 1m resolution [ASC geospatial data], Scale 1:4000, Tiles: su6557, su6558, su6559, su6657, su6659, su6658, su6757, su6758, su6759, su6857, su6858, su6859, Updated: 5 January 2016, Open Government Licence, Using: EDINA LIDAR Digimap Service, <https://digimap.edina.ac.uk>, Downloaded: 19 November 2020.
Burgh Camp	Lidar Composite Digital Terrain Model England 1m resolution [ASC geospatial data], Scale 1:4000, Tiles: tm2051, tm2052, tm2053, tm2151, tm2152, tm2153, tm2251, tm2252, tm2253, tm2351, tm2352, tm2353, tm2451, tm2452, tm2453, Updated: 5 January 2016, Open Government Licence, Using: EDINA LIDAR Digimap Service, <https://digimap.edina.ac.uk>, Downloaded: 7 August 2021.
Cash Mill	Lidar Composite Digital Terrain Model Scotland (Phase1) 1m resolution [ASC geospatial data], Scale 1:4000, Tiles: no20nw, no21sw, no20ne, no21se, Updated: 2 May 2012, Open Government Licence, Using: EDINA LIDAR Digimap Service, <https://digimap.edina.ac.uk>, Downloaded: 2 August 2021.
Cherbury Camp	OS VectorMap® Local [TIFF geospatial data], Scale 1:10000, Tiles: su39ne, su39nw, su39se, su39sw, su49nw, su49sw, Updated: 1 October 2020, Ordnance Survey (GB), Using: EDINA Digimap Ordnance Survey Service, <https://digimap.edina.ac.uk>, Downloaded: 9 March 2021 Lidar Composite Digital Terrain Model England 1m resolution [TIFF geospatial data], Scale 1:5000, Tiles: su39ne, su39se, su49nw, su49sw, Updated: 5 May 2022, Open Government Licence, Using: EDINA LIDAR Digimap Service, <https://digimap.edina.ac.uk>, Downloaded: 8 May 2024.
Clare Camp	Lidar Composite Digital Terrain Model England 1m resolution [TIFF geospatial data], Scale 1:5000, Tiles: tl74ne, tl74se, Updated: 5 May 2022, Open Government Licence, Using: EDINA LIDAR Digimap Service, <https://digimap.edina.ac.uk>, Downloaded: 8 May 2024.
Dinas Dinlle	OS VectorMap® Local [TIFF geospatial data], Scale 1:10000, Tiles: sh45ne, sh45nw, Updated: 1 January 2021, Ordnance Survey (GB), Using: EDINA Digimap Ordnance Survey Service, <https://digimap.edina.ac.uk>, Downloaded: 27 July 2021. Lidar Composite Digital Terrain Model Wales 1m resolution [ASC geospatial data], Scale 1:4000, Tiles: sh4255, sh4256, sh4257, sh4355, sh4356, sh4357, sh4455, sh4456, sh4457, sh4555, sh4556, sh4557, Updated: 6 May 2016, Open Government Licence, Using: EDINA LIDAR Digimap Service, <https://digimap.edina.ac.uk>, Downloaded: 27 July 2021.
Green Island	Lidar Composite Digital Terrain Model Scotland (Phase3) 50cm resolution [ASC geospatial data], Scale 1:2000, Tiles: nx87se, nx87sw, Updated: 31 December 2019, Open Government Licence, Using: EDINA LIDAR Digimap Service, <https://digimap.edina.ac.uk>, Downloaded: 2 August 2021.
Hetha Burn West	Lidar Composite Digital Terrain Model England 1m resolution [ASC geospatial data], Scale 1:4000, Tiles: nt8626, nt8627, nt8628, nt8726, nt8727, nt8728, nt8826, nt8827, nt8828, nt8926, nt8927, nt8928, Updated: 5 January 2016, Open Government Licence, Using: EDINA LIDAR Digimap Service, <https://digimap.edina.ac.uk>, Downloaded: 2 August 2021.

Holkham	Lidar Composite Digital Terrain Model England 1m resolution [ASC geospatial data], Scale 1:4000, Tiles: tf8543, tf8544, tf8545, tf8643, tf8644, tf8645, tf8743, tf8744, tf8745, tf8843, tf8844, tf8845, tf8943, tf8944, tf8945, Updated: 5 January 2016, Open Government Licence, Using: EDINA LIDAR Digimap Service, <https://digimap.edina.ac.uk>, Downloaded: 7 August 2021.
Island Covert	OS VectorMap® Local [TIFF geospatial data], Scale 1:10000, Tiles: so83ne, so83nw, Updated: 1 October 2020, Ordnance Survey (GB), Using: EDINA Digimap Ordnance Survey Service, <https://digimap.edina.ac.uk>, Downloaded: 2 March 2021. Lidar Composite Digital Terrain Model England 2m resolution [ASC geospatial data], Scale 1:8000, Tiles: so8437, so8237, so8238, so8239, so8338, so8337, so8439, so8438, so8339, so8537, so8539, so8538, so8637, so8638, so8639, Updated: 5 January 2016, Open Government Licence, Using: EDINA LIDAR Digimap Service, <https://digimap.edina.ac.uk>, Downloaded: 2 March 2021.
Narborough Camp	Lidar Composite Digital Terrain Model England 1m resolution [ASC geospatial data], Scale 1:4000, Tiles: tf7311, tf7312, tf7313, tf7411, tf7412, tf7413, tf7414, tf7512, tf7513, tf7514, tf7613, tf7614, Updated: 5 January 2016, Open Government Licence, Using: EDINA LIDAR Digimap Service, <https://digimap.edina.ac.uk>, Downloaded: 7 August 2021.
Oakmere	Lidar Composite Digital Terrain Model England 1m resolution [ASC geospatial data], Scale 1:4000, Tiles: sj5669, sj5565, sj5566, sj5567, sj5568, sj5569, sj5765, sj5766, sj5767, sj5665, sj5768, sj5769, sj5666, sj5667, sj5668, sj5965, sj5966, sj5967, sj5968, sj5969, sj5865, sj5866, sj5867, sj5868, sj5869, Updated: 5 January 2016, Open Government Licence, Using: EDINA LIDAR Digimap Service, <https://digimap.edina.ac.uk>, Downloaded: 13 September 2021.
Oldbury Camp	Lidar Composite Digital Terrain Model England 1m resolution [TIFF geospatial data], Scale 1:5000, Tiles: st68nw, st69ne, st69nw, st69se, st69sw, st58ne, st59ne, st59se, st68ne, Updated: 5 May 2022, Open Government Licence, Using: EDINA LIDAR Digimap Service, <https://digimap.edina.ac.uk>, Downloaded: 2 July 2024.
Peckforton Mere	OS VectorMap® Local [TIFF geospatial data], Scale 1:10000, Tiles: sj55ne, sj55nw, Updated: 1 January 2021, Ordnance Survey (GB), Using: EDINA Digimap Ordnance Survey Service, <https://digimap.edina.ac.uk>, Downloaded: 6 September 2021. Lidar Composite Digital Terrain Model England 1m resolution [ASC geospatial data], Scale 1:4000, Tiles: sj5255, sj5256, sj5257, sj5258, sj5259, sj5355, sj5356, sj5357, sj5358, sj5359, sj5455, sj5456, sj5457, sj5458, sj5459, sj5555, sj5556, sj5557, sj5558, sj5559, sj5655, sj5656, sj5657, sj5658, sj5659, Updated: 5 January 2016, Open Government Licence, Using: EDINA LIDAR Digimap Service, <https://digimap.edina.ac.uk>, Downloaded: 13 September 2021.
Salmonsbury Camp	Lidar Composite Digital Terrain Model England 50cm resolution [ASC geospatial data], Scale 1:2000, Tiles: sp1519, sp1520, sp1521, sp1522, sp1619, sp1620, sp1621, sp1622, sp1719, sp1720, sp1721, sp1722, sp1819, sp1820, sp1821, sp1822, sp1919, sp1920, sp1921, Updated: 5 January 2016, Open Government Licence, Using: EDINA LIDAR Digimap Service, <https://digimap.edina.ac.uk>, Downloaded: 13 September 2021.
Skipwith	Lidar Composite Digital Terrain Model England 1m resolution [ASC geospatial data], Scale 1:4000, Tiles: se6235, se6236, se6237, se6238, se6239, se6335, se6336, se6337, se6338, se6339, se6436, se6437, se6438, se6439, se6536, se6537, se6538, se6539, se6636, se6637, se6638, se6639, Updated: 5 January

	2016, Open Government Licence, Using: EDINA LIDAR Digimap Service, <https://digimap.edina.ac.uk>, Downloaded: 2 August 2021.
Stonea Camp	OS VectorMap® Local [TIFF geospatial data], Scale 1:10000, Tiles: tl49se, tl49sw, Updated: 1 January 2021, Ordnance Survey (GB), Using: EDINA Digimap Ordnance Survey Service, <https://digimap.edina.ac.uk>, Downloaded: 7 August 2021. Lidar Composite Digital Terrain Model England 1m resolution [TIFF geospatial data], Scale 1:5000, Tiles: tf30se, tf30sw, tf40se, tf40sw, tl38ne, tl38nw, tl38se, tl38sw, tl39ne, tl39nw, tl39se, tl39sw, tl48ne, tl48nw, tl48se, tl48sw, tl49ne, tl49nw, tl49se, tl49sw, tf50se, tf50sw, tl58ne, tl58nw, tl58se, tl58sw, tl59ne, tl59nw, tl59se, tl59sw, Updated: 5 May 2022, Open Government Licence, Using: EDINA LIDAR Digimap Service, <https://digimap.edina.ac.uk>, Downloaded: 8 July 2024.
Sutton Common	Lidar Composite Digital Terrain Model England 50cm resolution [ASC geospatial data], Scale 1:2000, Tiles: se5410, se5411, se5412, se5413, se5510, se5511, se5512, se5513, se5610, se5611, se5612, se5613, se5710, se5711, se5712, se5713, se5810, se5811, se5812, Updated: 5 January 2016, Open Government Licence, Using: EDINA LIDAR Digimap Service, <https://digimap.edina.ac.uk>, Downloaded: 2 August 2021.
Tattershall Thorpe	Lidar Composite Digital Terrain Model England 1m resolution [TIFF geospatial data], Scale 1:5000, Tiles: tf04ne, tf05ne, tf05se, tf06ne, tf06se, tf07se, tf14ne, tf14nw, tf15ne, tf15nw, tf15se, tf15sw, tf16ne, tf16nw, tf16se, tf16sw, tf17se, tf17sw, tf24ne, tf24nw, tf25ne, tf25nw, tf25se, tf25sw, tf26ne, tf26nw, tf26se, tf26sw, tf27se, tf27sw, tf34ne, tf34nw, tf35ne, tf35nw, tf35se, tf35sw, tf36ne, tf36nw, tf36se, tf36sw, tf37se, tf37sw, Updated: 5 May 2022, Open Government Licence, Using: EDINA LIDAR Digimap Service, <https://digimap.edina.ac.uk>, Downloaded: 8 July 2024.
Tharston	Lidar Composite Digital Terrain Model England 2m resolution [ASC geospatial data], Scale 1:8000, Tiles: tm1795, tm1796, tm1797, tm1895, tm1896, tm1897, tm1995, tm1996, tm1997, tm2095, tm2096, tm2097, Updated: 5 January 2016, Open Government Licence, Using: EDINA LIDAR Digimap Service, <https://digimap.edina.ac.uk>, Downloaded: 7 August 2021.
The Berth	Lidar Composite Digital Terrain Model England 1m resolution [ASC geospatial data], Scale 1:4000, Tiles: sj4222, sj4122, sj4124, sj4123, sj4224, sj4223, sj4322, sj4323, sj4324, sj4422, sj4423, sj4424, Updated: 5 January 2016, Open Government Licence, Using: EDINA LIDAR Digimap Service, <https://digimap.edina.ac.uk>, Downloaded: 4 December 2020.
Wall Camp	Lidar Composite Digital Terrain Model England 1m resolution [TIFF geospatial data], Scale 1:5000, Tiles: sj50ne, sj51ne, sj51se, sj52ne, sj52se, sj60ne, sj60nw, sj61ne, sj61nw, sj61se, sj61sw, sj62ne, sj62nw, sj62se, sj62sw, sj70ne, sj70nw, sj71ne, sj71nw, sj71se, sj71sw, sj72ne, sj72nw, sj72se, sj72sw, Updated: 5 May 2022, Open Government Licence, Using: EDINA LIDAR Digimap Service, <https://digimap.edina.ac.uk>, Downloaded: 8 June 2024.
Wardy Hill	OS VectorMap® Local [TIFF geospatial data], Scale 1:10000, Tiles: tl48se, Updated: 1 January 2021, Ordnance Survey (GB), Using: EDINA Digimap Ordnance Survey Service, <https://digimap.edina.ac.uk>, Downloaded: 7 August 2021. Lidar Composite Digital Terrain Model England 1m resolution [ASC geospatial data], Scale 1:4000, Tiles: tl4580, tl4581, tl4582, tl4583, tl4680, tl4681, tl4682, tl4683, tl4780, tl4781, tl4782, tl4783, tl4880, tl4881, tl4882, tl4883, tl4980, tl4981, tl4982, tl4983, Updated: 5 January 2016, Open Government Licence,

	Using: EDINA LIDAR Digimap Service, <https://digimap.edina.ac.uk>, Downloaded: 7 August 2021. OS Terrain 50 [ASC geospatial data], Scale 1:50000 (see Belsar's Hill)
Warham Camp	OS VectorMap® Local [TIFF geospatial data], Scale 1:10000, Tiles: tf93ne, tf93nw, tf94se, tf94sw, Updated: 1 January 2021, Ordnance Survey (GB), Using: EDINA Digimap Ordnance Survey Service, <https://digimap.edina.ac.uk>, Downloaded: 7 August 2021. Lidar Composite Digital Terrain Model England 1m resolution [ASC geospatial data], Scale 1:4000, Tiles: tf9239, tf9240, tf9241, tf9242, tf9339, tf9340, tf9341, tf9342, tf9439, tf9440, tf9441, tf9442, tf9539, tf9540, tf9541, tf9542, tf9639, tf9640, tf9641, tf9642, Updated: 5 January 2016, Open Government Licence, Using: EDINA LIDAR Digimap Service, <https://digimap.edina.ac.uk>, Downloaded: 7 August 2021.
Y Werthyr	OS VectorMap® Local [TIFF geospatial data], Scale 1:10000, Tiles: sh37ne, Updated: 1 January 2021, Ordnance Survey (GB), Using: EDINA Digimap Ordnance Survey Service, <https://digimap.edina.ac.uk>, Downloaded: 27 July 2021. Lidar Composite Digital Terrain Model Wales 1m resolution [ASC geospatial data], Scale 1:4000, Tiles: sh3576, sh3577, sh3578, sh3579, sh3676, sh3677, sh3678, sh3679, sh3776, sh3777, sh3778, sh3779, sh3876, sh3877, sh3878, sh3879, sh3976, sh3977, sh3978, sh3979, Updated: 6 May 2016, Open Government Licence, Using: EDINA LIDAR Digimap Service, <https://digimap.edina.ac.uk>, Downloaded: 15 July 2024.