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HORIZON NUCLEAR POWER

WYLFA NEWYDD, ANGLESEY

AREA 18

ARCHAEOLOGICAL POST-EXCAVATION ASSESSMENT REPORT

DECEMBER 2021

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HORIZON NUCLEAR POWER

WYLFA NEWYDD, ANGLESEY

AREA 18, ARCHAEOLOGICAL POST-EXCAVATION ASSESSMENT REPORT

DECEMBER 2021

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SUMMARY

Wardell Armstrong LLP (WA) was commissioned by Horizon Nuclear Power to undertake the post-excavation assessment for archaeological excavations at the proposed new nuclear power station at Wylfa Newydd, Anglesey, Wales, centred on National Grid Reference (NGR): SH 35285 92785. The archaeological fieldwork programme was undertaken in support of a Development Consent Order application. The excavation was divided into defined areas and this report details the results of the archaeological excavation at Area 18.

Area 18 consisted of a single area in Field O6 covering 544m^2. The archaeological fieldwork was undertaken by Wessex Archaeology on 1st May 2017.

The archaeological remains consisted of a single stone-built trackway, aligned northwest-southeast. The feature was visible as a linear anomaly during a geophysical survey and identified during the preceding evaluation. The trackway may have been a short section laid down as solid base for traversing a known wet area as it was not observed in Area 19, 40m to the southeast.

Although the trackway did not produce any dateable evidence, there were some similarities with the form and fabric of structures dated to the Late Iron Age and Roman periods on sites such as Areas 4, 9, 19 and 20 and may relate to the occupation of these sites.

CRYNODEB

Comisiynwyd Wardell Armstrong LLP (WA) *gan* Horizon Nuclear Power *i gyflawni asesiad ol-gloddio archaeolegol ar gyfer cloddfau archaeolegol ar safle arfaethedig gorsaf bŵer niwclear Wylfa Newydd, Ynys Môn, Cymru, wedi ei ganoli ar Cyfeirnod Grid Cenedlaethol (NGR): SH 36350 93450. Ymgymerwyd ar y rhaglen waith maes archaeolegol i gefnogi cais Orchymyn Cydsyniad Datblygu (EN010007). Rhannwyd y rhaglen gwaith maes i lecynnau diffiniol, mae'r adroddiad hwn yn manylu canlyniadau cloddfa archaeolegol yn Area 18.*

Roedd Area 14 yn cynnwys un llecyn yng nghae O6 ac yn mesur 544m². Cwblhawyd y gwaith maes archaeolegol gan Wessex Archaeology ar y 1af o Fai 2017.

Darganfyddwyd trac wedi ei adeiladu o gerrig wedi ei alinio gogledd-orllewin - de-ddwyrain. Adnabuwyd y nodwedd ar arolwg geoffisegol a chadarnhawyd ei bresenoldeb yn ystod y gwerthusiad ffosi. Mae'n bosib bod darn byr o drac wedi ei adeiladu i groesi darn o dir gwlyb gan and oedd unrhyw dystiolaeth ohono'n parhau yn Area 19, 40m i'r de-ddwyrain.

Er nad ddarganfyddwyd unrhyw arteffactau i ddyddio'r trac roedd yn debyg i esiamplau a ddyddwyd i'r cyfnodau Oes Haearn Hwyr a Rhufeinig yn safleoedd Area 4, 9, 19 a 20.

ACKNOWLEDGEMENTS

Wardell Armstrong LLP (WA) thanks Horizon Nuclear Power for commissioning the project, and for all their assistance throughout the work.

Wardell Armstrong LLP also thanks Ian Halfpenney at CADW, Ashley Batten, Inspector of Ancient Monuments for North East Wales also at CADW (formerly of Gwynedd Archaeological Planning Service (GAPS), Sean Derby Gwynedd Archaeological Trust (GAT) and Jenny Emmett, Senior Planning Archaeologist at Gwynedd Archaeological Planning Service. Thanks also go to Wessex Archaeology who undertook the excavation and subsequent site summary report, and to Jones Bros Ltd plant hire company for their help throughout this project.

The assessment report was written by Vix Hughes. The figures were produced by Helen Phillips and Valeria Tiezzi. The project was managed by Frank Giecco and the initial report edited by David Jackson with this version by Lynne Gardiner.

1 INTRODUCTION

1.1 Project Circumstances and Planning Background

1.1.1 In May 2017, Wessex Archaeology undertook an archaeological excavation in Area 18, Field O6 at Wylfa Newydd, Anglesey, Wales, centred on National Grid Reference (NGR): SH 35285 92785 (Figure 1). This excavation was one of multiple defined areas excavated as part of a large scheme of works commissioned by Horizon Nuclear Power (HNP). The intention is to construct a nuclear power station, related plant and ancillary structures and offsite power station facilities for which a Development Consent Order application has been submitted to The Planning Inspectorate (EN010007).

1.2 Primary Reference Numbers (PRNs)

1.2.1 Historic Environment Record event numbers ('PRNs') were assigned following discussions between Wessex Archaeology and Nina Steele, Senior Historic Environment Record Archaeologist at Gwynedd Archaeological Trust. PRN45392 has been assigned to the Wylfa Newydd project as a whole and further event numbers have also been assigned to 'noteworthy components' of the project. Numbers associated with this area are presented in Table 1.1.

Table 1.1: PRN gazetteer

PRN	Description	Associated contest numbers/PRNs
PRN91979	Trackway	{18006}, undated but similar form and fabric of structures dated to the Late Iron Age and Roman periods on Wylfa.
PRN76023	Assigned to potential Romano-British activity at the site	

1.3 Project Documentation

1.3.1 The project conforms to a brief prepared by HNP which was prepared in consultation with the Gwynedd Archaeological Planning Service (GAPS), the archaeological planning advisor to the Isle of Anglesey Council. A Written Scheme of Investigation (WSI), was then produced to provide a specific methodology based on the brief for a programme of archaeological excavation (HNP 2015). This was agreed with the archaeological planning advisor prior to the fieldwork taking place. This is in line with government advice as set out in Section 5.8 of the National Policy Statement for Energy (EN-1) (Department for Energy and Climate Change 2011).

1.3.2 This report outlines the fieldwork undertaken on site at Area 18, the results of this scheme of archaeological excavation and the subsequent programme of post-excavation assessment (Wardell Armstrong 2019). It follows on from a series of works consisting of desk-based assessments, geophysical surveys and two sets of evaluation trenches, culminating in the excavation fieldwork. The previous elements of work have been fully reported on (see bibliography where relevant).

1.3.3 The excavation of Area 18 was undertaken in Field O6, over one day in May 2017 (Figure 2). The area of investigation targeted features recorded during the previous geophysical survey and archaeological evaluation. The site comprised one 544m^2 area.

2 EXCAVATION METHODOLOGY

2.1 Standards and Guidance

2.1.1 The archaeological excavation was undertaken following the Chartered Institute for Archaeologists (CIfA) *Standard and guidance for archaeological field excavation* (CIfA 2014a), and in accordance with the Wessex Fieldwork Recording Manual (2015).

2.1.2 The fieldwork programme was followed by an assessment of the data as set out in the aforementioned standards, as well as the guidelines from Historic England (MoRPHE 2015) and the *Standard and guidance for the collection, documentation, conservation and research of archaeological materials* (CIfA 2014b).

2.2 Archaeological Excavation

2.2.1 The archaeological excavation of Area 18 comprised the strip map and sample of a single part within Field O6 encompassing 544m^2. These defined areas were identified for archaeological excavation based on the results of the previous geophysical survey and archaeological evaluation.

2.2.2 The general aims of the project were:

- *to ensure the adequate recording of any archaeological remains revealed by the strip map and sample work;*
- *to identify, investigate and record the character, nature, extent and relationships of the archaeological remains discovered, to the extent possible by the methods put forward in the specification;*
- *to determine (so far as possible) the stratigraphic sequence and dating of the deposits or features identified;*
- *to integrate the results of the work into the wider historic and archaeological context of the landscape and to address relevant regional research objectives where applicable and so far as is possible;*
- *to disseminate the results through deposition of an ordered archive at the suitable repositories for both physical and digital material, the deposition of a detailed report at the Historic Environment Record (HER) and publication at a level of detail appropriate to the significance of the results;*
- *to undertake the works in such a way as to allow sufficient data to be gathered to address the various research objectives outlined below. This includes the investigation and recording of features, the identification, recording and collection of artefacts and ecofacts (including environmental samples) and the use of appropriate analytical methodologies / techniques when examining the record / artefacts.*

And specifically for the Area 18 excavation,

- *To gain insights into the local farming economy and the wider exploitation of the natural environment – with particular reference to the exploitation of lakes and bogs.*
- *To gain insights in social change during the Late Bronze age / Early Iron Age period via analysis of the material culture.*
- *To identify and understand early field systems, their development and degree of continuity.*
- *To further understanding and identification of pasture land in locations other than upland locations – specifically such locations as coastal wetlands, elevated wetlands and moors.*
- *To undertake detailed analysis of (early) medieval artefacts and their contexts in order to understand the chronological and typographic development, and use, of the artefacts.*
- *To develop our understanding of known, but poorly understood, monument types, such as that seen here.*

2.2.3 Deposits considered not to be archaeologically significant were removed by a 360˚ tracked mechanical excavator with a toothless ditching bucket, under close archaeological supervision. The area was subsequently cleaned by hand. All possible features were inspected, and selected deposits were excavated by hand to retrieve artefactual material and environmental samples. Once completed all features were recorded according to the Wessex standard procedure (Wessex Archaeology 2015).

2.2.4 On completion the excavated area was reinstated by replacing the excavated material in the reverse sequence of which it was removed. Topsoil and subsoil were excavated and stored separately to prevent mixing.

2.2.5 The work is primarily summarised by investigation for clarity but related features and remains are linked throughout. Where contexts could be identified between the investigations, they have been done so and the evaluation contexts are integrated into the excavation phased narrative where applicable.

2.2.6 Within the defined Periods (see below) broad phasing has been ascribed to the features, deposits and structures encountered during the investigations, and the results are presented below in chronological order. The Periods used are derived from those identified in the Research Framework for the Archaeology of Wales (CIfA Cymru/Wales 2017) and are consistent throughout the different Areas of work, but within these the Phases may not be directly compatible. The dating and phasing are provisional as is appropriate for an assessment of the site and may be refined in the light of evidence produced from detailed analysis of the dataset. It is also noted that imposing rigidly defined periods on a continuous process is somewhat of a contrivance

but is done so for simplicity.

- Period 0 Natural Drift Geology
- Period 1 Palaeolithic and Mesolithic 250 000 – 4000 BC
- Period 2 Neolithic and Early Bronze Age 4000 – 1500 BC
- Period 3 Late Bronze Age and Iron Age 1500 BC – AD 43
- Period 4 Roman AD 43 - 410
- Period 5 Early Medieval AD 410 – 1100
- Period 6 Medieval AD 1100 - 1539
- Period 7 Post-medieval AD 1539 - 1750
- Period 8 Industrial and Modern AD 1750 – present
- Undated

3 SITE ARCHIVE

3.1 Description

3.1.1 A full professional archive has been compiled in accordance with the project specification, and the Archaeological Archives Forum recommendations (Brown 2011). The archive will be deposited with the Oriel Ynys Môn, with copies of the report sent to the Gwynedd Archaeological Trust HER, available upon request. The archive can be accessed under the unique project identifier WA19/CL12283/Area 18/35-2016.

3.1.2 The paper archive and digital data, including photographs will be lodged with the Royal Commission on Ancient and Historical Monuments of Wales (RCAHMW) in Aberystwyth on completion of the project.

3.1.3 The Site Archive comprises the material and documentary archives as follows (Table 3.1).

Table 3.1: qualification of excavation data

Category	Quantification
Context Records	9
Small finds	0
Bulk finds	0 kg
Environmental samples	0
Monochrome film	0
Digital photographs	86
Rectified photographs	0
Hand drawn plans	0
Hand drawn sections	2
GPS survey pre-excavation plans	Yes
GPS survey excavation plans	Yes
TST surveyed excavation plans	No

4 BACKGROUND

4.1 Location and Geological Context

4.1.1 Area 18 is located in the northern part of Anglesey, approximately 370m to the west of the centre of Tregele and 2km southwest of the centre of Cemaes, situated to the east of the proposed development area (Figure 1). The site comprised one field, Field O6, centred at National Grid Reference (NGR): SH 35285 92785. The coastline is 1.2km to the north.

4.1.2 Area 18 lay on undulating ground at approximately 21m above Ordnance Datum (aOD). The ground slopes down to the southwest towards the road to Cemlyn. Field O6 appears to be part of wider prehistoric and medieval activity in this area of the site. A small river is located 420m to the west of the proposed investigation area, this river runs southwards for 120m before dividing in two, with one branch running off to the SW and the other to the SE. Where the river divided, a wet marshy area had been created.

4.1.3 Prior to the archaeological excavation, the fields were in use as improved agricultural land, characterised by enclosed arable fields.

4.1.4 The underlying solid geology within the area of investigation is mapped as mica schist and psammite of the New Harbour Group formed during the Ediacaran period between 541 to 635 million years ago. This is overlain by superficial deposits of Devensian till deposited up to 2 million years ago during the Quaternary period, in a local environment dominated by ice age conditions (BGS 2019). The natural substrate observed during the works at Area 18 comprised a mid orangey brown sandy clay, which is consistent with the mapped geologies above.

4.1.5 The overlying soil is freely draining slightly acidic loam (Cranfield Soil and Agrifood Institute 2019) and was identified on the site as a mid-brown silty clay, up to 0.15m thick, with mudstone inclusions. A paler relict ploughsoil subsoil lay below this and was up to 0.15m thick.

4.2 Historical and Archaeological Background

4.2.1 An archaeological baseline assessment was produced to assess the known historical and archaeological background of the site and the surrounding landscape to a distance of 6km (GAT 2012b), which was later reviewed and updated (Jacobs 2015). It is not intended to repeat that information here and what follows is an overview relating directly to the immediate environs of Area 18. For further details please refer to the

original documents.

4.2.2 ***Period 1 - Palaeolithic and Mesolithic (25 000 – 4000 BC):*** There is no known Palaeolithic or Mesolithic activity within Area 18.

4.2.3 The earliest known activity on Anglesey is in the form of Mesolithic flint scatters located close to the coast, south of the proposed development area (GAT 2012b).

4.2.4 ***Period 2 – Neolithic and Early Bronze Age (4000 – 1500 BC):*** There is no previously known Neolithic or Early Bronze Age activity within Area 18. Across Anglesey remains of this date include megalithic and ceremonial sites, funerary sites, artefact scatters and find spots, with a small amount of settlement evidence from postholes and pits.

4.2.5 There are changes and transitions over time including the change from communal burial practices and their sites to individual burials, as evidenced in the form of urn burials containing cremated remains and inhumations within cists.

4.2.6 Burnt mounds dating to the Bronze Age (*c.*2600-700 BC) are also common throughout Anglesey and North Wales (GAT 2012b). These are typically located near to, or alongside watercourses either in groups or individually (*ibid.*). Burnt mounds can be found at Carrog (PRN 27515) located nearly 2km to the east of the proposed development site, and east of Penciw (PRN 3565) located nearly 6km to the east of the proposed development site (*ibid*).

4.2.7 ***Period 3 – Late Bronze Age and Iron Age (1500 BC – AD 43):*** There is no previously known Late Bronze Age and Iron Age activity within Area 18.

4.2.8 Evidence for activity of this period on Anglesey comes from hillforts, small, enclosed settlement sites (roundhouses, fields etc.), finds including hoards, but very little funerary evidence (GAT 2012b, Cuttler *et al.* 2012). Hillforts and related fortifications continue from the latter part of the Bronze Age into the Iron Age (*c.*800 BC - 43 AD). One of the largest promontory forts on the island at Dinas Gynfor is located almost 3km northeast of the Wylfa Newydd Development Area.

4.2.9 The archaeological evaluation and excavations revealed that the surrounding landscape contained settlement and industrial remains dating from perhaps the Bronze Age to Romano-British periods. The remains were extensive, and the stone structures generally well preserved in fields O5 (Areas 19 and 20) to the southwest and Field E3 (Area 4) to the north.

4.2.10 At Area 4 the excavation revealed a large Romano-British fortified enclosure at the top

of the hill with evidence for internal structures, and further buildings to the immediate west. Numerous pits and ditches were recorded in the land surrounding the enclosure and although the majority of these did not have an obvious function, several were clearly ovens or kilns (Wessex 2018a).

4.2.11 In Area 20 the Iron Age to Roman remains included stone-built roundhouses, wells, storage pits, enclosures and trackways. A feature of the Iron Age period remains was the use of orthostats for the roundhouses and enclosure walls and even some storage pits were lined with upright slabs. Water management was also an important feature, two of the wells appeared to draw water from a nearby stream and some of the roundhouses were slightly raised, perhaps to avoid wet ground. All houses contained capped drains, although it was not clear whether these were for general drainage or a specific industrial purpose. Some houses contained evidence for activity such as hearths and burnt deposits (Wessex 2018b).

4.2.12 ***Period 4 – Roman (AD 43 – 410):*** There is no known Roman activity within Area 18. Anglesey was invaded in *c.*AD 60-61 by the Roman army and there is evidence of settlement sites, ephemeral military establishments (Jacobs 2015), scatters of Roman artefacts and Romano-British enclosure sites, such as those seen in Areas 4 (Field E3) and 19 and 20 (both Field O5), (Wessex 2018a and 2018b).

4.2.13 ***Period 5 - Early medieval (AD 410 – 1100):*** There is no previously known early medieval activity within Area 18.

4.2.14 Evidence of early medieval settlement in Anglesey is largely based on references made in documentary sources (Headland Archaeology 2017) which suggests a pattern of disparate farming sites located close to small ecclesiastical complexes across Anglesey (*ibid.*).

4.2.15 Archaeological excavations have established that there is often a spatial relationship between early medieval settlement sites and cemetery site locations on Anglesey (Jacobs 2015) and it is thought that the use of long cist burials is consistent with the wider Welsh Christian burial practices of the 8th to 9th centuries (*ibid.*).

4.2.16 Other evidence includes occasional findspots, inscribed stones and a rare small fortified site at Porth Wen which may have related to the 9th century Viking raids.

4.2.17 ***Period 6 - Medieval (1100 – 1539):*** By the 12th century, Area 18 was located within the *Talybolion commote* (a recognised regional unit of royal administration) with a royal manorial centre located at Cemaes (GAT 2012b).

4.2.18 The Talybolion commote was subsequently sub-divided into a number of smaller administrative centres called '*trefi*' (Jacobs 2015) which included: the ecclesiastical parishes of Llanfechell and Llanbadrig; the townships of Cemaes, Clegyrog, Llanfechell and Caerdegog; and the hamlet settlements of Cafnan, Tre'r Gof, Gwaunydog and Llanddygfael (*ibid*).

4.2.19 Documentary sources indicate that the pattern of medieval settlement on Anglesey during this period was characterised by largely unequal settlements with discrete areas of nucleation (Jacobs 2015). This pattern influenced later post-medieval and early-modern patterns and can be seen as agricultural land with intermittent farmsteads, small hamlets, and villages (*ibid.*).

4.2.20 Archaeological evidence indicates that the practice of open-field farming, with narrow strips of arable pasture within large unenclosed fields located close to settlements was common and there is evidence of ridge-and-furrow, associated land clearance cairns, terraces, field boundaries, open fields, pens and small enclosures.

4.2.21 The medieval landscape also had agricultural buildings, domestic dwellings, mills and other structures though none are known to survive as complete upstanding remains. Only ecclesiastical elements show such survival on Anglesey. The distribution of medieval churches and settlement sites varies to include churches situated at the centre of each village or hamlet, to churches on the periphery of known settlement sites.

4.2.22 ***Period 7 - Post-medieval (1539 – 1750):*** During the 17th and 18th centuries, Cemaes and Cemlyn Bay became principle centres of shipbuilding, fishing and later brickmaking and copper mining (*ibid.*).

4.2.23 Although the rural landscape established during the medieval period continued into the post-medieval period there were fewer landowners that controlled larger areas of land and there were changes towards a more 'estate' system with additional in houses and farmsteads established.

4.2.24 ***Period 8 – Industrial and Modern (AD 1750 – present):*** In the 19th century small-scale gentrification of the countryside continued with larger country houses and farmhouses being constructed or the existing ones being remodelled.

4.2.25 Agricultural land saw improvements to increase productivity during the post-medieval period such as draining of bog-land and changes to farming techniques, ploughing, manuring, enrichment, drainage, stock breeds and crop choices. The late 18th to 19th

century land improvements are likely to have removed any remains of earlier surface and buried near surface features, though fairly deep soils may have protected features cut into the substrata.

4.2.26 The recorded remains of post-medieval field boundary systems are only part of the preserved landscape. For example, documented and existing boundaries may have been in place much earlier and subsequently denuded and buried, while newer ones were added to extend areas of ownership or use.

4.2.27 The archaeological evaluations (Headland Archaeology 2017, Wessex Archaeology 2016) have demonstrated that this is not the complete picture and that there is a more complex landscape spanning the medieval to post medieval periods on Anglesey. Upstanding elements that can survive include clawdd (plural cloddiau). Within northwest Wales, the term is usually used to describe an earthen bank, often stone-faced (GAT 2012b). An unusual feature of stoneclad cloddiau is that the facing stones are commonly laid with their long axis vertical (DSWA 2013).

4.2.28 With the rise of the Industrial Revolution, the amount of industrial activity, such as mining, quarrying and brickmaking on Anglesey dramatically increased from the late 18th century onwards but declined in the early 20th century.

4.2.29 Population varied during this period with associated fluctuations in buildings such as new / remodelled wealthy dwellings, and more functional and modest ones becoming more common. This can be particularly identified for wartime accommodation and the more recent Power Station construction.

4.2.30 In 1960, the Central Electricity Generating Board (CEGB) applied for consent to build the existing Power Station with consent being granted in late 1961 (*ibid*). In 1963 work began on the construction of the two Magnox reactors (*ibid*). The construction of the Power Station persisted throughout the 1960s, with Wylfa being the last and largest of this design of reactor (*ibid*). The Existing Power Station was officially commissioned in 1972 (*ibid*).

4.2.31 Construction of the two Magnox reactors and the Central Electricity Generating Board (CEGB) Power Station was a massive undertaking, involving excavating 13m below the existing ground level. The work took place for the CEGB between 1963 and 1972.

4.3 Previous Work

4.3.1 ***Documentary Research:*** An archaeological desk-based assessment was originally prepared in 2012 by Gwynedd Archaeological Trust (GAT 2012b), which set out the

archaeological and historical background of the site and provided an assessment of the significance of all known and potential heritage assets up to 6km from the area of investigation to support the site preparation and clearance phase of works. An updated desk-based cultural baseline assessment was also prepared by Jacobs (2015) to support the DCO application.

4.3.2 The Desk-Based Assessment (GAT 2012b) did not highlight any specific archaeological potential aside from the fact that the area may contain 'background agricultural features' such as field boundaries and ditches.

4.3.3 ***Geophysical Survey:*** The surveys (ASWYAS 2015; GAT 2012a) did not identify any potential archaeological features other than field boundaries and sub circular features of uncertain, but likely agricultural origin.

4.3.4 ***Archaeological Evaluation:*** Evaluation trial trenching took place in 2016 (Headland Archaeology 2017). A total of seven trenches were excavated in Field O6. The trenches were 1.8m wide and between 30m and 50m long. Three trenches were located to investigate the field boundary and possible pits suggested by the geophysical survey. Trench 2079, Field O6, a straight sided, stone constructed surface, or platform [2079-004] was identified. It comprised a 2.58m wide, flat arrangement of stones of varying shapes and sizes, up to 0.72m across, spanning the width of the trench. Possible natural peat deposits were also located in Field O6.

5 ARCHAEOLOGICAL EXCAVATION RESULTS

5.1 Introduction

5.1.1 The excavation of Area 18 produced only one feature of archaeological significance, although several other features were tested and found to be of natural origin.

5.1.2 Results are detailed below, deposit numbers are given in **(parenthesis)**, cut numbers are given in **[square brackets]**, and structure numbers are given in **{braces}**.

5.2 Results

5.2.1 An average of 0.15m of mid-brown silty clay topsoil **(18001)**, and a further 0.15m of mid-orangey brown silty clay subsoil **(18002)**, was removed to reveal the archaeological features above the geology. The natural geological substrate **(18003)** comprised a mid-orangey grey clay, representing glacial till, consistent with the mapped geology. The sole feature was stratigraphically sealed by the subsoil and truncated the underlying natural substrate.

5.3 Undated Remains

Phase 1

5.3.1 The single phase of archaeological activity encountered at Area 18 comprised a probable trackway. The trackway, PRN91979, was given the group number **{18006}** and identified as [2079-004] in the evaluation. The construction of this feature comprised a shallow construction cut **[18004=18005]** in the natural substrate. This was below a layer of redeposited natural **(18009)**, forming a level platform for the trackway.

5.3.2 The trackway itself comprised a cambered mid-greyish brown silty clay bedding layer **(18008)**. This was sealed by a northwest-southeast alignment of horizontally laid stones **(18007)** that formed a rough surface. The stones varied in size, but the majority were, on average, 0.3m by 0.2m and 0.1m thick. The stones had been deliberately laid in a dense arrangement with reasonably straight sides, some forming edging. The trackway extended over 9.5m in length and was 2.6m wide. No artefactual material was recovered from the underlying matrix or from the surface itself.

5.4 Finds and Palaeoenvironmental Results

5.4.1 It should be noted that no artefacts were recovered from the excavated remains. In addition, no deposits suitable for palaeoenvironmental analysis were identified during excavation. Therefore, no assessments were required.

6 DISCUSSION

6.1 Interpretation

6.1.1 The archaeological excavation of Area 18 in Field O6, within the proposed development site of a new nuclear power station at Wylfa Newydd, Anglesey, allowed the investigation and recording of the archaeological remains revealed by the geophysical survey and the trial trenching programme.

6.1.2 The archaeology revealed in the open area excavation consisted of a single stone-built trackway, aligned northwest-southeast. The feature was visible as a linear anomaly during the geophysical survey and identified in the evaluation.

6.1.3 The remains were located within the central part of the area with no other features of archaeological origin uncovered.

6.1.4 The feature was interpreted as a trackway due to its linear form and well-formed edges. Without associated ancillary features such as postholes to indicate a superstructure it was less likely to be a working platform. The feature did not appear to continue across the landscape as it was not seen in Area 19, 40m to the southeast.

6.1.5 The area of the field in which the trackway was located was particularly waterlogged during the excavation, probably resulting from its location close to a small river to the west, and this may have been a factor in its construction. The trackway may therefore have been a short section laid down as a solid base for traversing a known wet area.

6.1.6 Although it remains undated there was some compatibility with the form and fabric of structures dated to the Late Iron Age and Roman periods, on sites such as Areas 4, 19 and 20. It may not have extended as far as Area 19 as a formal built trackway but it may have been part of a route to and from that site.

6.1.7 The archaeological remains in Area 18 were seen to demonstrate a simple stratigraphic sequence being sealed by the subsoil and truncating the natural substrate. There was only one observable phase of undated activity. The feature may therefore be a single entity established for a short duration.

6.1.8 No artefactual material was recovered, making it difficult to accurately date the archaeological remains. Given the form of the remains, and comparability to similar remains within the area, it is hypothesised that the activity is of general Romano-British date but there is no means of accurate dating. Dating and function of the trackway feature may become apparent with further work, particularly relating it to

features/layout in Area 19-O5(N), which in turn will affect the significance of Area 18 (see Section 7.1).

6.1.9 Due to the nature of the archaeological remains it was not possible to develop the understanding of known, but poorly understood, monument types such as this. Nor was it possible to address many of the research aims of the site in terms of economy and exploitation of the natural environment development, the degree of continuity of field systems, the identification and use of pasture-land, or social changes.

7 STATEMENT OF POTENTIAL

7.1 Significance

7.1.1 The trackway in Area 18 should not be viewed isolation as it is likely related to the Romano-British landscape seen in other Areas (HS15, 4, 9, 19 and 20) and may form an extension of their hinterlands and routeways through the landscape, and in particular, the larger landscape and archaeological setting of Area 19 and Hot Spot 15.

7.2 Recommendations

7.2.1 The archaeological remains will not expand the understanding of the archaeology of the Isle of Anglesey regarding the regional research framework of Wales (CIfA Cymru/Wales 2017).

7.2.2 However, for completion and future synthesis there is a need to combine the various datasets already produced into a searchable database that can allow the information to be unified and interrogated in a rapid and meaningful manner. This could also assist in producing an accessible resource for digital deposition and public dissemination.

7.2.3 The results of the Area 18 archaeological excavation should be incorporated along with the results of wider Wylfa Newydd scheme and the results disseminated to the interested parties and public. This should be done through deposition of an ordered archive at the suitable repositories for both physical and digital material, the deposition of a detailed report at the Historic Environment Record (HER) and publication.

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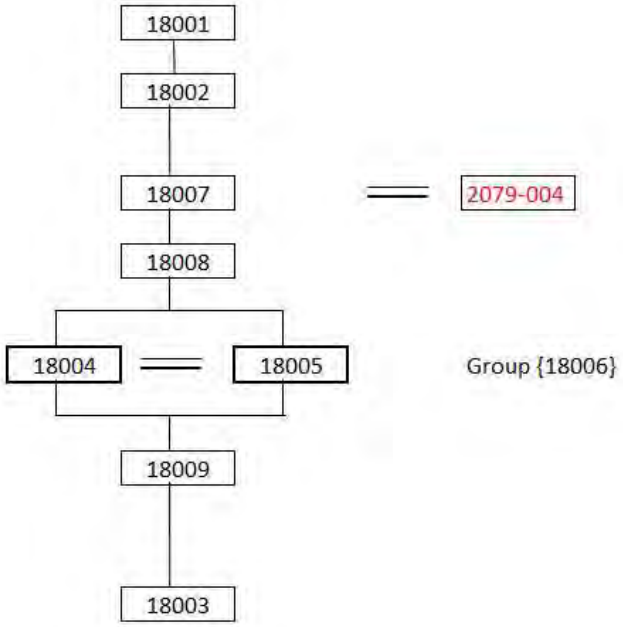
APPENDICES

APPENDIX 1: CONTEXT INDEX

Context Number	Context Type	Description	Width	Height/Depth	Discussion
18001	Layer	Mid brown silty clay	N/A	0.15m	Topsoil
18002	Layer	Mid orangey brown silty clay	N/A	0.15m	Subsoil
18003	Layer	Mid orangey grey clay	N/A	N/A	Natural geology
18004	Cut	NW-SE aligned, imperceptible shallow edges and flat base	2.6m	0.2m	Interface / construction horizon
18005	Cut	NW-SE aligned, imperceptible shallow edges and flat base	3.85m	0.35m	Interface / construction horizon
18006	Group	NW-SE aligned stone trackway / bank	2.6 – 3.8m	0.35m	Trackway / surface
18007	Layer	85% stone deposit, single course of flat, irregular stones, mostly slate, of variable sizes	2.6m	0.13m	Trackway, surface
18008	Layer	Mid greyish brown silty clay	2.6m	0.14m	Trackway, bedding
18009	Layer	Light orange, mottled with grey, sandy clay, occasional rounded stones	2.6m	0.12m	Re-deposited natural

APPENDIX 2: HARRIS MATRIX



11111 Wessex excavation number
22222 Wessex or Headland evaluation number

APPENDIX 3: PLATES

Plate 1; Trackway **{18006}**, facing SW, 1m scale

Plate 2; Trackway **{18006}**, facing NW, 2m scale

Plate 3; Trackway **{18006},** facing NW, 1m and 2m scale

Plate 4; Trackway **{18006}**, facing NW, 1m scale

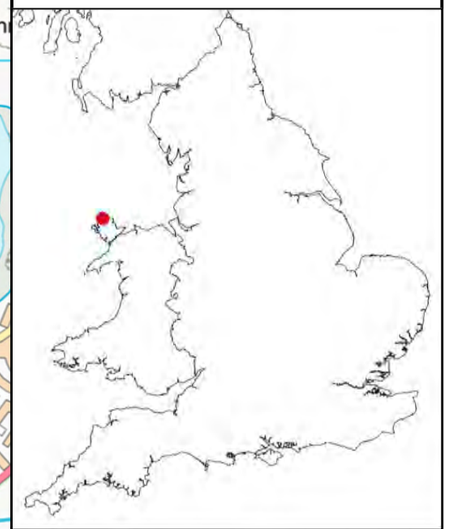
APPENDIX 4: FIGURES

DO NOT SCALE FROM THIS DRAWING

Wylfa Newydd development area

Excavation area

Hot spots



Mynydd y Wylfa

Cemaes Bay

Cemlyn Bay

Cerrig Brith

Porth-y-Pistyll

Porth y Wylfa

Area 9 (F1)

Area 11 L1(w)

Area 12 L1(c)

Area 13 L1(e)

Wylfa Head

Area 14 (L1/L20)

Area 1 (L3/L4)

Penrhyn

Ffordd Y Traeth

Area 17 (L2)

Area 16 (K2)

Tormans Cottage

Cemaes

Area 2 (L8/L12/L16)

High Street

Felin Gafnan

Area 5 (A1)

Area 3 (K11)

Tyddyn-Goronwy

Maen Y Bugail

Area 4 (E3)

Tyddyn Sydney

Swn Y Mor

Cafnan

Area 7 (A3)

10

13

11

12

8

15

7

9

6

14

5

16

17

Area 8 (A9)

Area 18 O6

Area 19 O5(n)

Tregele

EV9

Area 20 O5(s)

Ffordd Y Felin

Cemlyn Lodge

Caerdegog Isaf

Mynydd-Lthel

Nanner

234000/392000

Foel Fawr

Gors

237000/392000

Caerdegog Uchaf

Cromlech

Groes-Fechan

Tyn Cae

The Bungalow

0

1km

REVISION	DETAILS	DATE	DR'N	CHK'D	APP'D

CLIENT

Horizon Nuclear Power

PROJECT

Area 18,
Wylfa Newydd, Anglesey

DRAWING TITLE

Figure 1:
Wylfa Newydd development area and excavated sites

DRG No.	REV
CL12283-1801	A

DRG SIZE	SCALE	DATE
A3	1:12,500	Feb 2020

DRAWN BY	CHECKED BY	APPROVED BY
HP	DAC	FG

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N:\CP\CL12283 - WYLFA POSTEX ASSESSMENT\03 - DESIGN\AUTOCAD\AREA 18\CL12283-1801-A.DWG

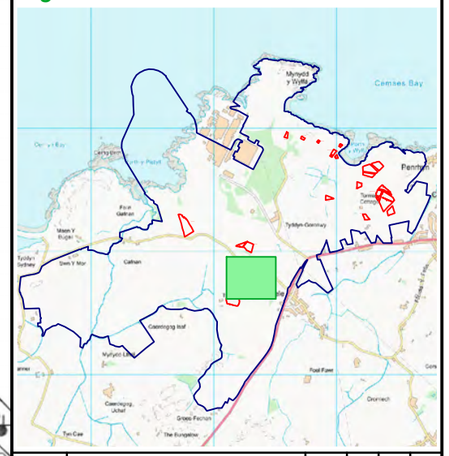
DO NOT SCALE FROM THIS DRAWING

Wylfa Newydd development area

Excavation area

Excavation areas in vicinity

Figure location:



REVISION	DETAILS	DATE	DR'N	CHK'D	APP'D

CLIENT

Horizon Nuclear Power

PROJECT

Area 18,
Wylfa Newydd, Anglesey

DRAWING TITLE

Figure 2:
Detailed site location

DRG No.	REV
CL12283-1802	A

DRG SIZE	SCALE	DATE
A3	1:1,250	Jan 2020

DRAWN BY	CHECKED BY	APPROVED BY
HP	DJ	FG

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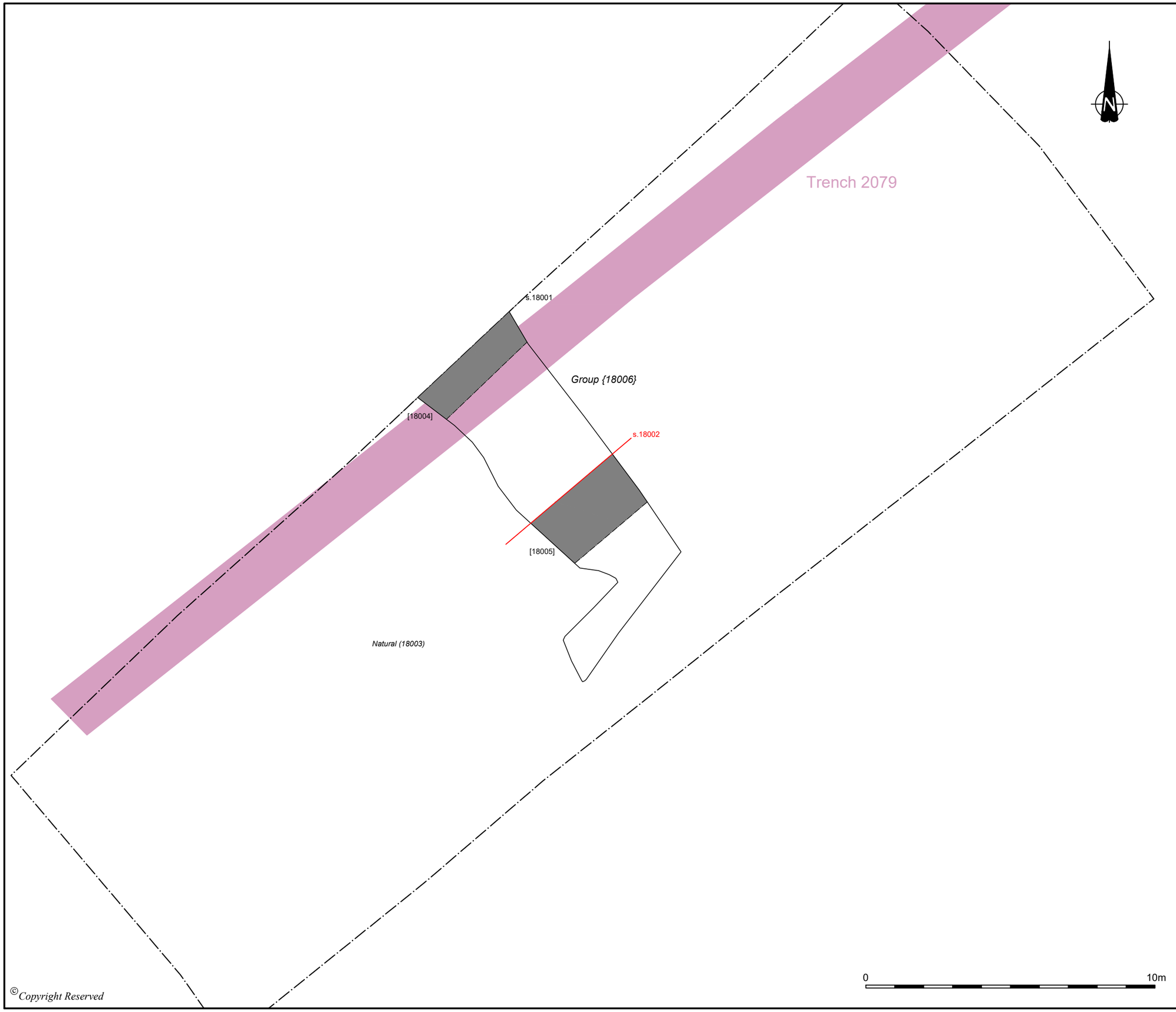
N:\CP\CL12283 - WYLFA POSTEX ASSESSMENT\03 - DESIGN\AUTOCAD\AREA 18\CL12283-1802-A.DWG



DO NOT SCALE FROM THIS DRAWING

(18000) Context numbers

Sections shown in further figures

Sections not shown in further figures

Limit of excavation

Excavated area

Trench location

REVISION	DETAILS	DATE	DR'N	CHK'D	APP'D

CLIENT

Horizon Nuclear Power

PROJECT

Area 18,
Wylfa Newydd, Anglesey

DRAWING TITLE

Figure 3:
Area 18; detailed plan

DRG No.		REV
CL12283-1803		A
DRG SIZE	SCALE	DATE
A3	1:125	March 2020
DRAWN BY	CHECKED BY	APPROVED BY
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N:\CP\CL12283 - WYLFA POSTEX ASSESSMENT\03 - DESIGN\AUTOCAD\AREA 18\CL12283-1803-A.DWG

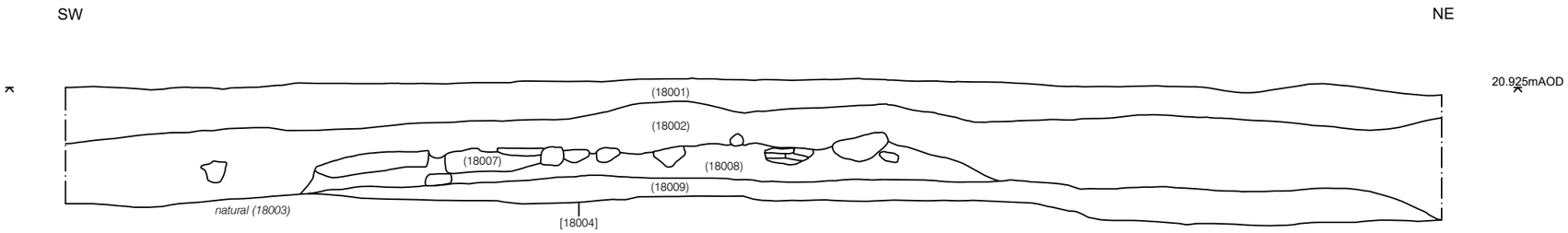
DO NOT SCALE FROM THIS DRAWING

(18000) Context numbers

Limit of excavation

Height mAOD

Stones



Section 18001. South-east facing section across trackway {18006}.

0 2m

REVISION	DETAILS	DATE	DR'N	CHK'D	APP'D

CLIENT

Horizon Nuclear Power

PROJECT

Area 18,
Wylfa Newydd, Anglesey

DRAWING TITLE

Figure 4:
Area 18; section

DRG No.	REV
CL12283-1804	A

DRG SIZE	SCALE	DATE
A3	1:25	March 2020

DRAWN BY	CHECKED BY	APPROVED BY
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N:\CP\CL12283 - WYLFA POSTEX ASSESSMENT\03 - DESIGN\AUTOCAD\AREA 18\CL12283-1804-A.DWG

APPENDIX 5: GAZETTEER OF FEATURES ENCOUNTERED IN AREA 18

Feature	*Date*	*Description*	*Easting, northing*
Trackway	Possibly Late Iron Age or Romano-British	a single stone-built trackway, aligned northwest-southeast identified by geophysical survey and targeted as Area 18 excavation The trackway may have been a short section laid down as solid base for traversing a known wet area as it was not observed in Area 19, 40m to the southeast Although the trackway did not produce any dateable evidence, there were some similarities with the form and fabric of structures dated to the Late Iron Age and Roman periods on sites such as Areas 4, 9, 19 and 20	235288,392781

APPENDIX 6: POST-EXCAVATION ASSESSMENT METHOD STATEMENT

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ENERGY AND CLIMATE CHANGE
ENVIRONMENT AND SUSTAINABILITY
INFRASTRUCTURE AND UTILITIES
LAND AND PROPERTY
MINING AND MINERAL PROCESSING
MINERAL ESTATES
WASTE RESOURCE MANAGEMENT

HORIZON

WYLFA NEWYDD

POST EXCAVATION ASSESSMENT METHOD STATEMENT

APRIL 2019

wardell armstrong

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DATE ISSUED: April 2019

JOB NUMBER: **CL12271**

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APPROVED BY:

Frank Giecco	Technical Director	

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WYLFA NEWYDD POST EXCAVATION ASSESSMENT METHODOLOGY

Introduction

This document has been prepared to provide the client with an explanation of the Post Excavation Assessment (PXA) process and to provide Wardell Armstrong's own technical team, with clear guidance on undertaking the PXA for the Wylfa Newydd archaeological mitigation works. Post Excavation Assessment (PXA) is the first stage of a process of post-excavation analysis, publication and archive deposition. It provides quantification and initial assessment of the archive resulting from excavation and provides a framework to inform further investigation and publication. It is designed to ensure that Horizon Nuclear Power meet their requirements to secure discharge (by the two primary stakeholders: Gwynedd Archaeological Planning Service (GAPS) and CADW) of the early works archaeological mitigation programme at Wylfa Newydd.

It is based on the requirement described in the Written Scheme of Investigation for Trial Trenching and Excavation (2015) and Written Scheme of Investigation for Strip Map and Sample Excavation and Paleoenvironmental Assessment (2016). It is informed by the following guidance, Association of Local Government Archaeological Officers (ALGAO) Advice Note for Post-Excavation Assessment (2015), Conservation principles for the sustainable management of the historic environment in Wales CADW (2011), Chartered Institute for Archaeologists (CIfA) Standard and Guidance for Archaeological Excavation (2014) sections 3.4 to 3.6, and for human remains The British Association of Biological Anthropology and Osteoarchaeology Human Bones from Archaeological Sites. In addition, GAPS require reference to Society of Museum Archaeologists (1993), Selection, Retention and Dispersal of Archaeological Collections: Guidelines for use in England, Wales and Northern Ireland, as well as Welsh Office Circular 60/96, (1996), Planning and Historic Environment: archaeology.
This current document identifies the stages of the PXA process, then describes the broad tasks required for each stage. The document concludes with a report template containing individual sections within the PXA report and UPD.

Requirement for and Purpose of the Post Excavation Assessment

The PXA will follow a staged process of post excavation assessment detailed in Written Scheme of Investigation for Trial Trenching and Excavation (2015) and the Written Scheme of Investigation for Strip Map and Sample Excavation and Paleoenvironmental Assessment (2016).

As stated in the ALGAO *Advice Note for Post-Excavation Assessment*, "following the completion of archaeological fieldwork, it is standard practice for a post excavation assessment (PXA) to be undertaken". CIfA describe the purpose of a PXA as a means by which "the findings should be assessed against the original project design to determine the extent to which the original research aims have been met, and the identification of any new research questions to be incorporated in a post-excavation project design". CIfA further state that PXA work "must be carried out by suitably qualified and experienced staff, who must be apprised of the project design before commencing work. The post excavation manager should preferably be a corporate member of CIfA. The level of assessment of records and materials should be appropriate to the aims and purpose of the project".

In brief the PXA process involves cleaning, processing, sorting and cataloguing the finds and environmental samples and the ordering of the documentary site records to create an archive, and then assessment of that archive to focus further analysis and reporting on that archive. The archive consists of two elements, the material archive (finds, processed environmental samples and human remains) and the documentary archive (site records and ancillary research documentation such as notes on archival sources).

Post Excavation Assessment Stages and Outputs

The PXA consists of four separate, largely, though not necessarily, sequential stages; processing of the finds, palaeoenvironmental samples and any human remains (the material archive); archival preparation for data assessment and deposition (both material and documentary archive); data assessment and finally reporting. The outputs are two stand alone documents, although often bound together under a single cover as they will be in this case. The documents are the Data Assessment Report (DAR) which quantifies the data, identifies its significance and potential for further research, and the Updated Project Design (UPD), which scopes the response necessary by achieving the site's research potential and provides the basis for a cost for doing so.

The proposed work described in the UPD is entirely separate from the PXA and will form a future stage of work involving any necessary post-excavation research and leading to the

publication of the results of the excavation. This future stage concludes with the deposition of the entire project archive with the Oriel Museum Anglesey. Funding of the required future research, publication and archive deposition for long-term curation is a requirement to secure final discharge of the 2017-2019 phase of fieldwork at the Wylfa site.

For Wylfa Newydd each site will have a separate DAR and UPD to allow GAPS/CADW and the client, to be fully appraised of the justifications for further analytical work. Each site can then be discussed in relation to its specific significance before arriving at a consensus with regard to further work requirements. There will also be a need for an overview DAR and UPD which will have two functions:

- To succinctly summarise the findings of the individual site DARs and UPDs following consultation and provide a cohesive assessment of the whole project as well as a basis for an overall justified costing for future work requirements.
- To provide a research statement regarding the overall potential of the Wylfa Newydd development area. Clearly many of the sites will not merit the publication of a standalone report. Consequently, the research potential of such sites will be best realised in contributing to period-based volumes that address regional research framework questions.

Stage 1 Processing

A summary of the processing requirements is given below. A more detailed breakdown of the required procedures for finds is contained in appendix 1 and for environmental samples in appendix 2.

Environmental sample processing involves sieving individual 10 litre tubs of soil samples for bulk samples (collected from site) in a purpose-built water filtration tank. The flots (floats) and retents (sinks) are then dried, bagged and labelled. More specialised forms of sample processing may be required for other samples taken such as column samples for insects, pollen monoliths or cores, but these represent only a tiny fraction of the samples collected. Human remains (cremated and non-cremated) require different cleaning methods depending on their state of preservation. Non-cremated articulated and disarticulated human remains in good condition will undergo wet cleaning but without the bones being immersed in water. Human remains in poor condition must not be wet-washed and will have to be dry-brushed to avoid unnecessary damage to the remains.

Bulk finds are cleaned by washing. Small finds are cleaned according to the requirements of the material, this usually but not always involves washing. Following cleaning, most finds will need to be dried and some may require stabilisation to preserve them. Cleaning and stabilisation by material and object will be as described in Watkinson & Neal (1998). Specialist conservation will not be routinely undertaken at this stage as this will involve items being sent away to specialist laboratories and the consequent costs, but the conservation need will be defined by a specialist in conservation. Where an immediate conservation need is identified this will be addressed to ensure item stability.

Stage 2 Archival Preparation

Three tasks are required in stage 2 in relation to the material archive, marking in accordance with Oriel Museum guidelines, X-raying metal objects and boxing the finds and human bones for long term curation. There will be some need to carry out X-ray photography of metal objects to be able to identify them and assess their significance. Finds, mainly pottery, will need to be marked as appropriate. As some Prehistoric and Roman pottery is of a sandy fabric this can sometimes be difficult to place a mark directly on the fabric so clear nail varnish is required to prepare the location of the mark. Following marking the finds will be bagged and boxed. The archive boxes need to be made of acid free cardboard for long term conservation storage and will need to be purchased specifically for the project.

The documentary archive should have been appropriately ordered, indexed and catalogued before it left site, but it will require checking and final cross-referencing before it can be assessed. The checking will involve both digital and paper-based records and include a finalisation of plan and section data, both hand-drawn and recorded through a digital medium. Relevant HER entries will need to be listed in full detail. All records will need security copies. Paper records (drawn plans, sections and record sheets) will be scanned for digital archiving. The digitisation of all hand drawn plans and sections is to be avoided as not cost effective. Drawings for digitisation can be selected in the analysis phase when it is known which drawings will contribute to the publication. This ensures that all digitisation will be ‘heads up’ and only for the purposes of report illustration rather than ‘heads down’, thus removing the need for digitisation tablets and increasing efficiency.

Stage 3 Data Assessment

In all cases the assessment begins with a quantification of the items to be assessed, whether it be sample residues, finds or site records. The material archive assessment involves separate

assessments of ecofacts, artefacts and any human remains. Further details of the finds assessment are contained in appendix 3.

Every flot and retent will be examined to establish whether they contain plant macrofossils, zooarchaeological remains, snail shells etc, artefacts or metal working residue. Ecofacts, residues and any artefacts are then extracted and examined. Ecofactual assemblages are identified and characterised. The assessment of individual ecofactual assemblages must be undertaken by a suitably-qualified palaeoenvironmentalist.

The finds assessment involves the quantification, identification and dating of the recovered artefacts. The finds assessment can only be compiled by a suitably-qualified finds specialist who can identify and spot-date the artefacts. Where necessary, specialists with local expertise will be consulted, especially regarding the pottery assemblages.

Radiocarbon dating, or any other form of absolute scientific dating, will be undertaken at the assessment stage, though some samples may need to be sent for testing to identify their suitability for dating. As this is an assessment a full suite of dates suitable for Bayesian analysis will not be undertaken but the potential for such future work will be highlighted in the UPD. The documentary archive assessment involves identifying each site's stratigraphic phases assisted by a Harris Matrix. It is required that this will be done using the Harris Matrix generator software. Duplicate and false contexts will be identified, recorded and discarded.

<u>Stage 4 PXA and UPD Reporting</u>

Stage 4 results in the creation of the PXA report and the UPD. A detailed template for producing these documents follows. The documents produced will be technical grey literature reports and not publication reports.

Report Template

The following report template is laid out in accordance with the desired structure and layout of the report. Sentences in italics refer to the required illustrations whether drawings or photographs.

1. **Non-technical summary, including reasons for work, aims and summary results**

2. **Introduction**

2.1 Site location (include eight digit NGR), site code/ PRN reference, and Event Number

2.2 Scope of the project.

2.3 Dates/duration of fieldwork.

2.4 Outline of the site's character (including topsoil, subsoil and substrata descriptions, past land use impacts on preservation and impact of bioturbation) and how the site fits into the local archaeological landscape.

2.5 Brief summary of previous work including directly relevant nearby sites (i.e. likely to be part of same archaeologically represented activity), geophysical results, metal detecting results and evaluation results.

2.6 Explanation of the purpose of the assessment report and organisation of the report (refer to this report template and include as appendix 1).

2.7 *Site location map related to the development area.*

2.8 *Plan of site and excavated area (usually these will be the same).*

3. **Summary of the excavation methodology**

3.1 Proposals set out in the approved Written Scheme of Investigation for the fieldwork (copy of the Written Scheme of Investigation sections 4 and 5 only as appendix 2).

3.2 Any variations from the Written Scheme of Investigation with justifications.

3.3 Site planning strategy with justifications for the applied methodology.

3.4 A description of any avoidance strategies or re-burial methods used to preserve unexcavated archaeological remains in situ, indicating whether or not these will be subject to a monitoring scheme and, if so, providing a description of it or references to supporting relevant documentation.

4. **Site archive**

4.1 Summary details of the contents and organisation of the project archive

4.2 Quantification of documentary archive (including catalogues and indices) and details of current (give date) location of the paper archive. Details of the digital archive and arrangements for storage security.

4.3 Summary of work carried out on the documentary archive during post-excavation assessment.

4.4 Quantification of material archive (by storage box) and details of current (give date) location.

4.5 Summary of work carried out on the material archive, including nature of processing and cleaning, and any necessary preliminary conservation/stabilisation.

4.6 Details of any samples sent for scientific analysis or dating as a necessary precursor to costing a programme of analysis.

4.7 Agreed destination of the site archive (in all instances this will be the Oriel Museum, Anglesey) with a statement of any receiving repository conditions if necessary.

4.8 OASIS reference supported by completed data collection form as appendix 3.

4.9 *Representative sample photographs of site features that aid understanding of the assessment of stratigraphic data*.

5. Stratigraphic data

5.1 Summary of the nature of the investigated features/deposits described by phase in chronological order (not by individual context or feature), supported by a Harris matrix/matrices in appendix 4 (use context group numbers if appropriate).

5.2 Statement of significance of the stratigraphic data.

5.3 *Final pre-excavation plan.*

5.4 *Either an overall plan for all phases or individual phase plans or both as appropriate to the site's complexity.*

5.5 *Sections of key features with a location plan showing position of sections.*

5.6 *If relevant a more detailed plan of key structures.*

5.7 *Where relevant a structure through motion model illustration(s).*

6. Artefacts

6.1 Quantification (by weight in grams for bulk finds) of finds by type.

6.2 Description of condition, stability and the immediate and longer term conservation and storage needs by artefact group.

6.3 An assessment of the character, range and variety, date, meaning and significance of all recovered artefact groups.

6.4 Statement by a recognised specialist on the research potential of each individual artefact group. If no further work beyond assessment is considered necessary this should be clearly indicated.

6.5 Statement of significance for the retention of material and a proposal for a fully justified discard strategy for low/nil value assemblages, in agreement with GAPS/CADW.

6.6 *Supporting finds illustrations at appropriate scales (for the assessment wherever practicable scaled photographs should be used rather than line drawings).*

7. **Palaeoenvironment**

7.1 Quantification (by weight in grams) of the retents and flots available for analysis. Quantification by sample bucket where further portions of a sample are available and the assessment sub-sample has revealed that further sample processing is worthwhile for the additional data it may reveal. Sub-sampling will have been sufficient to characterise and understand a sample.

7.2 Factual summary of each type of sample (e.g. bulk organic, dendrochronological, monolith), quantity, preservation, post-depositional processes, curation and storage need by ecofact group.

7.3 An assessment of the character, range, variety and significance of all ecofactual groups (likely to include plant macrofossils, pollen, animal bone, shell, snails and insects).

7.4 Statement by a recognised specialist on the research potential of each individual ecofact group, including potential to provide scientific dating. If no further work beyond assessment is considered necessary, this should be clearly indicated.

7.5 Statement of significance for the retention of material and a proposal for a fully justified discard strategy for low/nil value assemblages, in agreement with GAPS/CADW.

7.6 *Representative photographs of key assemblages*.

8. **Human remains**

8.1 For inhumations quantify by number of burials and then summarise information on skeletal completeness in a table divided as >75%, -75%, -50%, <25%. For cremations, bone remains from each context should be quantified by weight in grams.

8.2 Factual data about the bone assemblage, describing the provenance of the skeletal material and the general condition of the remains. The condition of the bone will influence the information that can be gained from the assemblage.

8.3 Statement by a recognised specialist on the research potential of the human remains.

8.4 Note on the long-term arrangements for the curation or reburial of the human remains.

8.5 *Plans showing the location of burials or other deposits of human remains*

8.6 *Photographs and/or drawings of inhumation burials in situ or a structure through motion 3d model.*

9. **Discussion**

9.1 A brief summary of the character and significance of the site as represented through its stratigraphic, artefactual and palaeoenvironmental data. Include where relevant the results of any documentary research. If no further work beyond assessment is considered necessary, this should be clearly indicated. If further work is required then include 9.2, 9.3 and 9.4 below.

9.2 A tabulated list of relevant sources discovered (relevant books, articles, HER data, archival sources) quantity, variety, level of study of sources during post-excavation assessment.

9.3 Indicate applied studies that will be necessary for further analytical work. These might include, for example, comparative analysis, archival and/or cartographic research and intra and inter-site spatial analyses, site morphological studies, absolute dating methods, scientific techniques not covered by the standard suite of applications (e.g. specific chemical analyses, thin sectioning for soils or ceramic research, isotope studies, scanning electron microscopy, specific biological analyses etc).

10. **Statement of potential**

10.1 A summary of the potential of the data in terms of local, regional, national and international importance, referencing as relevant regional and national period and subject specific research agendas. This should include:

- an appraisal of the extent to which the site archive might enable the data to meet the original research aims of the project;
- a statement of the potential of the data in developing new research aims, to contribute to other projects and to advance methodologies;
- an assessment of the relevant level at which the site data might be published e.g. site specific publication, project landscape overview or background contextual data (choose one only).

10.2 An informed strategy for the detailed analysis of some or all data groups as recommended by relevant specialists to enable a reconstruction of the history and use of the site to be developed, in line with the site's relevant research potential

(where no further work is recommended this section is not required). This strategy must include provision to incorporate the results of any earlier phases of archaeological work on a specific site, reappraising materials and artefacts recovered during earlier assessment and evaluation phases and, where appropriate, earlier excavation results - including, where possible, from neighbouring sites

10.3 *Map of the site in context at a regional or local level, showing other relevant sites and where appropriate connections and networks.*

11 Bibliography of sources used in the compilation of the PXA

12. Updated Project Design

12.1 Introduction including purpose of the UPD to provide details of a programme of analysis leading to the appropriate mechanism for the dissemination of the results of the project. Also, to provide a basis for costing the programme of analysis, publication and deposition of the archive.

12.2 Justification for the contents of the proposed programme of analysis and any theoretical approaches to be deployed, in relation to the site's statement of potential and proposal for publication/dissemination as appropriate:

- inclusion of main results in an overall synthetic volume only
- thematic paper on a specific research theme
- internet publishing through journal or proprietary website (stating whether all catalogues will be available and interactive)
- short illustrated site report for a journal
- section/chapter in edited monograph
- fully illustrated site monograph
- popular booklet (additional publication only and not to be the primary publication).

12.3 Proposal for analysis of the stratigraphic data concentrated on key feature groups.

12.4 Detail of illustrations required to support the stratigraphic analysis.

12.5 Detail of retention and discard strategy for the material archive.

12.6 Proposals for scientific dating (potentially an initial suite of dates and a second after provisional results from the artefact and ecofact analysis are received).

12.7 Proposals for a Bayesian analysis to refine chronologies, following consultation with Cadw regarding to the selection of contexts and samples for scientific dating.

12.8 Proposals, where relevant, for other forms of scientific analysis such as lipids, strontium or oxygen isotope analysis.

12.9 Details of illustrations required to support the artefact analysis.

12.10 Requirement for conservation works on material archive.

12.11 Proposals for further research, including archive visits and comparative analysis of other investigated relevant sites in order to contextualise the site data.

12.12 Details of resultant technical/archive report.

12.13 Publication report synopsis where relevant, including any additional illustrations required.

12.14 Proposals for monitoring and continued liaison with GAPS and CADW throughout the post-excavation analytical programme.

12.15 Staged programme and timetable for any proposed further work up to and including publication and archive deposition. Task list and Gantt chart.

Task breakdown for PXA

1. **Processing**

1.1 Environmental sample processing

1.2 Cleaning human remains

1.3 Bulk finds cleaning

1.4 Small finds cleaning

1.5 Artefact stabilisation

2. **Archival preparation**

2.1 Finds marking

2.2 X-raying metal objects

2.3 Archive box purchase

2.4 Boxing

2.5 Site record checking and cross-referencing

2.6 Compilation of list of archival sources

2.7 Records scanning

3. **Data assessment**

3.1 Zooarchaeological remains

3.2 Insects

3.3 Snails

3.4 Shells

3.5 Plant macrofossils

3.6 Pollen

APPENDIX 1 METHOD STATEMENT: STAGE 1 FINDS PROCESSING

Finds processing and assessment summary

At stage 1 the finds will be cleaned (usually but not always involving washing). At stage 2 the finds will marked, bagged and boxed. Once this is done in stage 3 the finds will be quantified and assessed; this involves the creation of an Excel spreadsheet into which are recorded numbers of items, weight and spot-dating and the finds are cross-referenced to the stratigraphic contexts from which they were derived. Having done this in stage 4 a report will be prepared on the assessment results. The work will be solely aimed at identifying significant assemblages for further future analysis as will be detailed in the Updated Project Design.
The following specification allows for the cleaning of bulk finds.

Washing and cleaning

Bulk artefacts (pottery, animal bone, glass, ceramic building material) are bagged up on-site and returned to the post-excavation department. The finds are washed and cleaned using two bowls (one to wash, one to rinse) and toothbrushes. The finds are placed in trays linked with newspaper – the site code, context number and (if applicable) the small find number is written either on the newspaper or on a tag attached to the tray with permanent marker. To increase the efficiency and speed of the finds' drying time, a drip-tray system is employed in

which finds are put on newspaper first before being placed in the tray. This ensures excess water is soaked up (and is particularly useful for large, heavy fragments such as architectural stone and ceramic building material).

Organic finds are processed differently and will depend on whether they have been recovered from waterlogged deposits; leather, shale, jet, wood and worked bone that has been recovered from waterlogged deposits needs to be kept dark, dry and cool. Objects are cleaned primarily with soft wet brushes and they are bagged (with water in the bags) and are put in an organics fridge.

All metalwork (including copper alloy, lead and iron) and oyster shell is dry-brushed. Delicate metal and non-metal small finds are dry-brushed and placed in crystal boxes in trays on acid-free tissue paper. Plaster/mortar are dry-brushed and placed in labelled trays.
Human remains (cremated and non-cremated) are processed differently and will require different cleaning methods depending on their state of preservation. Non-cremated articulated and disarticulated human remains in good condition will undergo the same processing as bulk finds, but the bones are not immersed in water. The human remains will only be marked depending on the requirements of the curator and county repository. Human remains in poor condition must not be wet-washed and will have to be dry-brushed for remains to stabilise.

<u>Time estimates for finds washing and cleaning</u>

It must be emphasised that finds washing is hugely dependent on a wide range of variables, including the original burial environment (acidic soils, different soil types e.g. clay versus sand) and previous activity on the site (agricultural activity such as ploughing may damage the finds).

Find type	**Weight**	**Time**
Prehistoric pottery	1kg	1-2 hours
Roman pottery	1kg	1-1.5 hours
Saxon pottery	1kg	1-1.5 hours
Medieval pottery	1kg	1 hour
Post-medieval pottery	1kg	1 hour
CBM & daub	1kg	1-1.5 hours
Animal bone (good condition)	1kg	1-1.5 hours
Animal bone (bad condition)	1kg	1-2 hours

Human bone (complete skeleton, good condition)	7-8kg	1-1.5 days
Human bone (bad condition)	1kg	1-2 days
Glass	1kg	1-1.5 hours
Metalwork	1kg	1-1.5 hours
Oyster shell	1kg	1-1.5 hours
Flint	1kg	1 hour
Stone	1kg	1 hour
Leather	1kg	1-1.5 hours
Archaeometallurgical waste	1kg	1 hour
Plaster/Mortar	1kg	1-2 hours
Clay Pipe	1kg	1-1.5 hours

APPENDIX 2 METHOD STATEMENT: STAGE 1 ENVIRONMENTAL PROCESSING

Environmental processing and assessment summary

For environmental samples in stage 1 the samples will be processed. In stage 2 this material will be dried, bagged and sorted. In stage 3 this material will be examined to establish whether or not they contain plant macrofossils, zooarchaeological remains, artefacts or metal working residue. Having done this in stage 4 they will be required to prepare a report on the assessment results. They will not be instructed to analyse the materials derived from the flots and retents at the assessment stage. The work will be solely aimed at establishing significant flots and retents for further future analysis as will be detailed in the Updated Project Design. The following specification allows for the processing and assessment of bulk environmental samples and for waterlogged materials from a General Biological Analysis sample (GBA).

General Biological Analysis sample

The colour, lithology, weight and volume of the sample will be recorded on the sample sheet. The sample will be then be processed. All samples will be floated on a 250-300 mm mesh and the heavy residues washed over a 0.5-1 mm mesh as required by SCCAS. The flot should be air dried.

The flot should be 100% sorted with all relevant material being recovered, once this process has been completed, the remaining material may be discarded. Any plant remains should be quantitively recorded. All ecofactual material should be removed as should relevant artefactual material. Earthworm and nematode capsules should be counted but not recovered. If charcoal-rich a 2mm sieve should be used, the resultant material should then be

subject to the same process outlined above. The data from the flot sorting should then be recorded into a spreadsheet (Excel) or database (Access).

Once dried the entire retent residue should be sorted. In order to ease sorting, the dried residues may be passed over a 4mm mesh, this also aids charcoal retention of a suitable size for ID. The dried residues should be described (colour, lithology, weight and volume of the individual fractions).

The <4mm fraction will be scanned with a magnet in order to pick up micro-slags, and 100% sorted for the recovery of artefacts and ecofacts.

The fine fraction will be sorted and any relevant material recovered. The sorted residues can then be discarded. Any resulting artefactual and ecofactual material should be recorded (abundance/actual quantities dependent on material and weighed).

Recording of the Environmental Data

Where possible quantify, counts of over 50 individuals per species can be referred to by levels of abundance, such as +=50-100, ++=100-200, +++=200-500 and ++++ to indicate greater than 500. If identification is not to species level then a distinction between cereals and weeds species (or non-economic taxa) should be made. The presence of chaff should be noted.
For long term storage, the plant remains should be stored in soda glass tubes with sample information, and identification (where relevant) clearly marked using pencil and a Tyvek label placed inside the tube.

Waterlogged Samples

Between 250 and 500ml of a 1l sub sample from the GBA is processed by placing the material in a 500µm sieve and washing the sample through until all of the sediment has been removed. The latter is essential or the fluid in which the sample is stored will become cloudy. Once clean the sample is removed from the sieve to an airtight jar and stored in ethanol (95% alcohol).

Paraffin Flotation

The remaining 9l of the GBA will be placed into a bucket filled with hot water to disaggregate the sample. A handful of the material is then placed in a 300µm sieve and washed until as much of the sediment as possible has been removed. The material is then tipped from the

washing sieve into a further sieve and allowed to drain and dry. Once the sample has been completely processed, it will then be left to dry for an hour. The sample is then tipped back into the bucket and enough paraffin to coat the sample is added –multiple buckets may be required if the sample is large. This will be then allowed to stand for 15 minutes and cold water added to the bucket.

The bucket is then allowed to stand for a further 15 minutes. At this stage any insect sclera should have risen to the surface of the water as the paraffin adheres favourably to the chitin which forms the exoskeleton of the beetle. The top 2cm of bucket is then poured off through a 300µm sieve and this process is repeated twice more.

At the end of this process, the flots within the sieve will be washed using domestic washing up-liquid until all traces of both the paraffin and detergent have been removed. The latter is essential as any trace of either left on the flot will render the storage medium cloudy. The sample is then stored in ethanol (95% alcohol) inside an airtight jar.

METHOD STATEMENT STAGES 2 AND 3 FINDS ASSESSMENT

Summary

The finds assessment involves the quantification, identification, dating and significance assessment of the recovered artefacts. The assessment of significance happens in stage 4 when the context of the finds can be taken into account as their significance is not solely based on the object's intrinsic interest. The finds assessment can only be compiled by a suitably-qualified finds specialist who can identify and spot-date a wide range of artefacts.

The finds assessment will adhere to a number of national guidelines, including CIfA (2017), Historic England, EAC (2014), Brown (2011) and Watkinson & Neal (1998) as well as the specific county museum's own standard requirements plus national and regional fabric codes (prehistoric through to post-medieval pottery). The finds assessment will make recommendations to be included in the UPD (updated project design). These may include further literary research and comparative analysis, AMS C14 dating, strontium or oxygen isotope analysis, Bayesian scientific methods plus illustration / photography.

The following specification allows for the quantification, identification and dating and significance assessment of the finds.

Stage 2

Certain types of find, when dry, are then marked; this can be dependent on the curator and the county repository. Finds, including pottery, CBM, animal bone, glass and clay tobacco pipe, are marked with the site code, context number, small find number and the museum accession number (if applicable). The finds are marked using permanent Indian ink (Winsor & Newton); for finds with rough surfaces (applicable to all types of pre post-medieval pottery), a small patch of acrylic or nail varnish is applied to provide a smoother surface.

Types of finds and ecofactual remains that are not marked include human bone, leather, shale, jet, all metalwork, plaster/mortar, oyster shell, slag and wood.

Once the finds are dry and marked, they are quantified and bagged in zip-lock self-sealable bags and the site code, context number, small find number and museum accession number is written on the bags. For small finds and delicate/fragile artefacts, 2 layers of acid-free ridged

foam is cut and inserted into the bag beforehand and the artefact is sandwiched between the two layers.

The non-metal artefacts, when bagged, are placed in acid-free archive boxes and they are ordered by material type and by context. Boxes should not weigh over 6kg. Metal artefacts and some organic finds are kept in Stewart tubs with a bag of silica gel and humidity strip indicators. WA Ltd's in-house archive labels are then put on the front of the box.

Time estimates for finds marking and bagging and boxing

Marking 30-40 seconds per artefact e.g. per bone, per pot sherd.

Bagging and boxing 1 box at 6 kg full capacity – 30-40 minutes.

Stage 3

Once processed (cleaned and dried stage 1 and marked stage 2) the finds will need to be assessed. In stage 3 preliminary recording and description of the assemblage is undertaken and an Excel spreadsheet is created. This stage is where the artefacts are quantified, weighed, spot-dated and where additional comments / notes are made. The Excel spreadsheet (or Access database) forms a critical part of the finds assessment and every finds report must have one. The preliminary recording is conducted by a suitably-qualified finds specialist, with a proven record and appropriate local knowledge.

Time estimates for preliminary recording

Recording and describing 1 box (6 kg) of finds = 1-3.75 hours dependent on the nature of the items.

Materials costs to be considered to PXA

In addition to the person costs there is a material cost for storage materials, including boxes, silica gel, acid free tissue and zip-lock bags, for the artefacts and the human bone. For example, finds and documentary archive boxes need to be acid free for long term storage. Appropriate temporary storage and monitoring of waterlogged artefacts is required, prior to conservation.

There will be some need to carry out X-ray photography of metal objects to be able to assess their significance.

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