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

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HORIZON NUCLEAR POWER

WYLFA NEWYDD, ANGLESEY

AREA 3 ARCHAEOLOGICAL POST-EXCAVATION ASSESSMENT REPORT

DECEMBER 2021





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AREA 3, ARCHAEOLOGICAL POST-EXCAVATION ASSESSMENT REPORT

DECEMBER 2021

PREPARED BY:

Vix Hughes

Principal Archaeologist

REVIEWED BY:

Lynne Gardiner

Associate Director

APPROVED BY:

Frank Giecco

Technical Director

Junemer

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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 36350 93450. The archaeological fieldwork programme was undertaken in support of a Development Consent Order application (EN010007). The fieldwork programme was divided into defined areas and this report details the results of the archaeological excavation at Area 3.

The site consisted of a single area in Field K11, centred on NGR SH 36250 93300 and covering 1462m². The archaeological work was undertaken between 7th August and 3rd November 2017.

The areas produced varied results with two main areas of focus positioned north and south of an east-west aligned palaeochannel.

The earliest feature detected was a pit radiocarbon dated to a calibrated calendar date of 2151-1981 BC in the Early Bronze Age date.

On the southern side were the remains of two burnt mounds and other features associated with this activity thought to be Bronze Age in date. The larger, more extensive deposit was radiocarbon dated to a calibrated calendar date of 1322-1163 cal BC which indicated a Middle to Late Bronze Age date. The exact function of the features remains ambiguous and could be related to cooking, dyeing, tanning, bathing, saunas and brewing.

To the southeast of the burnt mounds there was a number of ditches exposed and a cluster of postholes and pit features that may be linked to the adjacent contemporary occupation.

On the northern side of the palaeochannel was another focus of ditches and several pits of uncertain date and function.

The Area 3 excavation has confirmed that burnt mounds form an important part of Wylfa's archaeological landscape and the data is cumulatively advancing the understanding of the chronology, landscape setting, environmental context and function of such features.

CRYNODEB

Comisiynwyd Wardell Armstrong LLP (WA) gan Horizon Nuclear Power i gyflawni asesiad olgloddio 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 ddiffiniedig, mae'r adroddiad hwn yn manylu canlyniadau cloddfa archaeolegol yn Area 3.

Roedd Area 3 yn cynnwys un llecyn, yng nghae K1, wedi ei ganoli ar NGR SH 36250 93300 ac yn mesur 1462m². Cwblhawyd y gwaith maes archaeolegol rhwng y 7fed o Awst a'r 3ydd o Dachwedd 2017.

Roedd yr archaeoleg yn amrywio dros y llecyn, nodwyd dwy brif ardal o ffocws i'r gogledd a'r de o balaeosianel ar aliniad dwyrain-orllewin.

Y nodwedd gynharaf nodwyd oedd pydew a gynhyrchwyd dyddiad radiocarbon o 2151-1981 CC yn yr Oes Efydd Gynnar.

Ar ochr ddeheuol roedd gweddillion dau dwmpath llosg a nodweddion cysylltiedig sydd yn debygol o ddyddio i'r Oes Efydd. Caethwyd ddyddiad radiocarbon o 1322-1163 CC o'r dyddodyn mwyaf sy'n awgrymu ei fod yn dyddio rhwng yr Oes Efydd Gynnar a Hwyr. Mae pwrpas twmpathau llosg yn amwys ond gallant fod yn gysylltiedig â choginio, lliwio, barcio, ymolchi, sawnau a bragu.

I'r de-ddwyrain o'r twmpathau llosg roedd nifer o ffosydd a chlwstwr o dyllau pyst a phydewau allai fod yn gysylltiedig â'r feddiannaeth gyfagos.

Ar ochr ogleddol y palaeosianel roedd ffocws arall o ffosydd a nifer o bydewau, ni wyr pwrpas nag oed y pydewi.

Mae cloddfa Area 3 wedi cadarnhau bod twmpathau llosg yn elfen bwysig yn nhirwedd archaeolegol Wylfa a bod y data yn casglu ac yn cynyddu dealltwriaeth o gronoleg, lleoliad tirweddol, cyd-destun amgylcheddol a phwrpas y nodweddion.



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The assessment report was written by Vix Hughes. The figures were produced by Helen Phillips and Valeria Tiezzi. The finds assessment was undertaken by Sue Thompson and the lithics assessment by Miguel Gonzalez. Frances Lynch undertook the prehistoric pottery assessment. Palaeoenvironmental assessment was managed by Lynne Gardiner. Freddie Sisson undertook the palaeoenvironmental assessment and supervised the environmental team, who consisted of Megan Lowrie, Katherine Bostock, Paul Sherwood, and Charles Rickerby. The project was managed by Frank Giecco and Damion Churchill. Frank Giecco edited previous drafts and Lynne Gardiner reviewed this draft, final approval provided by Frank Giecco.



1 INTRODUCTION

1.1 **Project Circumstances and Planning Background**

1.1.1 Between August 2017 and February 2018, Wessex Archaeology undertook an archaeological excavation in Area 3, Field K11 at Wylfa Newydd, Anglesey, Wales, centred on National Grid Reference (NGR): SH 36250 93300 (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 new 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 (HER) event numbers ('PRNs') were assigned following discussions between Wessex Archaeology and Nina Steele, Senior Historic Environment Record Archaeologist at Gwynedd Archaeological Trust (GAT). Sean Derby (GAT) aided in subsequent assigning for this element of the project. 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. Primary reference numbers allocated to Area 3 are presented in Table 1.1.

PRNs	Description	Associated contexts/PRNs
PRN76008	Burnt mound and associated feature, Middle to Late	{3015}
	Bronze Age	
PRN92026	Pit, Early Bronze Age	[3007]
PRN92027	Pit, Bronze Age	[3005]
PRN76008	Burnt mound, Middle to Late Bronze Age	{3015}
PRN92028	Pit, Middle to Late Bronze Age	[3089]
PRN92029	Pit, Middle to Late Bronze Age	[3092]
PRN92030	Pit, Middle to Late Bronze Age	[3097]
PRN92044	Stakeholes, Middle to Late Bronze Age	[3103], [3105], [3107], [3109]
PRN92045	Possible burn mound, Middle to Late Bronze Age	[3014]
PRN92031	Linear features, possible Bronze Age	[3021=3045], [3049], [3057],
		[3057], [3064=3066]
PRN92032	Stakeholes, possible Bronze Age	[3025], [3027], [3029], [3041]
PRN92033	Pit, Neolithic to Bronze Age	[3019]
PRN92034	Pit, Neolithic to Bronze Age	[3043]
PRN92035	Pit, Neolithic to Bronze Age	[3047]
PRN92036	Pit, Neolithic to Bronze Age	[3069]
PRN92037	Pit, Neolithic to Bronze Age	[3099]
PRN92042	Pit, Neolithic to Bronze Age	[3060]
PRN92043	Pit, Neolithic to Bronze Age	[3071]
PRN92038	Pit, Neolithic to Bronze Age	[3053]

Table 1.1: primary reference numbers (PRNs) for Area 3



PRNs	Description	Associated contexts/PRNs
PRN92039	Drain, industrial and modern	
PRN92040	Ditch, uncertain	[3051]
PRN92041	Ditch, uncertain	[3055=3076]

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 3, the results of this scheme of archaeological excavation and the subsequent programme of post-excavation assessment. It accords with the Post-Excavation Assessment Method Statement as given in Appendix 7. 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 3 was undertaken between 7th August and 3rd November 2017, in field K11 covering a 1462m² area (Figure 2, Plate 1). The investigation targeted features recorded during the previous geophysical survey and archaeological evaluation.



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 comprised the strip map and sample of a single area in field K11, centred on NGR SH 36250 93300 and covering 1462m². The archaeological work was undertaken between 7th August and 3rd November 2017. The defined area was identified for archaeological excavation based on the results of the previous geophysical survey and trial trench evaluation, centred around Trenches 506 and 1434.
- 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 3 excavation:

- to address archaeological research objectives posed by the Research Framework for the Archaeology of Wales (CIfA Cymru/Wales 2017).
- to more definitively establish the date of the archaeological remains present (in particular the burnt mound and associated features)
- to gain information on the past environment of the landscape surrounding the investigation area via the recovery, and study, of micro and macro fossils from the feature fills; and,
- to understand how the remains seen within the investigation area relate to other known features across the landscape (chronologically, stratigraphically as well as spatially), with particular reference to the prehistoric activity in Fields K1, K4, C15 to the south and C16 to the west as well as the medieval activity seen in Field L3 on the other side of the SSSI, to the north.
- 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. In the case of burnt spreads or extensive deposits these were excavated in quadrants or sondages. 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 All finds encountered were retained on site and returned to the Wardell Armstrong (WA) Carlisle office where they were identified, quantified and dated to period. A *terminus post quem* was then produced for each stratified context under the supervision of the WA Finds Officer, and the dates were used to help determine the broad date phases for the site. On completion of this project, the finds were cleaned and packaged according to standard guidelines (Watkinson and Neal 1998). Please note, the following categories of material will be discarded after a period of six months following the submission of this report, unless there is a specific request to retain them (and subject to the collection policy of the relevant depository):
 - unstratified material;
 - modern pottery;
 - and material that has been assessed as having no obvious grounds for retention.



- 2.2.6 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 summary where applicable.
- 2.2.7 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 is 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 3/35-2016.
- 3.1.2 The Area 3 archive comprises the material and documentary archives as follows (Table 3.1).

Category	Quantification
Context Records	102 (10 void / unused)
Small finds	10
Bulk finds	0.673kg
Environmental samples	24 samples (713kg / 359 l)
Monochrome film	0
Digital photographs	231
Rectified photographs	0
Hand drawn plans	0
Hand drawn sections	52
GPS survey pre-excavation plans	Yes
GPS survey excavation plans	Yes
TST surveyed excavation plans	No

Table 3.1: quantification of excavation data



4 BACKGROUND

4.1 Location and Geological Context

- 4.1.1 Area 3 is located on the north Anglesey coast, approximately 970m to the west of the centre of Cemaes, just over 1km to the east of the existing Magnox power station, 450m to the south of the coastline and 260m to the south east of Tre'r Gof SSSI (Figure 1). Area 3 comprised a single field, centred at National Grid Reference (NGR): SH 36250 93300.
- 4.1.2 Area 3 lay on undulating ground between 19m and 24m above Ordnance Datum (aOD). Prior to the archaeological excavation, the fields were in use as improved agricultural land, characterised by pasture land.
- 4.1.3 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 3 comprised a mid orangey brown clay, which is consistent with the mapped geologies above.
- 4.1.4 The overlying soil is freely draining slightly acidic loam (Cranfield Soil and Agrifood Institute 2019) and was identified on the site as a dark brown sandy silt, up to 0.25m thick. A paler subsoil lay below this and was up to 0.37m 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) and was reviewed and updated later (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 3. 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 3.
- 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 3. Across Anglesey remains of this date are seen to 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 Prehistoric remains were uncovered in nearby Fields K1, K4 and C 15 and 16 to the west. These consisted of a substantial burnt mound and a large number of pits which contained both prehistoric pottery and lithic tool debitage. Prehistoric activity was also noted within Field L1, in the form of a costal burnt mound and to the northeast in Fields L8, L9, L11, L12, L13 and L16 (Area 2).
- 4.2.8 *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 3.
- 4.2.9 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.
- 4.2.10 The archaeological evaluation trenches in Fields L8 and L12 uncovered significant prehistoric activity, in the form of a hilltop ring ditch, to the east (Wessex 2016).
- 4.2.11 Period 4 Roman (AD 43 410): There is no known Roman activity within Area 3. 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.
- 4.2.12 Period 5 Early medieval (AD 410 1100): There is no previously known early



medieval activity within Area 3.

- 4.2.13 Evidence of early medieval settlement in Anglesey is largely based on references made on documentary sources (Headland Archaeology, 2017) which suggests a pattern of disparate farming sites located close to small ecclesiastical complexes across Anglesey (*ibid*.).
- 4.2.14 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*.).
- 4.2.15 Other evidence includes occasional findspots include inscribed stones and a rare small fortified site at Porth Wen may have related to the 9th century Viking raids.
- 4.2.16 Period 6 Medieval (1100 1539): By the 12th century, Area 3 was located within the Talybolion commote (a recognised regional unit of royal administration) with a royal manorial centre located at Cemaes (GAT 2012b).
- 4.2.17 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*.).
- 4.2.18 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.*).
- 4.2.19 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.
- 4.2.20 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.

- 4.2.21 Significant medieval activity including a cemetery site and evidence for both domestic and industrial activity was uncovered by the trial trench evaluation in field L1, c.500m to the west (Headland 2017, 15-18) and subsequently excavated by Brython Archaeology.
- 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' systems 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 added to extend areas of ownership or use.
- 4.2.27 The archaeological evaluations (Headland 2017, Wessex 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) which can refer to a ditch or bank, and frequently appears in place-names. Within northwest Wales, the term is usually used to describe an earthen bank, often stone-faced. An unusual feature of stone clad 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) noted that the mapped field boundaries could be fossilised and originate in earlier eras. It concluded that the area may contain 'background agricultural features' such as field boundaries and ditches.
- 4.3.3 *Geophysical Survey:* The surveys conducted in Area 3 (GAT 2011a, 2011b, 2012a) identified a 19th century ditch which corresponded to that seen on historic maps.
- 4.3.4 The geophysical survey did detect the burnt mound, visible in the greyscale figures, but without an excavated reference example it was not interpreted as such, at the time.



4.3.5 **Archaeological Evaluation:** During the 2016 evaluation 22 trenches were excavated in Field K11. This revealed two deposits in adjacent Trenches 506 and 1434 appeared to be the remains of one possible large burnt mound (50604, 143409) that measured at least 8.1 m by 4.3 m and 0.24 m in depth (Figure 3.8). Whilst the deposit was formed of small heat-affected stones it did not contain the significant quantity of charcoal that characterised the other excavated mounds. A small pit or ditch terminal [143407] on the southern side of the mound may have been associated with it (Wessex Archaeology 2016).



5 ARCHAEOLOGICAL EXCAVATION RESULTS

5.1 Introduction

- 5.1.1 The areas produced varied results with two main areas of focus positioned north and south of an east-west aligned palaeochannel.
- 5.1.2 On the southern side were the remains of two 'burnt mounds' and other features associated with this activity thought to be Bronze Age in date. To the southeast there was a number of ditches exposed and a cluster of postholes and pit features.
- 5.1.3 On the northern side of the palaeochannel was another focus of ditches and several pits.
- 5.1.4 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 0.25m of dark brown sandy silt topsoil (**3001**), and a further 0.37m thick of mid greyish brown silty clay subsoil (**3002**), was removed to reveal the archaeological horizon cut into the natural geological substrate. The natural geological substrate (**3003**) comprised mid-orangey brown sandy clay, representing glacial till; consistent with the mapped geology. All features were sealed by the subsoil and truncated the underlying natural substrate.
- 5.2.2 The lack of complex stratigraphic relationships, datable material and the relatively dispersed nature of the features meant that only broad phasing could be established, with a limited sequence of events. For example, the instance an undated pit cutting undated linear features did not allow for all the pits to be placed in a later phase to the linear features.

5.3 **Period 0 – Natural Features**

5.3.1 A wide, shallow palaeochannel **[3018]**, 5.5m wide and up to 0.3m deep was aligned east-west across the site (Figure 3a, Plate 2). The channel was relatively shallow and may have resulted from water scouring rather than a substantial watercourse, which dried and infilled. However, the stratigraphic sequence was examined in one location and this suggested that the feature was open at the time the adjacent burnt mound formed to the south. The base fill **(3034)** was interpreted as being deposited in a dynamic environment. The putative palaeochannel was probably the source of water and some of stones for the water heating process. The upper fills of the channel **(3035**,



3033, 3036, 3032 and 3031) appeared to post-date the burnt mound.

5.4 Period 2 – Late Neolithic and Early Bronze Age

5.5 *Phase 1*

- 5.5.1 The earliest phase of archaeology activity encountered at Area 3 consisted of two pits in the southeast area. Pit **[3007]** was a well-defined 0.73m wide, 0.35m deep concave feature with a small number of flint fragments and chert debitage within the contrasting fills **(3008)** and **(3010)**, (Plate 3), PRN92026. A relatively moderate frequency of charcoal was noted within the deposit, including that of oak (*Quercus* sp.) from **(3008)** which was radiocarbon dated to 2151-1981 cal BC (calibrated calendar date), in the Early Bronze Age.
- 5.5.2 This pit had a second, later pit **[3011]** cut into it (Figure 3g), or the pit was re-cut whilst still active. Pit **[3011]** was smaller and contained a single fill **(3009)**. A fragment of chert debitage was assigned to **[3011]** but may have been from its fill **(3009)**.
- 5.5.3 Pit **[3005]** was a well-defined 1.3m wide, 0.25m deep concave feature with a single fragment of chert core debitage within the fill **(3006)**, (Plate 4), PRN92027. This pit, although shallower than **[3007]**, was more similar in form than to the other less regular pits (Period 3, Phase 2).

5.6 Period 3 – Late Bronze Age to Iron Age

5.7 *Phase 1*

- 5.7.1 The next phase of archaeology encountered at Area 3 consisted of a number of pits and associated spreads of burnt material **(3004)** and **(3015)**, and the remnants of probable land demarcation ditches and pit clusters. A number of the features have to be dated but were phased on the basis of morphology or spatial relationships.
- 5.7.2 Underlying the mound **{3015}** were three pits **[3089**, **3092** and **3097**], which demonstrated that the pits were in use first. They were grouped towards the southern central area. The material infilling the pits was compatible with the subsequent spread, seen as **(3012)** and **(3103)**. The features demonstrate characteristics consistent with burnt mounds and troughs, usually dated to the Bronze Age.
- 5.7.3 A layer of burning activity was located to the northern limits of burnt mound **{3015}**. This fill **(3088)**, Figure 5, was 1.33m by 0.6m by 0.06m and consisted of a charcoal-rich layer. Another layer, **(3090)** was observed to the southern side of the burnt mound. This layer was 2.1m by 2m by 0.12m and consisted of a mid-orange brown silty sand



layer.

- 5.7.4 Pit feature **[3089]** was oval to sub-rectangular in plan, measured approximately 1m by 0.6m and was 017m deep, PRN92028. It had moderately steep sides and a flat base and contained a lower fill **(3111)** and upper fill **(3112)**. The feature was interpreted as a water trough. Neither fill contained artefactual material.
- 5.7.5 Pit **[3092]** was sub-squared measured 1.6m by 1.2m and was 0.4m deep and was characteristic of a more complex water trough, PRN92029. It had moderately steep sides and a gently concave to flat base and contained four fills, **(3093, 3094, 3095** and **3096)**, (Figure 3c). However, sequentially after the initial pit was dug four small post/stakeholes were inserted **[3103, 3105, 3107** and **3109]**, PRN92044, prior to the pit being filled (Plate 5). The stakeholes were on average 0.09m in diameter and no more than 0.15m deep. It is difficult to be certain but highly probable that the stakeholes are contemporary and together represent a wooden superstructure.
- 5.7.6 Overlying the infilled stakeholes, the initial fill (**3093**) was a thin clay deposit assumed to be a deliberate lining. A complete copper alloy object was retrieved from the sample taken from this deposit. The object was thought to be a brooch pin broadly consistent with others dating to the Bronze Age to Roman eras. That clay layer (**3093**) sealed the infilled stakeholes, suggested the stakes had been removed/rotted by the time the clay was deposited. Layer (**3093**) was overlain by a second thin layer of concentrated black silt fill (**3094**) with frequent charcoal inclusions. The abundant charcoal produced oak (*Quercus* sp.) fragments which were radiocarbon dated to 1322-1163 cal BC (calibrated calendar date), in the Middle to Late Bronze Age. Above this was a thick mid yellowish grey deposit of heat affected stones (**3095**) and sealing this was a thin layer of black silt with frequent charcoal inclusions, (**3096**).
- 5.7.7 The troughs are generally interpreted as water containers that are heated using stones from the fire pit with the burnt mounds being form from the waste from this process.
- 5.7.8 Pit feature **[3097]** was sub-circular in plan, measured approximately 1m by 1m and was 0.14m deep, PRN92030. It had steep sides and a concave base and contained a single fill **(3098)**, (Figure 3d). The fill was a black silt with frequent heat affected stones and charcoal inclusions, which were denser towards the base (Plate 6). There was no recorded clay lining and no evidence of the underlaying natural being heat affected. The original function remains unclear, but fire waste was discarded within it. There was no artefactual material.



- 5.7.9 Burnt mound **{3015}** overlying the pits, was extensive, measured 16.8m by 14.7m, was 0.35m thick and sub-rectangular in plan (Plates 7 and 8). The deposit itself, recorded as **(3012)** and **(3013)**, (Figure 3b), was composed of a blue-grey black silty clay with frequent inclusions of sub-angular stones that had been discoloured through heating and some were partially cracked. There was also a relatively high frequency of charcoal was noted within the deposit and a very small sherd of Roman pottery was recovered from **(3012)**, which may have been intrusive. A small assemblage of flint debitage finds were retrieved from all three deposits, **(3012, 3013** and **3015)**.
- 5.7.10 The upper fills of the palaeochannel (3035, 3033, 3036, 3032 and 3031), (in sequence, Figure 3a) appeared to post-date the burnt mound (3015) and were variable in nature. It was suggested by the excavators that the paleochannel may have undergone episodic changes resulting in the variations. The sequence would indicate that the feature continued to operate after the burnt mound had formed.
- 5.7.11 Feature [3014], PRN92045, was oval in plan and located 5m to the southeast of burnt mound {3015}, (Plate 9). It measured 5.3m by 5.2m and was 0.15m to 0.6m deep. Infilling the feature was a dark grey silty clay deposit (3004), with moderately frequent inclusions of sub-angular stones that had been discoloured through heating and some were partially cracked and abundant charcoal (Figure 3e). The material was characteristic of a burnt mound but had been placed into a cut feature, the initial excavation of which may have had a different function, perhaps extraction of required material including stones. A fragment of chert debitage was assigned to [3014] but may have been from its fill (3004).
- 5.7.12 In the southeast corner of the site, approximately 15m from the main burnt mound {3015}, was a cluster of features including a group of stakeholes, pits and short linear features.
- 5.7.13 The short linear features included **[3021=3045]**, **[3049]**, **[3057]** and **[3064=3066]**, PRN92031. The features were interpreted as a small group of wooden structures but there are no clear associations on the basis of artefacts or morphology to confirm this. Spatially they may be associated, which could suggest a prehistoric, possibly Bronze Age, date and therefore they might be contemporary with the burnt mound.
- 5.7.14 Linear feature **[3021=3045]** was a 0.25m wide east-west aligned shallow possible beam slot, seen for 1.7m. It contained a single fill **(3022)** and **(3046)**, neither of which contained any artefactual material (Figure 3f, Plate 10). The feature was truncated by pit **[3019]**.



- 5.7.15 Parallel and offset to [3021=3045] was a second east-west aligned linear feature [3049]. This was slightly wider and continued beyond the eastern excavation limit. The single fill (3050) contained two fragments of flint debitage. Two fragments of flint debitage was assigned to [3021] but may have been from its fill (3022).
- 5.7.16 Feature **[3057]** was approximately 4m long, 0.9m wide, 0.12m deep, with a poorly defined terminus at the southern end, and continued north beyond the limits of excavation, but was not detected in the adjacent evaluation Trench 506, as **[50604]** (a burnt mound) was not physically related but might have been part of the overall site. The single fill **(3058)** was a dark brown silty clay with occasional charcoal inclusions, but no artefactual material (Plate 11). The ambiguity of the feature means that it may have been a shallow ditch, possibly a hedgeline or a plant bedding trench.
- 5.7.17 To the south was north-south aligned linear feature **[3064=3066]**, with two clear termini, which were excavated (Plate 12). The feature was similarly sized to **[3057]**, although slightly narrower and with more regular edges. There was a single fill which, in the case of **(3065)**, contained a worked chert fragment. The ambiguity of the feature means that it may have been a shallow ditch, possibly a hedgeline or a plant bedding trench.
- 5.7.18 A group of four features were interpreted as stakeholes [3025, 3027, 3029 and 3041], (Plate 13), PRN92032. On average they were 0.08m in diameter and 0.06m deep. Each had a dark greyish brown fill with moderately frequent charcoal inclusions. Three of the possible stakeholes formed a curved line while the fourth [3041] lay to the southeast. A fragment of flint debitage was assigned to [3025] but may have been from its fill (3026).

5.8 *Phase 2*

- 5.8.1 There was no discernible pattern to the distribution of eight pits seen in the same area as the short linear features. The pits are speculatively placed in a slightly later phase than the linear features as there was an apparent relationship of pit [3019] truncating the linear feature [3021=3045], which could indicate a general trend. The pits consisted of [3019, 3043, 3047, 3069 and 3099]. The pits varied in size and form and all had single fills.
- 5.8.2 Pit **[3019]**, PRN92033, post-dated the narrow linear **[3021=3045]**, and was oval in plan, measured 2.7m by 0.4m and was 0.26m deep (Figure 3h). The single fill **(3020)** contained frequent charcoal inclusions, four pieces of flint debitage and a fragment of



pottery dated to a broad Neolithic to Bronze Age date.

- 5.8.3 Features **[3043]**, PRN92034, and **[3047]**, PRN92035, were further away from the main cluster of pits and ditches. Feature **[3043]** was an elongated oval probable pit 1m in length and very shallow at 0.05m deep. The single fill **(3044)** had frequent inclusions of charcoal and may have results from discarded fuel waste (Figure 3i).
- 5.8.4 Pit **[3047]** was a larger more circular pit to the south (Plate 14). The pit was approximately 1m in diameter and 0.12m deep. The single fill **(3048)** was relatively similar to that of **(3044)** and had a compatible frequency of charcoal, but no heat affected stones.
- 5.8.5 Pit **[3069]**, PRN92036, was a slightly irregular oval feature 1.6m in diameter and only 0.14m deep. The fill **(3070)** contained occasional stones and frequent charcoal inclusions (Plate 15).
- 5.8.6 Pit **[3099]**, PRN92037, was an irregular circular feature and was the largest of the pits, being 2m in diameter and 0.16m deep. The single fill **(3100)** contained a low frequency of charcoal and three fragments of chert debitage.
- 5.8.7 North of the palaeochannel **[3018]** were a number of discrete features that may date to this broad period, **[3053**, **3060** and **3071]**.
- 5.8.8 Pit **[3060]**, PRN92042, was a well-defined 0.81m wide, 0.46m deep concave feature with no artefacts within the three contrasting fills **(3061, 3062** and **3063)**, (Plate 16). The initial brown fill **(3061)** contained a high frequency of angular stones and charcoal inclusions. Above this was a mottled greyish orange fill with a lower frequency of angular stones and no noted charcoal. The uppermost brown fill, **(3063)** was a sandier and contained fewer stones but a moderate frequency of charcoal. The fills may have been derived from discarded fire waste.
- 5.8.9 A second pit [**3071**], PRN92043, to the south was smaller and less well defined (Figure 3j). It contained a single fill (**3072**) which had abundant heat affected stones and frequent charcoal inclusions (Plate 17). Described as overlying the pit was a spread [**3073=3074**], which was a grey silty clay that contained a small number of heat affected stones.
- 5.8.10 Further south was an isolated pit **[3053]**, PRN92038, which was 0.9m in diameter and only 0.08m deep. The brown fill **(3054)** contained occasional charcoal inclusions and several pieces of flint debitage.



5.9 Period 8 Industrial and Modern

5.10 *Phase 1*

- 5.10.1 The 19th-century boundary detected by geophysical survey was removed prior to investigation of the burnt mound and was not recorded (Wessex 2018).
- 5.10.2 Linear feature **[3023=3037]** was a 1.52m wide east-west aligned, 0.24m deep ditch seen to extend over 20m and continued west beyond the limit of excavation. It contained a single fill seen as **(3024)** and **(3038)**, (Figure 3k). A fragment of flint debitage was assigned to **(3023)** but may have been from its fill **(3024)**, from which one confirmed piece of flint debitage was recovered. The feature was recorded as having been truncated by a much smaller north-south linear feature **[3039]**.

5.10.3 Phase 2

5.10.4 The narrow linear feature **[3016]**, PRN92039, aligned north-south, was consistent in form with a field drain, probably a 'sod' drain as there was no evidence of a ceramic pipe. As such, it would date to the post-medieval period.

5.11 Undated Features

- 5.11.1 There were two short stretches of ditch [3051], PRN92040, and [3055=3076], PRN92041, north of the palaeochannel. Ditch [3051] was on the same general alignment as the probable Bronze Age linear features to the southeast, but they cannot be directly related to them. Ditch [3051] was only seen for a short 4m length, 0.86m wide and 0.12m deep. There was a terminus to the south and the feature continued north beyond the limit of the excavation. The single grey fill (3052) contained a small amount of charcoal and burnt stone, but no artefactual material (Plate 18). The ambiguity of the feature means that it may have been a shallow ditch or possibly a hedgeline or a worn linear depression.
- 5.11.2 The second possible ditch **[3055=3076]** lay to the south. It was aligned northwestsoutheast, approximately 6m long, 0.and 0.13m deep at most. The **[3055]** terminus was at the northwestern end, while the southeastern extent was poorly defined. The single brown fill was seen as **(3056)** and **(3077)**, (Plate 19). Fill **(3077)** contained two pieces of flint debitage and a naturally rounded pebble adapted for use as a rubbing stone. The shape and fine grain of the rubbing stone suggest it may have been used in textile production as a slick-stone or linen smoother and could be Roman to Early Medieval in date (Rogers 1997). The ambiguity of the feature means that it may have been a shallow ditch, possibly a hedgeline.



6 FINDS ASSESSMENT

6.1 Introduction and Methodology

- 6.1.1 A total of 28 artefacts, weighing 683g, were recovered from 18 contexts as bulk finds from an archaeological investigation on Area Three. A further 11 Small Finds, with a combined total weight of 60g, were also recovered from five contexts.
- 6.1.2 All finds were dealt with according to the recommendations made by Watkinson & Neal (1998) and to the Chartered Institute for Archaeologists (CIfA) Standard & Guidance for the collection, documentation, conservation and research of archaeological materials (CIfA 2014b). All artefacts have been boxed according to material type and conforming to the deposition guidelines recommended by Brown (2011), EAC (2014) and Oriel Ynys Môn. The project has the unique identifier WA19/CL12283/Area 3/35-2016.
- 6.1.3 The material archive has been assessed for its local, regional and national potential in line with the archaeological research framework for Wales (ClfA Cymru/Wales 2017).
- 6.1.4 Quantification of bulk finds by material and context is given in Table 6.1, flints are quantified in Table 6.2, small finds are in Table 6.3 and there was a single find recovered from the environmental samples.

			Weight	Period /	
Context	Material	Quantity	(g)	Date	Comments
				Post Med-	Refined white earthenware. REFW.
304	Pottery	3	10	Modern	Plate fragments
3006	Chert	1	40		
3008	Chert	2	26		
3008	Flint	1	1		
3010	Flint	1	1		
3011	Chert	1	5		
3012	Chert	1	35		
					Grey ware body sherd. Sandy
3012	Pottery	1	5	Roman	micaceous fabric. CO RE. Abraded
3013	Flint	1	1		
3014	Chert	1	20		
3015	Flint	1	1		
					Small body sherd, Oxidised exterior,
3019	Pottery	1	5	Prehistoric	blackened interior. Large inclusions
3020	Flint	4	23		
3021	Flint	2	1		
3023	Flint	1	60		
3024	Flint	1	1		
3025	Chert	1	40		
3052	Stone	1	10		

Table 6.1: quantification of bulk finds by context and material



			Weight	Period /	
Context	Material	Quantity	(g)	Date	Comments
3077	Stone	1	383		Worked pebble. Rubbing stone
3093	Chert	2	15		
Total		28	683		

6.2 **Prehistoric Pottery by Francis Lynch**

6.2.1 The main feature of this area was the large burnt mound, which had spread over three of the original water troughs. There were other smaller areas of burnt stone and burning in the vicinity and in the south eastern corner of the excavation there was a convergence of field boundaries, stakeholes and smaller pits. A single abraded sherd of pottery was recovered from an elongated pit [3019]. The pit had a single fill (3020) containing a lot of charcoal. The condition of the pottery sherd suggests that it was residual, but it may have originally been related to the burnt mound.

(3019) Single sherd

6.2.2 Featureless sherd (27 x 20 x 9mm) in a very hard red/black fabric with a sharp distinction of colour. The majority of the stone grit is near the inner surface and the outer red surface is relatively smooth with only very small paler grits. The type of stone could be identified at analysis stage. All edges are notably abraded. This small piece is consistent with the Later Bronze Age material recovered from along the EV9 cable route, but it does not provide a precise date to any of the activities on the site.

6.3 Roman Pottery

- 6.3.1 A single sherd of Roman pottery was recovered from context **(3012)** weighing 5g. The fragment was in moderate condition with evidence of post-deposition abrasion.
- 6.3.2 The pottery was examined with a x10 hand lens and recorded according to published national guidelines (PCRG, SGRP & MPRG 2016). Where possible, mnemonic fabric codes were assigned using the National Roman Fabric Reference Collection (Tomber & Dore 1998) and the Roman Potsherd Atlas online (RPA 2019).
- 6.3.3 The single fragment comprised a body sherd of micaceous sandy greyware (CO RE) and is probably a fragment of a jar. A broad date of 1st to 4th century is appropriate.

6.4 **Post-medieval Pottery**

6.4.1 Three sherds of post-medieval to modern pottery, weighing 10g, were recovered from context (**304**), which is not an identified context for this (or any other) Area.



- 6.4.2 The pottery was examined with a x10 hand lens and recorded according to published national guidelines (PCRG, SGRP & MPRG 2016). Where possible, mnemonic fabric codes were assigned when they could be identified; this was undertaken using material published by MOLA (2015).
- 6.4.3 The pottery comprised plain white refined earthenware (REFW) plate fragments with a late 19th to 20th century date.

6.5 Lithics

- 6.5.1 A total of 31 (323.54g) lithics were recovered during the archaeological excavation at Area 3 (Table 5.2).
- 6.5.2 Methodologies and identification were aided by Andrefsky (2005), Ballin (2000) and Butler (2005).
- 6.5.3 All the lithics within the assemblage were individually examined and assigned to a category according to debitage, core or tool type. Cores/core fragments were further classified by platform and removal type; complete specimens and tested nodules were individually weighed. The condition and degree of cortication was noted for each artefact, along with evidence of burning, breakage and use. Dating was attempted throughout. The flints were individually numbered and recorded in order to facilitate revisiting the material and appending further data at a later stage. Bulk records were used for burnt unworked flint, which was quantified by piece and by weight. The data was entered directly on to a MS Excel spreadsheet.
- 6.5.4 *Condition.* The condition of the lithics varies, but a large proportion is in a fresh or minimally damage condition implying negligible post-depositional disturbance. Severe instances of edge-damage and surface rolling are generally associated with residual pieces found in later features. Material from topsoil, ploughsoil and subsoil layer also tends to be in a poor condition. The vast majority of flint are uncorticated. A small number display a medium to heavy cortication, which appears as a white or bluish-white surface discolouration.
- 6.5.5 *Raw material.* The entire assemblage is made up of two lithologies, a black fine grain, good quality local chert (42%) and local beach pebble flint (58%), both in a very similar proportion.
- 6.5.6 *The assemblage.* The assemblage is made up of 87% debitage, 3.2% of cores and core fragments, 3.2% of retouched tools and others (6.4%).



- 6.5.7 The technological traits of the assemblage, particularly the characteristics of the flakes, mostly tertiary, and blade-like removals, strongly suggest an Early Neolithic. Much reduction appears to have been undertaken using direct hard hammer percussion although there are suggestions of the use of a softer hammer on the blade-based removals. The only core recorded **(3006)** is a multiplatform platform flake core, with very little evidence for formal core rejuvenation **(3093)** by removal of core tablet or the use of opposed platforms.
- 6.5.8 The only retouched piece is a serrate piece, on a squat hard-hammer flake with a serrate retouch in the distal end and platform preparation, is likely to be Early Neolithic.
- 6.5.9 The lack of diagnostic elements in the assemblage make more difficult to date it, but technologically the assemblage of Area 3 appears to date to the Early Neolithic.



				Raw Ma	aterial				Dim	ensions				
Context no.	Туре	Colour	Lustre	Texture	Opacity	Cortex	Patination	L	w	т	Weight (g)	Class	Category	Subcategory
3025	Chert	Black	Dull	Fine	Opaque	Nco	None	40.3	41.5	16.5	39.25	Debitage	Flake	Primary flake
3012	Chert	Black	Dull	Fine	Opaque	Nco	None	49.9	58.1	12.2	33.65	Retouched tool	Serrate	Serrate piece
3011	Chert	Black	Dull	Fine	Opaque	Nco	None	24.2	39.8	6.4	5.6	Debitage	Flake fragment	Tertiary flake
3014	Chert	Black	Dull	Fine	Opaque	Nco	None	44	48	11	18.3	Debitage	Core preparation flake	Core face preparation flake
3023	Flint	Cream	Dull	Fine	Opaque	CoD	Heavy				60.3			Natural. Flint pebble
3006	Chert	Black	Shiny	Fine	Opaque	Nco	None	38.3	40.6	18.7	42.5	Core	Core fragment	Multiplatform flake core
3093	Chert	Black	Shiny	Fine	Opaque	Nco	None	24.4	25.5	10.4	6.58	Debitage	Core preparation flake	Core edge preparation flake
3093	Chert	Grey	Dull	Fine	Opaque	Nco	None	37	24.2	10.2	6.28	Debitage	Flake	Tertiary flake
3008	Chert	Grey	Dull	Fine	Opaque	Nco	None	44.6	28.2	5.1	6.27	Debitage	Flake	Tertiary flake
3008	Chert	Black	Dull	Fine	Opaque	Nco	None	48.2	39.9	12.4	19.29	Debitage	Flake	Tertiary flake
3008	Flint	Beige	Shiny	Fine	Opaque	Nco	Heavy	19.5	10.7	3.2	0.78	Debitage	Chip	Chip
3015	Flint	White	Shiny	Fine	Opaque	Nco	Heavy	14	10.2	2.2	0.34	Debitage	Chip	Chip
3010	Flint	White	Dull	Medium	Opaque	Nco	Heavy	20.5	16.4	4.6	1.39	Debitage	Chip	Chip
3021	Flint	Red	Dull	Fine	Opaque	nco	None	8.7	8.6	3.5	0.17	Debitage	Chip	Chip
3021	Flint	White	Shiny	Fine	Translucid	Nco	Heavy	17.3	10.5	1.9	0.35	Debitage	Chip	Chip
3024	Flint	Beige	Shiny	Fine	Opaque	Nco	None	8.9	15.4	5.8	1.14	Debitage	Chip	Chip
3013	Flint	Beige	Dull	Fine	Opaque	Nco	None	21.7	5.7	2	0.31	Debitage	Burin spall	Burin spall
3020	Flint	White	Dull	Medium	Opaque	NcoD	Heavy	36	25.8	8	6.23	Debitage	flake	Secondary flake
3020	Flint	White	Shiny	Fine	Opaque	Nco	Medium	29.9	15	5.9	2.64	Debitage	Core preparation flake	Core edge preparation flake
3020	Flint	Grey	Dull	Fine	Opaque	Nco	Heavy	16.5	13.4	2.6	0.6	Debitage	Chip	Chip
3020	Flint	Beige	Shiny	Fine	Opaque	NcoD	Medium	44.2	31.8	11.8	13.36	Debitage	Flake	Tertiary flake
3100 (SF 3018)	Chert	Black	Dull	Fine	Opaque	Nco	None	41.3	28	8	7.01	Debitage	Flake	Tertiary flake
3100	Chert	Black	Dull	Fine	Opaque	Nco	None	34	34.5	13.9	13.43	Debitage	Flake	Tertiary flake



	Raw Material						Dimensions							
Context no.	Туре	Colour	Lustre	Texture	Opacity	Cortex	Patination	L	w	т	Weight (g)	Class	Category	Subcategory
(SF 3017)														
3065 (SF 3007)	Chert	Black	Dull	Fine	Opaque	Nco	None	38.1	49.8	11.2	20.87	Debitage	Flake	Tertiary flake
3100 (SF 3016)	Chert	Black	Dull	Fine	Opaque	Nco	None	33.1	33.1	10.5	9.72	Debitage	Flake	Tertiary flake
3050 (SF 3003)	Flint	Grey	Shiny	Fine	Opaque	NcoD	Heavy	26.3	6.9	10.4	1.73			Burnt flint
3077 (SF 3008)	Flint	Beige	Shiny	Fine	Opaque	Nco	None	9.5	10.6	1.9	0.23	Debitage	Chip	Chip
3077 (SF 3009)	Flint	Grey	Shiny	Fine	Opaque	Nco	Medium	21.3	14.3	4.8	1.38	Debitage	Blade	Blade frag.
3054 (SF 3004)	Flint	White	Dull	Fine	Opaque	Nco	Heavy	16.7	10	2.7	0.43	Debitage	Chip	Chip
3054 (SF 3005)	Flint	White	Dull	Fine	Opaque	Nco	Heavy	15.6	11.4	1.7	0.42	Debitage	Chip	Chip
3054 (SF 3006)	Flint	Beige	Shiny	Fine	Opaque	Nco	Medium	31.4	14.5	5	2.99	Debitage	Blade	Tertiary blade

Table 6.2 Quantification of Flints

Key: Nco = no cortex present



6.6 **Stone**

- 6.6.1 Two stone artefacts were recovered from Area 3 with a combined weight of 393g.
- 6.6.2 A small fragment of possible burnt stone (sandstone?) was recovered from context (3052). Although the stone appears to be heat affected it was unworked.
- 6.6.3 The stone recovered from context (**3077**) is a pale coloured, fine grained stone which appears to be a naturally rounded pebble adapted for use as a rubbing stone. Its dimensions are 82mm (L) x 68mm (W) x 37mm (T). The stone is slightly flattened in profile with opposing worn faces. Natural pebbles would have been utilised as rubbing or grinding stones for a variety of purposes including as whetstones for sharpening metal blades, grinding stones for grains and polishing stones. Several examples were recovered during the excavations associated with the A55 Anglesey Road Scheme (Smith 2012). The shape and fine grain of this stone suggest it may have been used in textile production as a slick-stone or linen smoother and could be Roman to early medieval in date (Rogers 1997).

6.7 Small Finds

6.7.1 A total of ten small find numbers were allocated to lithic artefacts weighing a combined total of 59g (Tables 5.2 and 5.3). These are discussed in the lithics section above. A single copper alloy pin recovered from environmental sample <03024> was designated SF 03026 at the post-excavation stage.

Table 0.5. Quantification of small mus										
Context	Small Find number	Material	Quantity	Weight (g)						
3050	3003	Flint	1	1						
3054	3004	Flint	1	1						
3054	3005	Flint	1	1						
3054	3006	Flint	1	3						
3065	3007	Chert	1	21						
3077	3008	Flint	1	1						
3077	3009	Flint	1	1						
3100	3016	Chert	1	10						
3100	3017	Chert	1	13						
3100	3018	Chert	1	7						
3093	3026	Copper alloy pin	1	1						
	·	Total	11	60						

Table 6.3:	quantification	of	small	finds
	999911111109110	•••		

quantities included within the overall Lithic table 5.2

6.8 **Finds from Environmental Samples**

6.8.1 Copper Alloy. A single copper alloy artefact (**SF 03026**) was recovered from sample <**3024**> (**3093**) (Plate 20).



- 6.8.2 The copper alloy comprised a complete needle or brooch pin in moderate condition displaying overall corrosion. It measured 54mm in length and weighed 1g. The shaft of the object is round and tapered to a point, while the head is flat with a circular eye with a 4mm internal diameter. The artefact appears to be cast metal and no decoration was observed.
- 6.8.3 The overall shape of the copper alloy artefact is more suggestive of a pin rather than a needle, certainly it would only function as a sewing needle if used on very coarse fabrics, although similar items may have been used in weaving processes or netting (Rogers 1997). A similar object recorded on the Portable Antiquity Scheme (https://finds.org.uk/database/artefacts) is assigned a broad Bronze Age to Roman date (BH-5957A3).
- 6.8.4 It should be noted that c.382g+ of material originally collected as ceramic building material was later identified as natural heat-affected stone of non-archaeological provenance and not recorded here.

6.9 Statement of Potential

- 6.9.1 The prehistoric artefacts of local and regional significance and may warrant further study. They may benefit from being considered alongside similar objects from sites within the wider project.
- 6.9.2 The Roman pottery sherd is abraded and although it may warrant inclusion in the wider analysis of the area, adds little to the dating evidence for the area. Similarly, the post-medieval pottery has little archaeological potential, particularly since the provenance is uncertain.



7 PALAEOENVIRONMENTAL ASSESSMENT

7.1 Introduction

7.1.1 Twenty-four bulk samples were taken during the excavation on Area 3. A total weight of 713kg (359I) of sediment was processed for this stage of works.

7.2 Methodology

- 7.2.1 This report presents the results of the assessment of the environmental samples, palaeobotanical and charcoal remains in accordance with Campbell et al. (2011) and English Heritage (2008). Methodologies followed Wardell Armstrong (2018).
- 7.2.2 The bulk environmental samples were processed at Wardell Armstrong LLP. The colour, lithology, weight and volume of each sample was recorded using standard Wardell Armstrong pro forma recording sheets. The samples were processed with 500-micron retention and flotation meshes using the Siraf method of flotation (Williams 1973). Once dried, the residues from the retention mesh were sieved to 4mm and the artefacts and ecofacts removed from the larger fraction and forwarded to the finds department. The smaller fraction was scanned with a magnet for microslags such as hammerscales. This fraction was then examined for smaller artefacts such as beads. Once fully sorted, and all relevant material removed, the retent residues were discarded.
- 7.2.3 The flot plant macrofossils and charcoal were retained and scanned using a stereo microscope (up to x45 magnification). Any non-palaeobotanical finds were noted on the flot pro forma, (Table 7.2). Once fully sorted and all relevant material removed, the flots were discarded.
- 7.2.4 The four common palaeoenvironmental materials (namely plant remains, charcoal, shell and bone), along with magnetic matter, will be listed within the results section and where none were present this will be stated.
- 7.2.5 The assessment will establish the significance of the material and will only provide identifications where it was practicable to do so, such as, small quantities of plant material or charcoal identifications where radiocarbon determinations are sought. The report will focus on the preservational qualities and note the potential of the material to warrant analysis.
- 7.2.6 In the absence of single growth entities such as charred plant remains and hazel nutshell fragments charcoal will be utilised for radiocarbon determinations. Charcoal


was only identified to species to select the shortest-lived species for radiocarbon determination once the report author had determined what they would like dated. Where no short-lived species were observed the youngest i.e. twig, branch or periderm fragments from longer-lived species were selected. Once this was achieved no further identification was undertaken. Identification was undertaken using Hather (2000), Schweingruber (1982) and the author's own reference collection. Nomenclature followed Stace (2010).

7.2.7 Charred plant material was identified using Cappers et al. (2012), Cappers and Neef (2013), Cappers and Bekker (2013), Jacomet (2006) with nomenclature following Cappers and Neef (2012).

7.3 Results

- 7.3.1 Silty sand dominated the samples' sediment matrix with lesser quantities of sandy/silty clay sediments, further data can be observed in Table 7.1 with flot and finds fraom samples dated presented in Table 7.2.
- 7.3.2 Artefactual material recovered from the dried residues were minimal but contained examples of ceramic building material (CBM) and copper alloy.

7.4 Charred plant remains (CPR)

7.4.1 These were present only in **(3098)** <3027> from the fill of fire pit **[3097]**. This sample yielded 20 cereal grains which were in relatively good condition and identified as a mix of wheat (*Triticum* sp.) and barley (*Hordeum* sp.).

7.5 Charcoal

- 7.5.1 Charcoal was present in 19 samples and was in relatively good condition. From these five samples yielded more than 10g: (3012) <3005>, (3015) <3011> and (3012) <3022> all taken from burnt spreads; (3093) <3024> from the clay lining of trough [3092] and; (3098) <3027> from the fill of fire pit [3097]. The charcoal from these samples was identified as oak (*Quercus* sp.).
- 7.6 **Shell**
- 7.6.1 No shell was observed.
- 7.7 **Bone**
- 7.7.1 No bone was observed within the samples.

7.8 Magnetised matter



- 7.8.1 Magnetised material was present in thirteen samples and was examined for microslags under a microscope (x45 magnification). The material was entirely made up of small naturally occurring magnetised stone.
- 7.8.2 *Heated stone:* c.382g+ of material originally collected as ceramic building material was later re-identified as natural heat-affected stone seen in the burnt mound deposits (3012) and (3015) in particular, and therefore not unexpected.

7.9 Radiocarbon Samples

- 7.9.1 Two charcoal samples were submitted to Beta Analytic for radiocarbon determination, see Table 7.3. The full results are to be found in Appendix 5.
- 7.9.2 The samples were treated according to Beta Analytics (Beta Radiocarbon Dating 2020). The calibrated results followed Riemer et al. (2013) and was calibrated to the calendar timescale following Bronk Ramsey (2009).
- 7.9.3 Both samples were identified as oak prior to submission.
- 7.9.4 Sample <3003> from fill (3008) of pit [3007] provided a radiocarbon age of 3700±30 BP (lab number Beta-553495, 95.4% probability 2151-1981 calBC). Therefore, the accepted date range is 2151-1981 cal BC, which falls in the Early Bronze Age (Period 2).
- 7.9.5 Sample <3025> from fill (3094) of trough [3092] provided a radiocarbon age of 3020±30 BP (lab number Beta-553496, 95.4% probability, 1391-1131 calBC), which falls in the Middle to Late Bronze Age (Period 3).
- 7.9.6 Caution should be employed when assigning definite dates using these results. Both these were oak charcoal and the caveat of the old wood effect is relevant; the resulting dates for the features may be far older than presented.

7.10 Discussion

- 7.10.1 The CPR was recovered from a fire pit and may have been burnt as a part of the food preparation processes. Being a mix of cereal grains, these fit in within the wider Wylfa excavations and the wider Anglesey landscape as wheat and barley grains were recovered from Cefn Du (Ciaraldi in Cuttler et al., 2012, pp223-231).
- 7.10.2 All the recovered charcoal has the potential to provide an insight into burning activity and fuel types at Wylfa, with the exception of the charcoal from <3024> (3093), the clay lining of trough [3092]. The charcoal in the large assemblages from Area 3 was derived from areas of in situ burning, or adjacent dumped burnt material, with some



fragments being identified as oak, which supports the suggestion that oak was the preferred fuel source on Area 3, as seen at the other Wylfa sites. Oak has also been found at areas of burning across Anglesey as seen at Cefn Cwmwd where remains of oak charcoal were present across multiple time periods (Gale in Cuttler et al., 2012). This suggests that oak was either plentiful or managed across multiple time periods across Anglesey to ensure it was available as a regular source of fuel.

7.11 Statement of potential and recommendations

- 7.11.1 Full analysis of the charred plant remains would be required to allow identification to sub-species, if possible, should be undertaken. These would then be considered on an intra-site bases for Wylfa then collectively any inter-site analysis with the wider Welsh landscape. This would allow for the examination of crop husbandry practices and palaeodiets. This will be the same for the charcoal, which, once a full analysis as per Huntley (2010: 57-60) is undertaken then would allow to further inform on fuel management practices across Anglesey and North Wales.
- 7.11.2 *Radiocarbon suitability*: material from samples <3005>, <3011>, <3022> <3024> and <3027> may be suitable for radiocarbon determination. It must be stated that if a radiocarbon determination is sought from charcoal then the fragment must be identified to species prior to submission to select the shorter lived species to mitigate against the potential 'old wood effect' that may present a radiocarbon age far older than the feature, section 7.2.6 expands on this.
- 7.11.3 Care must be employed for selection as this must also be based on the suitability of the feature, for example, a tertiary pit fill or secondary fill of gully would be unlikely to provide a usable date for the feature.
- 7.11.4 *Retention and discard*: All ecofactual material should be retained with the site archive for analysis.
- 7.11.5 The magnetic matter from all samples may be discarded.

С	\diamond	TQ	Cut	Desc	Matrix	PW	PV	SW	SV
3006	3001	4	3005	Secondary fill of pit	sandy clay	48	23	7306	5200
3004	3002	4	3014	Burnt deposit	sandy clay	64	31	32613	22120
3008	3003	4	3007	Pit fill	silty clay	42	15	6895	4100
3009	3004	4	3011	Pit fill	silty sand	20	10	2128	1500
3012	3005	4		Burnt spread	silty clay	55	26	23483	16300
3020	3010	4	3019	Pit fill	clayey silt	54	25	9750	5800
3015	3011	4		Burnt spread	sandy silt	61	30	28978	19900
3044	3012	1	3043	Burnt spread in linear	silty sand	14	8	1925	1700

Table 7.1 sample information



С	\diamond	TQ	Cut	Desc	Matrix	PW	PV	SW	SV
3050	3013	1	3049	Fill of linear terminus	sand	8	5	1542	1100
3048	3014	2	3047	Pit fill	silty sand	21	14	2514	2000
3054	3015	1	3053	Pit fill	sandy silt	10	6	1602	1100
3063	3016	2	3060	Burnt deposit in pit	silty sand	25	16	6576	5800
3067	3017	1	3066	Fill of linear terminus	silty sand	11	7	2435	1550
3070	3018	1	3069	Pit fill	sandy silt	10	6	1003	940
3072	3019	1	3071	Burnt deposit in pit	silty sand	7	4	2592	2600
3077	3020	1	3076	Fill of linear terminus	clayey	12	6	1852	1300
					sand				
3088	3021	1		Layer	clayey	16	8	2005	1300
					sand				
3012	3022	3		Burnt spread	silty clay	46	20	23277	17000
3090	3023	1		Buried soil	silty sand	13	8	2696	1600
3093	3024	2	3092	Clay lining of trough	clayey silt	37	17	15056	11300
3094	3025	1	3092	Fill of trough	silty sand	9	4	2053	2000
3096	3026	3	3092	Fill of trough	silty clay	40	19	18431	12700
3098	3027	4	3097	Fill of fire pit	silty sand	59	36	23543	19900
3100	3028	2	3099	Pit fill	silty sand	31	15	5515	3700

Key: C=context; <>=sample number; TQ=tub quantity; Cut=cut number of feature; Desc=description of context; Matrix=sediment matrix processed; PW=processed weight(kg); PV=processed volume(I); SW=sorted weight(g); SV=sorted volume(mI)

			Flot				Rete	ent	
C	\diamond	WF	VF	CPR	Ch	Ch	HS	Cu	MM
3006	3001	0.5	2			<1			5
3004	3002	35.1	50		0.42	2	12		4
3008	3003	1.6	5			<1			3
3009	3004	<0.01	<1			<1	<1		1
3012	3005	4.5	10			25	1554		5
3020	3010	18.9	25			<1			3
3015	3011	66.1	200		0.6	20	70		6
3044	3012	9.5	30			5			
3050	3013	3.1	10						
3048	3014	7.2	25						
3054	3015	4	10						
3063	3016	5.9	30			<1			
3067	3017	3	7						
3070	3018	2.9	7			<1			1
3072	3019	0.3	3						
3077	3020	0.3	2			<1			
3088	3021	5.7	30			5			
3012	3022	11.4	45			13	110		2
3090	3023	8	30			<1			<1
3093	3024	7.6	25			34	33	1	<1
3094	3025	0.1	1			<1			
3096	3026	29.4	60		0.78	6	<1		
3098	3027	14.1	50	20		19	3		7
3100	3028	0.7	5			<1			<1

Table 7.2 flot and finds from sample information

Key: C=context; <>=sample number; WF=weight of flot(g); VF=volume of flot(ml); CPR=count of charred plant remains; Ch=charcoal(g); HS=heated stone(g);Cu=count of copper alloy pieces; MM=magnetised material(g)



Table 7.3 radiocarbon results

Lab	Sample id	Context	Material	Radiocarbon	2σ 95.4%	Relative
code		description	submitted	age BP		Probability
Beta-	A3_(3008)_<3003>	Pit fill	charcoal	2030±30	2151-2017 calBC-	84.6%
553495		[11034]	(oak)		2199-2165calBC	8.6%
					1995-1981 calBC	2.2%
Beta-	A3_(3094)_<3025>	Fill of trough	charcoal	3020±30	1322-1191 calBC	73%
553496			(oak)		1391-1337 calBC	18.8%
					1144-1131 calBC	2%
					1177-1163 calBC	1.5%



8 DISCUSSION

8.1 Interpretation

- 8.1.1 The archaeological excavation of Area 3 in Field K11, 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 strip map and sample work.
- 8.1.2 The purpose of the Area 3 excavation was to investigate the archaeological potential of the burnt mound revealed by the trial trenching programme, (Wessex 2016) which was retrospectively visible in the geophysical survey (ASWYAS 2015).
- 8.1.3 The archaeology consisted of spreads of burnt material with associate pits/troughs, linear ditch features and a small number of other clustered, discrete features.
- 8.1.4 The remains were located across the entire area, with the main focus towards the south and south-east, and a second focus towards the north-east, 'separated' by a probable palaeochannel. The linear ditches were generally shorter stretches, the pits were mostly medium sized and not overly deep and the main burnt mound was extensive in plan 16.8m by 14.8m and, as such, was one of the largest seen throughout the project.
- 8.1.5 The lithic assemblage contained some items that technologically be dated to the Early Neolithic, however, this is the only evidence for this area and may be have been residual.
- 8.1.6 A single pit **[3007]** was found to be of Late Neolithic to Early Bronze Age date, proven by a radiocarbon date from the fill. This suggests that there may have been an earlier phase of low-density activity in the form of scattered pits. The pit was well formed, regular and a similar, albeit shallower, pit **[3005]** was seen in close proximity. These may represent deliberate pits, perhaps with a votive function, rather than an expedient one. They may have been established as people moved through the landscape, rather than reflecting occupation or settlement activity. These pits differed from the others in the same vicinity, with the others being more irregular in form. The sporadic distribution of isolated or small clusters of Neolithic to Bronze Age pits within landscapes can be identified with careful data collection (ClfA Cymru/Wales 2017, 4). Another possible candidate for this type of activity may be pit **[3060]**, at a greater distance to the north. It is notoriously difficult to interpret and date pits which have little in the way of discernible contents and demonstrates the need for each feature



to have the potential evidence maximised.

- 8.1.7 The burnt mound **{3015}** material provided evidence of being heat affected with, small quantities of charcoal present amongst discoloured and fractured stones. The spread was created after the construction of the main trough **[3092]** and its internal wooden stakes as well as pits **[3089]** and **[3097]**. The pits contained fills almost identical to the spreads, being rich in heat affected stones with occasional charcoal inclusions.
- 8.1.8 The radiocarbon dating from a fill within the trough below the burnt spread produced a date 1322-1163 calibrated BC within the Middle to Late Bronze Age range, at 95.4% probability. The exact dates of the other suggested 'mounds' (3004) and (3073=3074) and may be of similar date, but this remains to be tested.
- 8.1.9 The group of features is interpreted as the remains of a burnt mound, sited adjacent to a probable palaeochannel **[3018]**.
- 8.1.10 A second infilled area of burnt material **(3004)** was seen to the southeast but it was not directly associated with any other features. It may represent a convenient area for discarded material subsidiary to the main mound.
- 8.1.11 Burnt mounds typically comprise a mound of heat-affected stones in a charcoal-rich soil matrix, often found close to sources of water and in association with a hearth and associated cut features such as troughs. The mounds were formed by the discarded stones and fuel waste. The stones were heated in a nearby fire and then immersed in water-filled troughs to heat the water, resulting in the stones being variably discoloured and heat fractured. The troughs are seen to vary in form from simple shallow pits to wood-lined pits, with occasional evidence for timber superstructures. Their usual interpretation is as cooking sites (eg Kenney 2012, 270), or they may be related to crop processing, but equally viable suggestions include, dyeing, tanning and brewing, bathing, saunas (Hodder and Barfield 1991; Ó Drisceoil 1988; Barfield and Hodder 1987) and it is probable that similar evidence may result from a variety of activities.
- 8.1.12 Due to the nature of the archaeological remains it was not possible to establish a stratigraphic relationship between the burnt mound **{3015}** activity and the probable occupation zone 15m to the south-east. This occupation zone consisting of a cluster of features including a group of stakeholes and short linear features that may be related to structures, as well as pits. The pit fills were not derived from the burnt mound activity, since they contained no heat affected stones and only had limited



evidence for discarded rubbish. The pottery recovered from pit **[3019]** may suggest that the potential settlement and burnt mound are contemporary. However, it was a single abraded sherd and its purpose for dating the fill should be employed with caution.

- 8.1.13 Pit **[3019]** post-dated the narrow linear **[3021=3045]**, which could hint that the linear features was part of establishing the layout of the occupation, while the pits represent the use and discard related to the occupation.
- 8.1.14 It was suggested that there may have been a second putative burnt mound [3073=3074], towards the northwest, but it is equally plausible that the spread was trampled material surrounding the debris filled pit [3071]. Neither pit [3071] nor [3060] had evidence of clay linings consistent with typical troughs.
- 8.1.15 The archaeological remains in Area 3 were seen to demonstrate a simple stratigraphic sequence with all features sealed by the subsoil and truncating the natural substrate. There were only a few instances of intercutting features and few features had more than one fill. The features may therefore be single entities established for a short duration.
- 8.1.16 There was a lack of artefactual material from the majority of contexts, lithics and copper alloy pin notwithstanding, which meant that dating of the deposits or features identified on the basis was not possible. By their nature it is hypothesised that the burnt mounds and associated troughs are of Bronze Age date and the dating by scientific means, namely radiocarbon of one burnt mound trough demonstrates a probability of a Middle to Late Bronze Age date.



9 STATEMENT OF POTENTIAL

9.1 Significance

- 9.1.1 The main categories of remains within Area 3, the burnt mound, subsidiary burnt material, possible associated occupation zone and the second more dispersed activity to the northwest, form part of the wider setting of the prehistoric and later remains. Other elements in the prehistoric landscape are seen in the nearby fields to the north (L1, L3), west (K1, K4, C10, C13 and C15) and northeast (L8 and L12), with burnt mounds recorded in Fields C13, K4 and L3 approximately 500m away.
- 9.1.2 The remains associated with the Middle to Late Bronze Age burnt mound in Area 3 are of regional significance and can contribute to published research aims (CIfA Cymru/Wales 2003, 2011, 2017). Although there are no specific research aims related to burnt mounds the accumulating data is advancing the understanding of the chronology, landscape setting, environmental context and function of such features. Significance of the remains will be affected by better understanding of the southeastern group of features and overall sequence of activity, particularly if this proves to be a domestic structure.
- 9.1.3 The Area 3 excavation has confirmed that burnt mounds form an important part of Wylfa's archaeological landscape.
- 9.1.4 The burnt mound in Area 3 provided virtually no datable artefacts with only a single fragment of prehistoric pottery. However, from the previous evaluations and other similar features within the wider excavation works were dated by occasional pottery sherds and radiocarbon dates to the Early Bronze Age. In addition, a recent overview of radiocarbon dates from 44 burnt mound sites in north-west Wales established that the majority belong to the period between the Neolithic/Bronze Age transition and the end of the Bronze Age (Kenney 2012, 266).
- 9.1.5 A review of burnt mounds in northwest Wales (Kenney 2012) has highlighted the importance of the relationship of burnt mounds to contemporary settlement and it stated that large-scale development archaeology could be a key route to its resolution (2012, 270). There is merit in the group value of the burnt mounds and how distinctions and commonalities can be determined. Therefore, the Area 3 results are significant in terms of being able to advance understanding in this regard. They can complement the increasing number of burnt mounds that have been identified. The evaluation stage identified 23 burnt mounds of probable Bronze Age date, (Wessex



2016, 68) and others are known in the southwest and northwest regions of Wales. This includes 39 confirmed Bronze Age burnt mounds encountered as part of excavations along the route of the LNG pipeline and several burnt mounds, such as the large site near Pentrefelin, seen during the construction of the Pwllheli to Blaenau Ffestiniog Pipeline, Gwynedd (NW Wales), (CIfA Cymru/Wales 2017).

- 9.1.6 There were variations between the grouped burnt mounds encountered during the project's excavations with a cluster in a valley containing a confluence of streams, and around the edges of a probable former mere, Fields A7, A8, A10, O15, O18, O19 and O21 (Wessex 2016, Figure 6.2), and a second concentration further northwest closer to the coast, Fields C13, C16, K4, K11, L1 and L3 (Wessex 2016, Figure 6.2; Headland 2018). The contrasting patterns in the distributions, size, and forms of burnt mounds and pottery between the two areas suggest that their landuse and character differed in prehistory and it is hypothesised that the northwestern group, in fields, might be more domestic in character due to the association with other features and pottery concentrations. In comparison to the Late Neolithic to Early Bronze Age burnt mounds seen in Field L3, Area 1 the remains in Area 3 appeared to be of a later Middle to Late Bronze date, demonstrating that there are variations.
- 9.1.7 The potential of the archaeological remains at Area 3 to try and understand the origins, possible changes, variations in form and construction as well as functional uses of burnt mounds, which are poorly understood, is significant. The dataset has the capacity to test hypotheses concerning how burnt mounds are created as either by-products or as intentional deposits and what activities this could encompass. This may be found through examining the relationship between the burnt mounds and the other spatially associated features such as post holes, pits and troughs, as well as the nearby probable occupation features.
- 9.1.8 The close association of potential settlement (in the form of structures in the southeast part of Area 3) with a burnt mound is therefore of greater significance than isolated burnt mounds. Further post-excavation analysis of the archive should elucidate whether the possible structural features associated with the burnt mound are part of a larger settlement and perhaps start to demonstrate whether the settlements form a pattern, spatially, chronologically and how they may interact.
- 9.1.9 Burnt mounds are repositories of palaeoenvironmental data. There is particular emphasis on obtaining accurate C14 dates in order that the chronology of sites and ceramic sequences can ascertained. The samples from the features contained



quantities of charcoal mainly derived from oak and charred plant remains that included cereals. This augments their archaeological potential, as there is 'a general scarcity of environmental data from Anglesey' (Cuttler et al. 2012, 241) with which to reconstruct ancient farming practices and changes in the landscape. Notably the environmental assessment also identified assemblages of charred plant remains and charcoal from the burnt mounds and, with more extensive investigation and sampling, there is potential to identify different fuel sources, uses and even phases within this large group of features (Wessex 2016, 82).

- 9.1.10 Charred cereal grains and chaff (wheat and barley) were present within the samples from the burnt mounds, indicating that crop processing had taken place but not whether the crops were grown locally. Grain processing and/or food preparation appears to have taken place in the vicinity of the early prehistoric possible settlement features and the burnt mounds. The presence of cereal remains implies a degree of permanence to settlement in the landscape. This suggests that there was arable agriculture and raises the possibility that some of the undated ditches (Wessex 2016, Section 12.5 below; Figure 1.17) could be of a similar date.
- 9.1.11 Due to the limited artefactual evidence from Area 3 it is difficult to gain further insights on many aspects that rely on material culture, such as social change during the Bronze Age, or understanding regional, national and international trade and how the development of social networks fitted into this.

9.2 **Recommendations**

- 9.2.1 The archaeological remains will expand on our understanding of the archaeology of the Isle of Anglesey regarding the regional research framework of Wales (CIfA Cymru/Wales 2017). In order to do this, 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.
- 9.2.2 The results of the Area 3 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 archive, as it stands, is of mixed media with some paper records and others as digital data only and this may require a more coherent stratagem.



- 9.2.3 The dissemination should include a detailed report submitted to the Gwynedd Historic Environment Record (HER), the Archaeological Data Service (ADS) and publication in the form of either a popular book or an academic monograph, whichever is deemed most appropriate.
- 9.2.4 The excavation of the Bronze Age burnt mound, associated pits, troughs and the recovery of ecofactual material requires full analysis. This will provide fuller dating, characterisation and distribution of burnt mound which will contribute to research aims on the wider setting of prehistoric sites and exploitation of the natural environment. In particular, the Area 3 burnt mound data should be combined with data including that from Areas 1, 13, and work on the Hotspots from Fields A7, A11 and A12 and will further enhance the recent regional review carried out by Kenney (2012).
- 9.2.5 In terms of the artefacts from Area 3 it has been identified that the single sherd of Neolithic / Bronze Age pottery needs to be fully analysed, as does the rubbing stone and the copper alloy needle / brooch pin. In addition, the flint assemblage needs to be considered with the other lithics assemblages from Wylfa as part of a wider project.
- 9.2.6 A full analysis of the appropriate environmental samples and the plant species present in the charred plant remains will provide insights into the local farming economy and the wider exploitation of the natural environment. This will be particularly focused on the Bronze Age since the secure data relates to that era.
- 9.2.7 An increased number of radiocarbon dates would assist with Bayesian chronological modelling (Whittle *et al.* 2011) for the burnt mound, related features and the features associated with the possible settlement and help with understanding this site in respect to the other burnt mounds within the project, and beyond.
- 9.2.8 Any material or samples connected with the background environment should be analysed in order to help understand the past environment contemporary with the settlement and burnt mound activity. This will also assist in understanding the function of the burnt mounds. A key element would be the nature of the water bodies usually adjacent to the sites, whether they are fresh or saltwater, flowing or still because this may have been an influencing factor.
- 9.2.9 If the occupation of the 'settlement' area is determined to not be contemporary with the burnt mound then it will be necessary to conduct full analysis of the environmental evidence from the putative settlement to assist with providing a date and function for



the remains which would help in understanding the development and degree of continuity of land divisions in Anglesey. This would contribute to the dating, characterisation and pattern of historic field systems is identified as a specific research aim in the WSI (HNP 2015, 2017a and 2017b).



10 BIBLIOGRAPHY

Andrefsky, Jr, W. 2005. *Lithics: Macroscopic approaches to analysis*. Cambridge Manual in Archaeology, 2nd edition. Cambridge University Press.

ASWYAS 2015. Wylfa Newydd Proposed New Nuclear Power Station Anglesey Geophysical Survey. Unpublished report no. 2720

Ballin, T.B. 2000. Classification and Description of Lithic Artefacts: A discussion of the basic lithic terminology. *Lithics* **21**: 9-15.

Barfield, L. and Hodder, M. 1987. Burnt mounds as saunas, and the prehistory of bathing, Antiquity **61**, 370–9

Beta Radiocarbon Dating 2020. Introduction to Radiocarbon Determinations by the Accelerator Mass Spectrometry Method, (PDF from Beta Analytic)

BGS 2019. British Geological Survey Geology of Britain Viewer. Available: http://mapapps.bgs.ac.uk/geologyofbritain/home.html [Accessed 21st November 2019]

Bronk Ramsey. C. 2009. Bayesian Analysis of Radiocarbon Dates. In *Radiocarbon* **51** (1): 337-60

Brown, D.H 2011. Archaeological Archives: A Guide to Best Practice in Creation, Compilation, Transfer and Curation, Archaeological Archives Forum.

Butler, C. 2005. Prehistoric flintwork. Stroud: Tempus.

Campbell, G, Moffett, L and Straker, V 2011. Environmental Archaeology. A Guide to the Theory and Practice of Methods, from Sampling and Recovery to Post-excavation (second edition), English Heritage, Portsmouth

Cappers, R.T.J., Bekker, R.M. and Jans, J.E.A., 2012. *Digitale Zadenatlas Van Nederland: Digital Seed Atlas of the Netherlands* (2nd Ed), Barkhuis Publishing, Groningen

Cappers, R.T.J. and Bekker, R.M., 2013. A Manual for the Identification of Plant Seeds and Fruits. Barkhuis Publishing, Groningen

Cappers, R.T.J. and Neef, R., 2012. *Handbook of Plant Palaeoecology*. Barkhuis Publishing, Groningen

Ciaraldi, M., Charred Plant Remains, in, Cuttler et al. 2012. A Corridor Through Time: The Archaeology of the A55 Anglesey Road Scheme, Oxbow, Oxford: pp222-242

CIFA Chartered Institute for Archaeologists 2014a. Standard and guidance for archaeological excavation. Chartered Institute for Archaeologists, Reading.



CIFA Chartered Institute for Archaeologists 2014b. Standard and guidance for the collection, documentation, conservation and research of archaeological materials. Chartered Institute for Archaeologists, Reading.

ClfA Cymru/Wales 2017. A Research Framework for the Archaeology of Wales Version 03, final refresh 2016. Available at: https://www.archaeoleg.org.uk/documents.html [Accessed 21st January 2020].

Cranfield Soil and Agrifood Institute 2019. Soilscapes. Available: http://www.landis.org.uk/soilscapes/ (Accessed 09/01/2019)

Cuttler, R, Davidson, A and Hughes, G 2012. *A Corridor Through Time: The Archaeology of the A55 Anglesey Road Scheme*. Oxford. Oxbow Books

Department for Energy and Climate Change 2011. Overarching Policy Statement for Energy (EN-1). The Stationary Office: London

DSWA Dry Stone Walling Association of Great Britain 2013. Technical Specifications for Welsh Cloddiau. Unpubl

Europae Archaeologia Consilium (EAC) 2014. A Standard and Guide to Best Practice for Archaeological Archiving in Europe, EAC Guidelines 1: Belgium.

Gale, R, 2012. Charcoal, in, Cutler, R., Davidson A. and Hughes G. (eds) A Corridor Through Time: The Archaeology of the A55 Anglesey Road Scheme, Oxbow Books: Oxford: pp 217-219

Gwynedd Archaeological Trust (GAT) 2011a. Preliminary outline interpretation of potential archaeological magnetic gradient anomalies in Phase 1 area, Wylfa. Unpublished GAT report 936 by Hopewell, D.

Gwynedd Archaeological Trust (GAT) 2011b. Proposed Nuclear Power Station, Wylfa, Ynys Mon. Archaeological Evaluation: Targeted Geophysics. Unpublished GAT report 987 by Hopewell, D.

Gwynedd Archaeological Trust (GAT) 2012a. Proposed Nuclear Power Station, Wylfa, Ynys Mon. Archaeological Evaluation: Geophysical Survey, Interim report. Unpublished GAT report 1019 by Hopewell, D.

Gwynedd Archaeological Trust (GAT) 2012b. Proposed Nuclear Power Station Wylfa, Ynys Môn: Archaeological Baseline Assessment Report 1.0. GAT report 999. GAT unpublished report by Cooke, R. Davidson, J and Hopewell, D.

Hather, J.G., 2000. The Identification of the Northern European Woods: A Guide for Archaeologists and Conservators. Archetype, London



Headland Archaeology 2017. Wylfa Newydd Proposed Nuclear Power Station: Archaeological trial trenching - Post-excavation assessment and updated project design (Application Reference Number: 6.4.69). Unpublished technical report.

Historic England 2015. Management of Research Projects in the Historic Environment: The MoRPHE Project Manager's Guide

Hodder M.A. and Barfield L.H. 1991. Burnt mounds and hot stone technology: papers from the Second International Burnt Mound Conference, Sandwell, 12th-14th October 1990, International Burnt Mound Conference, West Bromwich, Sandwell Metropolitan Borough Council

Horizon Nuclear Power (HNP) 2015. Wylfa Newydd Proposed New Nuclear Power Station: Written Scheme of Investigation for Archaeological Trial Trenching and Excavation. Unpublished report reference WN03.03.01-S5-PAC-MES-00001

Horizon Nuclear Power (HNP) 2017a. Wylfa Newydd Proposed New Nuclear Power Station: Written Scheme of Investigation: Archaeological Strip, Map and Sample and Palaeoenvironmental Assessment,

Horizon Nuclear Power (HNP) 2017b. Technical Update to the Written Scheme of Investigation for Archaeological Trial Trenching and Excavation: Investigation Area in Field K11

Huntley, J. 2010. A Review of Wood and Charcoal Recovered from Archaeological Excavations in Northern England, Research Department Report Series no 68-2010

Jacobs 2015. Wylfa Newydd Proposed New Nuclear Power Station. Cultural Heritage Desk-Based Survey, Report WN03.03.01-S5-PAC-REP-00016.

Jacomet, S. 2006. *Identifications of cereals from archaeological sites*, 2nd edition, IPAS, Basel University

Kenney, J 2012. Burnt mounds in north-west Wales: are these ubiquitous features really so dull?, in Britnell, W J and Silvester, R J (eds) Reflections on the Past. Essays in honour of Frances Lynch., 254-279, Vale of Glamorgan, Cambrian Archaeological Association

MOLA 2015. *Medieval and Post-medieval Pottery Codes*. Museum of London Archaeology:

https://www.mola.org.uk/medieval-and-post-medieval-pottery-codes [Accessed on 23 January 2020].

Ó Drisceoil D 1988. Burnt mounds: cooking or bathing? Antiquity 62, 671-680

PCRG, SGRP, MPRG 2016. A Standard for Pottery Studies in Archaeology. Medieval Pottery



Research Group.

Portable Antiquity Scheme <u>https://finds.org.uk/database/artefacts</u> [Accessed on 29 January 2020].

Reimer. P.J., Bard. E., Bayliss. A., Beck. J.W., Blackwell. P.G., Bronk Ramsey. C., Buck. C.E., Cheng. H., Edwards. R.L., Friedrich. M., Grootes. P.M., Guilderson. T.P., Haflidason. H., Hajdas. I., Hatte. C., Heaton. T.J., Hogg. A.G., Hughen. K.A., Kaiser. K.F., Kromer. B., Manning. S.W., Niu. M., Reimer. R.W., Richards. D.A., Scott. E.M., Southon. J.R., Turney. C.S.M., van der Plicht. J. 2013. Intcal13 and MARINE13 radiocarbon age calibration curves 0-50000 years calBP, *Radiocarbon* **55** (4): 1869-1887

Rogers, P.W. 1997. *Textile Production at 16-22 Coppergate The Archaeology of York: The Small Finds* 17/11. Council for British Archaeology.

Roman Potsherd Atlas online 2019: http://potsherd.net/atlas/potsherd [Accessed on 23 January 2020].

Schweingruber, F.H., 1982. *Microscopic Wood Anatomy* (2nd Ed), Swiss Federal Institute of Forestry Research, Zurich

Smith G 2012. 'Worked Stone Objects' In Cuttler. R et al A Corridor Through Time: The Archaeology of the A55 Anglesey Road Scheme, Oxbow Books

Stace, C., 2010. The New Flora of the British Isles. 3rd edition. Cambridge University Press: Cambridge

Tomber, R. and Dore, J. 1998. The National Roman Fabric Reference Collection, English Heritage

Wardell Armstrong 2019. Stoakley, M. and Gardiner, L. (2019) 'Horizon, Wylfa Newydd, Postexcavation assessment method statement'. Wardell Armstrong, Unpublished client report CL12271.

Wardell Armstrong 2018. Environmental Archaeology, Wardell Armstrong LLP Technical Manual No. 2, version 3

Watkinson, D.E. and Neal, V. 1998. First Aid for Finds. United Kingdom Institute for Conservation of Historic and Artistic Works (UKIC). RESCUE, The British Archaeological Trust: London.

Wessex Archaeology 2015. Fieldwork Recording Manual. Unpublished internal document

Wessex Archaeology 2016. Wylfa Newydd Isle of Anglesey: Archaeological Trial Trenching. Unpublished report ref. 110940.59

Wessex Archaeology 2018. Wylfa Area 1 Fields L3, L4: Site summary Report Unpublished



report ref. 209730.10 (Horizon Doc Ref: WYN-WES-CON-REP-00004)

Whittle, A., Healy F., Bayliss A., Allen M.J., Allen T., Bronk Ramsey C., Cagney L., Cooney G., Danaher E., Darvill T., Dixon P., Dorling P., Edmonds M., Evans C., Ford S., French C., Germany M., Griffiths S., Hamilton D., Hamilton J., Hedges R., Hey G., Higham T., Jones A.M., Kador T., Lewis R., Mallory J., McCormac G., Meadows J., Mercer R., O'Sullivan M., Pryor F., Rawlings M., Ray K., Robertson-Mackay R., Shand G., Sharples N., Smyth J., Stevens S., Thomas N., Todd M., Van Der Plicht J., Wainwright G., Wysocki M., and Dennis I. 2011. *Gathering Time: Dating the Early Neolithic Enclosures of Southern Britain and Ireland, Volumes 1 and 2*. Oxford; Oakville: Oxbow Books

Williams, D, 1973. Flotation at Siraf, Antiquity, 47, p198-202



APPENDICES



APPENDIX 1: CONTEXT INDEX

Context Number	Context Type	Description	Width	Height/Depth	Discussion
3001	Layer	Dark brown sandy silt		0.25m	Topsoil
3002	Layer	Mid greyish brown silty clay		0.37m	Subsoil
3003	Layer	Mid orangey brown clay		N/A	Natural geology
3004	Layer	Dark grey silty clay with frequent heat affected stones and charcoal	5.3m	0.15-0.6m	Spread of burnt stones, fill of [3014]
3005	Cut	Sub-circular - oval, with concave sides and flat base	1.3m	0.25m	Pit, filled by 3006
3006	Fill	Mid blackish brown sandy clay, moderate charcoal inclusions in lower part	1.3m	0.25m	Fill of pit [3005]
3007	Cut	Circular, with steep concave sides and flat base	0.73m	0.35m	Pit, filled by 3008 and 3010, truncate by pit [3011]
3008	Fill	Mid greyish brown silty sand with moderate charcoal inclusions	0.73m	0.3m	Lower fill of pit [3007]
3009	Fill	Light greyish brown silty sand	0.5m	0.19m	Fill of [3011]
3010	Fill	Light greyish brown silty sand	0.46m	0.16m	Upper fill of pit [3007]
3011	Cut	Circular, with concave base and sides	0.5m	0.19m	Pit, filled by 3009, truncated pit [3007]
3012	Layer	Dark greyish black silty clay, with frequent heat affected stones and charcoal	14.7m	0.23m	burnt mound
3013	Layer	Dark blueish black silty clay, with frequent heat affected stones and charcoal	11.6m	0.26m	burnt mound
3014	Cut	Irregular sub-circular, with gradual concave sides and irregular base	4.9m	0.15-0.6m	Interface / pit infilled by 3004
3015	Group	Burnt mound, spread of heat affected material, 3012, 3013, and pits 3092, 3089, 3097, and possibly pit 3091	14.7m	0.18m	burnt mound
3016	Cut	linear in plan with straight sides and flat base	0.14m	0.03m	Land drain, filled by 3016
3017	Fill	Mid brown silty clay	0.14m	0.03m	Fill of drain [3016]
3018	Cut	Irregular linear, general ENE- WSW orientation, concave sides and undulating base	5.5m	0.3m	Palaeochannel interface, filled by 3031, 3032, 3033, 3034, 3035, 3036



Context Number	Context Type	Description	Width	Height/Depth	Discussion
3019	Cut	Oval with concave sides and flat base	0.4m	0.26m	Pit, filled by 3020
3020	Fill	Mid orangey brown silty sand with frequent charcoal inclusions	0.4m	0.26m	Fill of pit [3019]
3021	Cut	E-W aligned narrow linear ditch, concave sides and uneven base	0.24m	0.11m	Ditch, filled by 3022
3022	Fill	Mid orangey brown sandy clay	0.24m	0.11m	Fill of ditch [3021]
3023	Cut	E-W linear ditch, concave sides and flat base	1.52m	0.24m	Ditch, filled by 3024
3024	Fill	Mid greyish brown silty clay, occasional sub-rounded stones	1.52m	0.24m	Fill of ditch [3023]
3025	Cut	Circular, steep sides and narrow concave base	0.08m	0.06m	Stakehole, (possible) filled by 3026
3026	Fill	Dark greyish brown silty sand, moderately frequent charcoal inclusions	0.08m	0.06m	Fill of Stakehole [3025]
3027	Cut	Circular, steep sides and narrow concave base	0.08m	0.06m	Stakehole, (possible) filled by 3028
3028	Fill	Dark greyish brown silty sand, moderately frequent charcoal inclusions	0.08m	0.06m	Fill of Stakehole [3027]
3029	Cut	Circular, steep sides and narrow concave base	0.08m	0.06m	Stakehole, (possible) filled by 3030
3030	Fill	Dark greyish brown silty sand, moderately frequent charcoal inclusions	0.08m	0.06m	Fill of Stakehole [3029]
3031	Fill	Light greyish blue silty sand	2.7m	0.18m	Natural fill in palaeochannel [3018]
3032	Fill	Dark greyish blue sandy silt, occasional medium sub- rounded stones	1.45m	0.2m	Natural fill in palaeochannel [3018]
3033	Fill	Light blueish grey silty clay	1.05m	0.1m	Natural fill in palaeochannel [3018]
3034	Fill	Mid yellowish orange sandy silt, moderate gravel inclusions, occasional sub- rounded stones	2.75m	0.18m	Natural fill in palaeochannel [3018]



Context Number	Context Type	Description	Width	Height/Depth	Discussion
3035	Fill	Mid greyish orange silty sand	1.8m	0.2m	Natural fill in palaeochannel [3018]
3036	Fill	Dark greyish brown silt, frequent heat affected stones, moderately frequent charcoal inclusions	0.48m	0.13m	Fill in palaeochannel [3018]
3037	Cut	E-W linear ditch, concave sides, unknown base	1.2m+	0.2m	Ditch, filled by 3038, below ditch [3039]
3038	Fill	Mid brown silty clay, occasional sub-angular stones	1.2m+	0.2m	Fill of ditch [3037]
3039	Cut	N-S linear ditch, shallow, imperceptible sides and base	0.33m	0.05m	Ditch, filled by 3040, above ditch [3037]
3040	Fill	Mid brown silty clay	0.33m	0.05m	Fill of ditch [3039]
3041	Cut	Circular, steep sides and narrow concave base	0.04m	0.04m	Stakehole, filled by 3042
3042	Fill	Dark greyish brown silty sand, moderately frequent charcoal inclusions	0.04m	0.04m	Fill of Stakehole [3041]
3043	Cut	Elongated oval pit, E-W trend, concave sides and base	0.45m	0.05m	Pit, filled by 3044
3044	Fill	Mid brown silty clay with frequent charcoal inclusions	0.45m	0.05m	Fill of pit [3043]
3045	Cut	E-W aligned narrow linear ditch, concave sides and base	0.26m	0.11m	Ditch, filled by 3046
3046	Fill	Mid orangey brown sandy clay	0.26m	0.11m	Fill of ditch [3045]
3047	Cut	Circular pit, asymmetrical gentle concave sides and base	0.96m	0.12m	Pit, filled by 3048
3048	Fill	Mid greyish brown silty clay with moderately frequent charcoal inclusions	0.96m	0.12m	Fill of pit [3047]
3049	Cut	E-W aligned linear ditch, gently concave sides and base	0.34m	0.07m	Ditch, filled by 3050
3050	Fill	Mid greyish brown silty sand	0.34m	0.07m	Fill of ditch [3049]
3051	Cut	N-S aligned linear ditch, concave sides and flat base	0.5m	0.12m	Ditch terminus, filled by 3052
3052	Fill	Mid blackish grey silty clay, with low frequency of charcoal inclusions	0.5m	0.12m	Fill of ditch [3051]



Context Number	Context Type	Description	Width	Height/Depth	Discussion
3053	Cut	Sub-circular - oval, with concave sides and base	0.92m	0.08m	Pit, filled by 3054
3054	Fill	Mid greyish brown silty sand, gravel inclusions, low frequency of charcoal	0.92m	0.08m	Fill of pit [3053]
3055	Cut	NW-SE aligned linear ditch, gentle concave sides and base	0.6m	0.13m	Ditch terminus, filled by 3056 and 3059
3056	Fill	Dark brown sandy silt	0.6m	0.13m	Fill of ditch [3055]
3057	Cut	N-S aligned linear ditch, concave sides and flat base	0.9m	0.12m	Ditch terminus, filled by 3058
3058	Fill	Dark brown silty clay, low frequency of charcoal inclusions	0.9m	0.12m	Fill of ditch [3057]
3059	Fill	Mid brown sandy silt	0.23m	0.03m	Fill of ditch 3055
3060	Cut	Oval to sub-rectangular, with steep straight sides and a gently concave base	0.81m	0.46m	Pit, filled by 3061, 3062 and 3063
3061	Fill	Mid brown sandy clay, frequent angular stones and charcoal inclusions	0.7m	0.15m	Fill of pit [3060]
3062	Fill	Mottled light grey and orange clay, moderately frequent small angular stones	0.76m	0.1m	Fill of pit [3060]
3063	Fill	Mid greyish brown silty sand, occasional small angular stones, moderately frequent charcoal inclusions	0.81m	0.2m	Fill of pit [3060]
3064	Cut	N-S aligned linear ditch, open V-shaped profile	0.62m	0.1m	Ditch terminus, filled by 3065
3065	Fill	Mid brown sandy silt, moderately frequent sub- rounded stoness	0.62m	0.1m	Fill of ditch [3064]
3066	Cut	N-S aligned linear ditch, concave sides and base	0.48m	0.15m	Ditch terminus, filled by 3067
3067	Fill	Light greyish brown sandy silt, moderately frequent sub- rounded stones	0.48m	0.15m	Fill of ditch [3066]
3068	Cut	Oval			Natural feature
3069	Cut	Oval, undulating concave sides and base	1.6m	0.14m	Pit, filled by 3070



Context Number	Context Type	Description	Width	Height/Depth	Discussion
3070	Fill	Dark greyish brown silty sand, occasional sub-angular stones, frequent charcoal inclusions	1.6m	0.14m	Fill of pit [3069]
3071	Cut	Oval, with concave sides and base	0.55m	0.1m	Pit, filled by 3072
3072	Fill	Black sandy silt, moderately frequent sub-angular heat affected stones and frequent charcoal inclusions	0.55m	0.1m	Fill of pit [3071]
3073	Layer	light grey silty clay, low frequency of small angular heat affected stones	1.9m	0.1m	Spread of heat affected material
3074	Layer	light grey silty clay, low+E50 frequency of small angular heat affected stones	0.9m	0.07m	Spread of heat affected material
3075	Layer	light grey silty clay, moderately frequent small angular heat affected stones	0.6m	0.11m	Natural, heat affected
3076	Cut	NW-SE aligned linear ditch, gentle concave sides and base	0.48m	0.08m	Ditch, filled by 3077
3077	Fill	Mid greyish brown sandy silt, moderately frequent small sub-angular stones	0.48m	0.08m	Fill of ditch [3076]
3078	void	void			void
3079	void	void			void
3080	void	void			void
3081	void	void			void
3082	void	void			void
3083	void	void			void
3084	void	void			void
3085	void	void			void
3086	void	void			void
3087	void	void			void
3088	Layer	Mid greyish black sandy silt, frequent heat affected stones and charcoal	0.6m	0.06m	Spread of heat affected material, infill of [3091]
3089	Cut	Oval to sub-rectangular, with steep straight sides and a gently concave base	0.6m	0.17m	Pit / trough, filled by 3111, 3112
3090	Layer	Mid orangey brown silty sand	2m	0.12m	Buried subsoil



Context Number	Context Type	Description	Width	Height/Depth	Discussion
3091	Cut	Irregular to sub-circular, gently concave sides and uneven base	16.4m	0.35m	Interface / hollow, filled by 3088
3092	Cut	Sub-rectangular, rounded corners, steep concave sides and gently concave base	1.2m	0.4m	Pit / trough, filled by 3093, 3094, 3095 and 3096
3093	Fill	Light grey clay	0.03m	0.03m	Lowest fill of pit / trough [3092]
3094	Fill	Black silt, frequent charcoal inclusions	0.02m	0.02m	Fill of pit / trough [3092]
3095	Fill	Mid yellowish grey, high frequency of discoloured and cracked stones, heat affected	1.2m	0.31m	Fill of pit / trough [3092]
3096	Fill	Black silt, frequent charcoal inclusions	1.2m	0.04m	Fill of pit / trough [3092]
3097	Cut	Sub-circular, steep concave sides and gently concave base	1.2m	0.14m	Pit / trough, filled by 3098
3098	Fill	Dark blueish black silt, frequent small sub-angular stones and charcoal inclusions	1.2m	0.14m	Fill of pit / trough [3097]
3099	Cut	Oval with concave sides and base	2m	0.16m	Pit, filled by 3100
3100	Fill	Mid greyish brown sandy silt, occasional gravel, low frequency of charcoal	2m	0.16m	Fill of pit [3099]
3101	Layer	Light greyish brown clayey sand		0.15m	Natural layer affected by burnt mound
3102	Layer	Mid grey clayey sand	8m	0.27m	Natural layer affected by burnt mound
3103	Cut	Circular, vertical sides and narrow concave base	0.1m	0.14m	Stakehole, filled by 3104
3104	Fill	Mid greyish brown silty clay	0.1m	0.14m	Fill of stakehole [3103]
3105	Cut	Circular, vertical sides and narrow concave base	0.09m	0.15m	Stakehole, filled by 3106
3106	Fill	Dark brownish grey sandy clay	0.09m	0.15m	Fill of stakehole [3105]
3107	Cut	Circular, vertical sides and narrow concave base	0.07m	0.1m	Stakehole, filled by 3108
3108	Fill	Dark brownish grey sandy clay	0.07m	0.1m	Fill of stakehole [3107]



Context Number	Context Type	Description	Width	Height/Depth	Discussion
3109	Cut	Circular, vertical sides and narrow concave base	0.08m	0.12m	Stakehole, filled by 3110
3110	Fill	Dark brownish grey sandy clay	0.08m	0.12m	Fill of stakehole [3109]
3111	Fill	unknown	0.6m	unknown	Fill of pit [3089]
3112	Fill	Mid orangey brown silty sand	0.6m	unknown	Fill of pit [3089]



APPENDIX 2: HARRIS MATRIX







APPENDIX 3: PLATES



Plate 1; Area 3 general view, facing W



Plate 2; Palaeochannel [3018], facing SSW, 2m scale





Plate 3; Pit [3007], cut by pit [3011], facing SSW, 1m scale



Plate 4; Pit [3005], facing E, 1m scale





Plate 5; Trough **[3092]**, stakeholes **[3103, 3105, 3107, 3109]**, fully excavated, facing S, 2m scale



Plate 6; Pit / trough [3097] part-excavated, facing S, 0.4m scale





Plate 7; Burnt mound {3015}, palaeochannel [3018] behind, facing NW, 2m scale



Plate 8; Burnt mound {3015} in the landscape, facing SW, 2m scale





Plate 9; Burnt spread (3004), part-excavated, facing S, 1m scale



Plate 10; Ditch [3021=3045] cut by pit [3019], facing S, 1m scale





Plate 11; Ditch [3057], facing N, 1m scale



Plate 12; Ditch [3064], facing N, 0.4m scale





Plate 13; Stakeholes [3025, 3027, 3029 and 3041], plan view, facing NNW, 0.4m scale



Plate 14; Pit [3047], facing S, 1m scale




Plate 15; Pit [3069], facing WNW, 1m scale



Plate 16; Pit [3060], facing WNW, 1m scale





Plate 17; Pit [3071] and spread (3073=3074), facing WNW, 1m scale



Plate 18; Ditch [3051], facing NE, 1m scale





Plate 19; Ditch [3055], facing S, 1m scale



Plate 20; Copper Alloy pin



APPENDIX 4: FIGURES



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APPENDIX 5: RADIOCARBON CERTIFICATES

BetaCal 3.21

Calibration of Radiocarbon Age to Calendar Years

(High Probability Density Range Method (HPD): INTCAL13)

(Variables: d13C = -26.2 o/oo)

·						
Conventiona	i radiocarbo	on age	3700	1 30 BP		
	95.4% prot	ability				
	(84.6%)	2151 - 2	2017 cal	BC	(4100 - 3966 ca	BF
	(8.6%)	2199 - 1	2165 cal	BC	(4148 - 4114 ca	BF
	(2.2%)	1995 -	1981 cal	BC	(3944 - 3930 ca	BP
	68.2% prot	oability				
	(50.1%)	2101 - 2	2036 cal	BC	(4050 - 3985 ca	BF
	(18.1%)	2137 - 1	2113 cal	BC	(4086 - 4062 ca	BF
2700 + 30 DP		A3_(30	008)_< 3	003 >	Character	afarin
3700 ± 30 BP	1	A3_(30	008)_< 3	003 >	Charred m	ateria
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Database used

INTCAL13

References

References to Probability Method

Bronk Ramsey, C. (2009). Bayesian analysis of radiocarbon dates. Radiocarbon, 51(1), 337-360. References to Database INTCAL13

Reimer, et.al., 2013, Radiocarbon55(4).

Beta Analytic Radiocarbon Dating Laboratory

4985 S.W. 74th Court, Miami, Florida 33155 • Tel: (305)667-5167 • Fax: (305)663-0964 • Email: beta@radiocarbon.com



BetaCal 3.21

Calibration of Radiocarbon Age to Calendar Years

(High Probability Density Range Method (HPD): INTCAL13)

(Variables: d13C = -25.6 o/oo) Laboratory number Beta-553496 **Conventional radiocarbon age** 3020 ± 30 BP 95.4% probability (3271 - 3140 cal BP) 1322 - 1191 cal BC (73%)(3340 - 3286 cal BP) (18.8%) 1391 - 1337 cal BC 1144 - 1131 cal BC (3093 - 3080 cal BP) (2%) (1.5%) 1177 - 1163 cal BC (3126 - 3112 cal BP) 68.2% probability (61.2%) 1299 - 1217 cal BC (3248 - 3166 cal BP) (7%) 1372 - 1359 cal BC (3321 - 3308 cal BP) A3_(3094)_< 3025 > 3020 ± 30 BP Charred material 3300 3200 Radiocarbon determination (BP) 3100 3000 2900 2800 2700 2600 2500 1450 1400 1350 1300 1250 1200 1150 1100 1050 1500 1000 Calibrated date (cal BC) **Database used** INTCAL13 References **References to Probability Method** Bronk Ramsey, C. (2009). Bayesian analysis of radiocarbon dates. Radiocarbon, 51(1), 337-360. References to Database INTCAL13 Reimer, et.al., 2013, Radiocarbon65(4).

Beta Analytic Radiocarbon Dating Laboratory

4985 S.W. 74th Court, Miami, Florida 33155 • Tel: (305)667-5167 • Fax: (305)663-0964 • Email: beta@radiocarbon.com



APPENDIX 6: GAZETTEER OF FEATURES ENCOUNTERED IN AREA 3

Feature	Date	Description	easting, northing
Prehistoric Pits	Early Bronze	Two pits located at the south-eastern	326265,393264
	Age	extent of the excavated area	
Two Burnt Mounds	Middle to Late	A large spread of burnt material overlay a	236244,393276;
	Bronze Age	number of features indicating a multi-	236257,393276
		phased burnt mound, with a second burnt	
		mound to the east	
Area of Occupation	Middle to Late	To the southeast of the burnt mounds was	236264,393267
associated with Burnt	Bronze Age	a concentration of features including a	
Mounds		group of stakeholes, pits and short linear	
		features interpreted as a small group of	
		wooden structures associated with the	
		burnt mounds	
Area of Dispersed	Uncertain	To the north were a number of discrete	236228,393301
Activity		features including ditches and several pits	
		of uncertain function	



APPENDIX 7: 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





DATE ISSUED: JOB NUMBER: April 2019 CL12271

PREPARED BY:

Megan Stoakley

Finds and Archive Specialist

1halle

Lynne Gardiner

Senior Environmental Archaeologist

APPROVED BY:

Frank Giecco

Technical Director

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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



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 (ClfA) 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 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.

Stage 4 PXA and UPD Reporting

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.</p>
- 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



- 3.7 Bulk finds
- 3.8 Small finds
- 3.9 Absolute dating laboratory consultation
- 3.10 Scientific analyses specialist consultation
- 3.11 Creation of phased matrices
- 3.12 Incorporation of phased data into project GIS
- 4. **Reporting**
- 4.1 PXA
- 4.2 UPD

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.

Time estimates for finds washing and cleaning

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 500 μ m 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 9I 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 $300\mu m$ 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 $300\mu m$ 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.

<u>Time estimates for finds marking and bagging and boxing</u> 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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STOKE-ON-TRENT

Sir Henry Doulton House Forge Lane Etruria Stoke-on-Trent ST1 5BD Tel: +44 (0)1782 276 700

BIRMINGHAM Two Devon Way Longbridge Technology Park Longbridge Birmingham B31 2TS Tel: +44 (0)121 580 0909

BOLTON 41-50 Futura Park Aspinall Way Middlebrook Bolton BL6 6SU Tel: +44 (0)1204 227 227

CARDIFF Tudor House 16 Cathedral Road Cardiff CF11 9⊔ Tel: +44 (0)292 072 9191

CARLISLE Marconi Road Burgh Road Industrial Estate Carlisle Cumbria CA2 7NA Tel: +44 (0)1228 550 575 EDINBURGH Great Michael House 14 Links Place Edinburgh EH6 7EZ Tel: +44 (0)131 555 3311

GLASGOW 2 West Regent Street Glasgow G2 1RW Tel: +44 (0)141 433 7210

LEEDS 36 Park Row Leeds LS1 5JL Tel: +44 (0)113 831 5533

LONDON Third Floor 46 Chancery Lane London WC2A 1JE Tel: +44 (0)207 242 3243

MANCHESTER 76 King Street Manchester M2 4NH Tel: +44 (0)161 817 5038 NEWCASTLE UPON TYNE City Quadrant 11 Waterloo Square Newcastle upon Tyne NE1 4DP Tel: +44 (0)191 232 0943

TRURO Baldhu House Wheal Jane Earth Science Park Baldhu Truro TR3 6EH Tel: +44 (0)187 256 0738

International offices:

ALMATY 29/6 Satpaev Avenue Regency Hotel Office Tower Almaty Kazakhstan 050040 Tel: +7(727) 334 1310

MOSCOW 21/5 Kuznetskiy Most St. Moscow Russia Tel: +7(495) 626 07 67



wardell-armstrong.com

STOKE-ON-TRENT

Sir Henry Doulton House Forge Lane Etruria Stoke-on-Trent ST1 5BD Tel: +44 (0)1782 276 700

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LONDON Third Floor 46 Chancery Lane London WC2A 1JE Tel: +44 (0)207 242 3243

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TRURO Baldhu House Wheal Jane Earth Science Park Baldhu Truro TR3 6EH Tel: +44 (0)187 256 0738

International offices:

ALMATY 29/6 Satpaev Avenue Regency Hotel Office Tower Almaty Kazakhstan 050040 Tel: +7(727) 334 1310

MOSCOW

21/5 Kuznetskiy Most St. Moscow Russia Tel: +7(495) 626 07 67

