wardell-armstrong.com

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

HORIZON NUCLEAR POWER

WYLFA NEWYDD, ANGLESEY

AREA 1

ARCHAEOLOGICAL POST-EXCAVATION ASSESSMENT REPORT

DECEMBER 2021

wardell armstrong

Wardell Armstrong
41-50 Futura Park, Aspinall Way, Middlebrook, Bolton, BL6 6SU
Telephone: +44 (0)1204 227 227 www.wardell-armstrong.com

DATE ISSUED:	December 2021
JOB NUMBER:	CL12283
SITE CODE:	117360
OASIS REFERENCE:	N/A
DEVELOPMENT CONSENT ORDER APPLICATION REF:	EN010007
REPORT VERSION NUMBER:	FINAL 1.0

HORIZON NUCLEAR POWER

WYLFA NEWYDD, ANGLESEY

ARCHAEOLOGICAL POST-EXCAVATION ASSESSMENT REPORT AREA 1

DECEMBER 2021

PREPARED BY:

Vix Hughes Principal Archaeologist

REVIEWED BY:

Lynne Gardiner Associate Director

APPROVED BY:

Frank Giecco Technical Director

CONTENTS

APPENDICES

APPENDIX 2: PLATES

APPENDIX 3: FIGURES

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 1.

Area 1 consisted of three areas, two in Field L3 (L3 South, L3 North) and one further north in Field L4, centred on NGR SH 36300 93700 and covering 11659m^2. The archaeological fieldwork was undertaken by Wessex Archaeology between 25th July 2017 and 8th August 2017.

The three areas produced varied results. In L3 South the investigated features were determined to not be of archaeological origin. The central area, L3 North, revealed a number of features associated with burnt mound activity in the form of three spreads, each with an associated pit / tough. The exact function of the features remains ambiguous and could be related to cooking, dyeing, tanning, bathing, saunas and brewing. The sampled sediments produced moderate amounts of charcoal, radiocarbon dating of which produced dates of Late Neolithic to Early Bronze Age.

In the northern area, L4 uncovered a rectilinear field system aligned northwest-southeast. There was no clear evidence for occupation, such as features or discarded rubbish, within the enclosed areas, and the fields may have been used for either arable production or for pastoral use. The absence of artefactual material meant an absolute date could not be determined. The field system is most likely to date to the Romano-British era or medieval to post-medieval period but this is based on morphological similarities to such features in the region and certainly it known to be out of use by the time of the earliest historical mapping.

CRYNODEB

Comisiynwyd Wardell Armstrong LLP (WA) gan Horizon Nuclear Power i gyflawni asesiad ol-gloddio archaeolegol ar gyfer cloddfau archaeolegol ar safle arfaethedig gorsaf bŵer niwclear Wylfa Newydd, Ynys Môn, Cymru, wedi ei ganoli ar Cyfeirnod Grid Cenedlaethol (NGR): SH 36350 93450. Ymgymerwyd ar y rhaglen waith maes archaeolegol i gefnogi cais Orchymyn Cydsyniad Datblygu (EN010007). Rhannwyd y rhaglen gwaith maes i lecynnau ddiffiniedig, mae'r adroddiad hwn yn manylu canlyniadau cloddfa archaeolegol yn Area 1.

Roedd Area 1 yn cynnwys tri llecyn, dau yng nghae L3 (L3 De, L3 Gogledd) ac un i'r gogledd yng nghae L4, ac yn mesur 11659m² wedi eu canoli ar NGR SH 36300 93700. Cwblhawyd y gwaith maes archaeolegol gan Wessex Archaeology rhwng y 25ain o Orffennaf 2017 a'r 8fed o Awst 2017.

Nodwyd canlyniadau amrywiol yn y tri llecyn. Yn llecyn L3 De nodwyd bod y nodweddion ddim o darddiad archaeolegol. Yn y safle canolog, L3 Gogledd, darganfyddwyd nifer o nodweddion oedd yn gysylltiedig â thwmpathau llosg. Nodwyd tri lledaeniad o gerrig wedi llosgi, pob un â chafn cysylltiedig. Ni wyr pwrpas union dwmpathau llosg ond mae'n bosib eu bod wedi ei defnyddio ar gyfer coginio, lliwio, barcio, ymolchi, sawnau a bragu. Adenillwyd swm cymedrol o olosg o'r samplau a gasglwyd wrth gloddio, mae dyddiadau radiocarbon yn awgrymu bod y nodweddion yn dyddio i'r cyfnod Neolithig Hwyr i'r Oes Efydd Cynnar.

Yn y llecyn gogleddol, L4 darganfyddwyd gyfundrefn caeau petryalog ar echelin gogledd-orllewin - de-ddwyrain. Nid oedd unrhyw dystiolaeth o feddiannaeth, fel nodweddion neu sbwriel, yn y llociau ac mae'n bosib i'r caeau fod wedi eu defnyddio ar gyfer tyfu cnydau neu borfeydd. Gan fod absenoldeb o arteffactau nid oedd yn bosib penderfynu dyddiad pendant. Mae'n debygol bod y gyfundrefn caeau yn dyddio i'r cyfnod Frythoneg-Rufeineg neu gyfnod canoloesol i ôl-gannoloesol ond mae'r dehongliad yma yn seiliedig ar nodweddion tebyg yn yr ardal oedd allan o ddefnydd pan gynhyrchwyd y mapiau hanesyddol cyntaf.

ACKNOWLEDGEMENTS

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

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

The assessment report was written by Vix Hughes. The figures were produced by Helen Phillips and Valeria Tiezzi. The overall finds assessment was undertaken by Sue Thompson and the lithic artefacts were assessed by Miguel Gonzalez. Freddie Sisson supervised the environmental team and wrote the report; the team consisted of Megan Lowrie, Katherine Bostock and Jyoti Stuart. The palaeoenvironmental assessment was edited by Lynne F Gardiner. The project was managed by Frank Giecco and Damion Churchill, who also edited the initial draft of the report. Lynne Gardiner reviewed the subsequent drafts.

1 INTRODUCTION

1.1 Project Circumstances and Planning Background

1.1.1 Between July and August 2017, Wessex Archaeology undertook an archaeological excavation in Area 1, Fields L3 and L4 at Wylfa Newydd, Anglesey, Wales, centred on National Grid Reference (NGR): SH 36300 93700 (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. Procurement of PRNs for this assessment was undertaken with Sean Derby (GAT). 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. Within Area 1, PRN76002 has been assigned to burnt mounds. Subsequent PRNs have been added and are presented in Table 1.1.

Table 1.1: Primary reference number (PRN) gazetteer

PRN no.	Description	Associated contexts/PRNs
PRN45392	Assigned to the whole Wylfa project	
PRN76002	Assigned to the burnt mounds in this are	Includes PRN91963, PRN91964, and PRN91965
PRN91963	Burnt mound and associated pit/trough: 1	Burnt mound spread (1070) and pit [1067]
PRN91964	Burnt mound and associated pit/trough: 2	Burnt mound spread (1071) and pit [1073]
PRN91964	Burnt mound and associated pit/trough: 3	Burnt mound spread (1072) and pit [1076]
PRN91966	Former field system	[1079], [1080], [1081], [1082]

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 1, 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. 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 1 was undertaken between 25th July 2017 and 8th August 2017, in Fields L3 and L4 (Figure 2). The area of 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 2020a), 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 2020b).

2.2 Archaeological Excavation

2.2.1 The archaeological excavation of Area 1 comprised the strip map and sample of three areas: L3 South 2323m^2; L3 North 5452m^2; and L4 3884m^2, totalling 11 659m^2. Fields L3 and L4 were separated by an existing public footpath and no excavation occurred beneath it. These defined areas were identified for archaeological excavation based on the results of the previous geophysical survey and archaeological evaluation.

2.2.2 The general aims of the project were:

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

And specifically, for the Area 1 excavation:

- *to address archaeological research objectives posed by the Research Framework for the Archaeology of Wales (CIfA Cymru/Wales 2017);*
- *To establish the true nature and function of the various archaeological remains present, specifically to identify the presence of any agricultural, domestic, industrial or ritual activity and the character of such;*
- *To establish the condition, age and stratigraphic sequence, of any archaeological / historical remain identified;*
- *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. 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 narrative 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 Archive Location

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 1/35-2016.

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

3.2 Archive Quantification

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

Table 3.1: Quantification of excavation data

Category	Quantification
Context Sheets	82
Small finds	0
Bulk finds	0.011kg
Environmental samples	7 samples (169 l)
Monochrome film	0
Digital photographs	224
Rectified photographs	0
Hand-drawn plans	0
Hand-drawn sections	46
GPS survey pre-excavation plans	Yes
GPS survey excavation plans	Yes
TST surveyed excavation plans	No

4 BACKGROUND

4.1 Location and Geological Context

4.1.1 Area 1 is located on the north Anglesey coast, approximately 900m northwest of the centre of Cemaes, situated to the northeast of the proposed development area (Figure 1). The site comprised two fields, centred at National Grid Reference (NGR): SH 36300 93700. The coastline is 110m to the northwest and the Tre'r Gof Site of Special Scientific Interest (SSSI) is only 200m to the southwest.

4.1.2 The site consisted of three areas: L3 South 2323m^2; L3 North 5452m^2; and L4 3884m^2, totalling 11,659m^2.

4.1.3 Area 1 lay on undulating coastal ground between 13m and 22m above Ordnance Datum (aOD). The ground slopes down to the southwest towards the Tre'r Gof SSSI. Immediately northwest of field L4 the ground slopes steeply down to the sea.

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

4.1.5 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 1 comprised a mid orangey brown sandy clay, which is consistent with the mapped geologies above.

4.1.6 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 silty sand, up to 0.36m thick, with mudstone inclusions. A paler relict ploughsoil subsoil lay below this and was up to 0.36m thick. A layer of colluvium up to 0.4m thick was present intermittently below the subsoil.

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 1. 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 1.

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 1. 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 during the evaluation phase in nearby fields K1, K4 and C15, 570m to the southwest. 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 an unusual, costal burnt mound, 310m to the northwest (Wessex 2016, 14-15).

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 1.

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, 240m to the south-southeast (Wessex 2016, 14-15).

4.2.11 ***Period 4 – Roman (AD 43 – 410):*** There is no known Roman activity within Area 1. 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 1.

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 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).

4.2.16 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.

4.2.17 ***Period 6 - Medieval (1100 – 1539):*** By the 12th century, Area 1 was located within the *Talybolion commote* (a recognised regional unit of royal administration) with a royal manorial centre located at Cemaes (GAT 2012b).

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

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

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

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

4.2.22 Southwest of Area 1 several trenches revealed the presence of a large east-west aligned ditch in Area 17, which corresponded to a surveyed geophysical anomaly and accorded with the projected line of an existing field boundary. The boundary was interpreted as a functional boundary with at least some defensive or visibly imposing effect and likely to have been in use for an extensive period of time. The upper fill contained occasional charcoal flecks and a sherd of 13-14th century medieval pottery. The southern edge of the ditch appeared to be truncated by a second, significantly smaller linear drainage feature, also likely to be of medieval or later date (Headland 2017, 15).

4.2.23 ***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.*).

4.2.24 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.

4.2.25 ***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.

4.2.26 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

4.2.27 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.

4.2.28 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 (ibid.). An unusual feature of stoneclad cloddiau is that the facing stones are commonly laid with their long axis vertical (DSWA 2013).

4.2.29 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.

4.2.30 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.

4.2.31 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.*).

4.2.32 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 linear features identified by the geophysical survey (see below) matched field boundaries marked on first edition OS mapping onwards. It concluded that the area may contain 'background agricultural features' such as field boundaries and ditches.

4.3.3 ***Geophysical Survey:*** The surveys (ASWYAS 2015; GAT 2011a 2011b and 2012a) identified a ring ditch feature, around 35m wide in the northwest part of Field L3. Linear field boundary type ditches were also identified to the east in Fields L3 and L4.

4.3.4 ***Archaeological Evaluation:*** Evaluation trial trenching took place in spring 2016 (Wessex 2016). Eleven trenches were excavated in Field L3, and 14 trenches in Field L4. The trenches were 1.8 m wide and between 30 m and 50 m long. Three trenches were located to investigate the large ring ditch feature identified by the geophysical survey (ASWYAS 2015, GAT 2011a, 2011b and 2012a). An apparent feature, [**52506**], was identified in Trench 525, where it was recorded as 3.15 m wide and 1 m deep and but was not seen in the other two trenches (TR1235 and TR524). Other trenches revealed smaller ditches, which were interpreted as the remains of early field boundary systems.

5 ARCHAEOLOGICAL EXCAVATION RESULTS

5.1 Introduction

5.1.1 The three areas produced varied results. In L3 South the investigated features were determined to not be of archaeological origin. The central area, L3 North, revealed a number of features associated with 'burnt mound' activity and thought to be of Bronze Age date. In the northern area L4 uncovered a field system of uncertain date, known to be out of use by the time of the first edition Ordnance Survey mapping.

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

5.2 Results

5.2.1 An average of 0.36m of dark brown silty sand topsoil **(1001)**, and a further 0.17m to 0.38m thick of mid brown silty sand subsoil **(1002)**, was removed to reveal the archaeological features above the geology. The natural geological substrate (**1003**) comprised a light to mid-orangey brown sandy clay, representing glacial till; consistent with the mapped geology. Colluvial deposits **(1004)** and **(1049)** were seen intermittently below the topsoil and above the subsoil in L3. All features were stratigraphically sealed by the subsoil and truncated the underlying natural substrate.

5.3 Period 0 Natural Features

5.3.1 *Phase 1*

5.3.2 Seven probable tree throws were investigated in Field L3 North and South (Figure 2). Four were in L3 South **[1005**, **1007**, **1011**, **1014]** and three were in L3 North **[1061**, **1063**, and **1065]**. The features were generally oval in plan, varied in size from 0.5 to 0.7m in diameter and most were 0.15m deep with maximum depths reaching 0.3m. Each had a single fill, which in the southern features was generally a light brown silty sand, and those further north being a darker mid brown. None of the fills contained any artefactual material. The exception being fill **(1013)** which had a moderate frequency of charcoal inclusions.

5.3.3 The outlier to these was feature **[1007]**, which at 2.7m wide by 0.4m deep was larger and contained three fills **(1008**, **1015** and **1016)**, with fill **(1015)** having occasional charcoal inclusions. The feature had characteristics typical of a tree throw (asymmetrical in plan and profile) and the charcoal may have originated from plant

matter being burnt either deliberately or by natural means (clearance for agriculture or wildfire).

5.4 Period 2 – Neolithic and Early Bronze Age

5.4.1 *Phase 2*

5.4.2 The earliest phase of significant archaeology encountered at Area 1 consisted of three spreads of burnt material **(1070**, **1071** and **1072)**; (Figures 3 and 4) each of which appeared to be accompanied by a nearby pit **[1067**, **1073** and **1076]**, respectively. The material forming the spreads was compatible with the pit fills. The features demonstrated characteristics consistent with burnt mounds and troughs, usually dated to the Bronze Age.

5.4.3 Burnt mound **(1070)**, (Plate 1), the largest of the three, measured 4m by 2.8m, was 0.1m thick and oval in plan and assigned PRN 91963. The deposit itself was composed of a blackish grey silty clay with frequent inclusions of sub-angular stones that had been discoloured through heating and some were partially cracked. A relatively low frequency of charcoal was noted within the deposit and it was devoid of artefactual material.

5.4.4 To the southeast was an associated pit feature **[1067]**, (Plate 2, Figure 6) that measured 1.3m by 1m and was 0.35m deep. It had moderately steep sides and a flat base and contained two fills. The initial fill **(1069)** was a thin clay deposit assumed to be a deliberate lining, overlain by a thick dark blackish grey fill **(1068)** with frequent burnt stone inclusions and a low frequency of charcoal, confirmed by the sample. Neither fill contained artefactual material.

5.4.5 Burnt mound **(1071)**, (Plate 3) to the west, measured 3.2m by 2.8m, was 0.1m thick and circular in plan and assigned PRN 91964. The deposit itself was composed of a black silty clay with moderately frequent inclusions of sub-angular stones that had been discoloured through heating and some were partially cracked. A relatively moderate frequency of charcoal was noted within the deposit, including that of Guelder Rose (*Viburnum opulus*) which was radiocarbon dated to 2275- 2035 cal BC (calibrated calendar date). The deposit also contained a piece of worked chert debitage / flake.

5.4.6 To the south was an associated pit feature **[1073]**, (Plate 4, Figure 6) that measured 1.1m by 0.6m and was 0.37m deep. It had moderately steep sides and a flat base and contained two fills. The initial fill **(1075)** was a thin clay deposit assumed to be a

deliberate lining, overlain by a thick dark blackish grey fill **(1074)** with frequent burnt stone inclusions and charcoal including that of Guelder Rose which was radiocarbon dated to 2281 - 2038 cal BC (Beta-553547). Neither fill contained artefactual material.

5.4.7 Burnt mound **(1072)**, (Plate 5), to the north, measured 3.4m by 2.65m, was 0.11m thick and circular in plan and assigned PRN 91965. The deposit itself was composed of a dark greyish brown sandy silt with moderately frequent inclusions of sub-angular stones that had been discoloured through heating and some were partially cracked. A relatively moderate frequency of charcoal, confirmed by the sample, was noted within the deposit and it was devoid of artefactual material.

5.4.8 To the northwest was an associated pit feature **[1076]**, (Plate 6, Figure 6) that measured 1.5m by 1m and was 0.15m deep. It had gentle concave sides and base and contained two fills. The initial fill **(1078)** was a thin clay deposit assumed to be a deliberate lining, overlain by a shallow mid greyish brown fill **(1077)** with occasional burnt stone inclusions and possible ashy material derived from burnt mound activity, with a low frequency of charcoal, confirmed by the sample. Neither fill contained artefactual material.

5.5 Period 4 – 7 Post-prehistoric

5.5.1 *Phase 3*

5.5.2 A former field system comprising four ditch features **[1079**, **1080**, **1081** and **1082]** was observed in Field L4. The field system was not seen to extend westwards into Field L3 (Figures 3 and 5).

5.5.3 The field system in L4 was rectilinear in plan and orientated northwest-southeast and assigned PRN 91966. Topsoil and subsoil stripping exposed most of the enclosure, except the southern side which lay beneath a public footpath. Only the northern ditches **[1081]** and **[1082]** were identified as a linear anomaly during the geophysical survey.

5.5.4 Ditch **[1079]** was aligned northwest-southeast and exposed for c. 35m along the southwest side of the field system. A total of three sections **[1023**=**1025**=**1027]** were excavated along the length of the boundary ditch. The feature appears to have been a single construction with gradually sloped sides and a concave base (Plate 7). Ditch **[1079]** measured up to 0.9m wide by 0.2m deep. It contained a single mid brown sandy silt fill, seen as **(1024**, **1026**, **1028)**, and from **(1028)** a piece of chert debitage and a burnt flint thumb scraper were recovered, thought to be consistent with a

Neolithic date, but may be residual. A possible continuation of the ditch **[123604]** was recorded to the south in Trench 1236 of the evaluation (Wessex 2016, Fig. 6.7).

5.5.5 To the southeast of ditch **[1079]** was the probable eastern return of the field enclosure, seen as ditch **[1080]**. The relationship between ditches **[1079]** and **[1080]** could not be examined as it lay beneath the extant public footpath. Ditch **[1080]** was aligned northeast-southwest, visible for a 30m length and terminated at the north eastern end where it formed field entranceways with ditches **[1081]** and **[1082]**.

5.5.6 Three sections **[1035**=**1037**=**1054]** were investigated in ditch **[1080]** during the excavation phase and these were in addition to two interventions seen in the earlier evaluation **[123304]** and **[123204]**, (Wessex 2016). It led from the northeast terminal **[1035]**, which formed part of the probable entranceway, to the edge of the excavation area. The feature appears to have been a single construction with gradually sloped sides and a concave base (Plate 8, Figure 6). Ditch **[1080]** measured 0.7-1.4m wide by 0.35-0.65m deep. It contained a single dark brown sandy silt fill with occasional stone inclusions, seen as **(1036**, **1038** and **1055)**, which contained no artefactual material.

5.5.7 Ditch **[1081]** was aligned northwest-southeast and exposed for 40m along the northwest side of the field system. A total of five sections **[1019**=**1021**=**1029**=**1047**=**1056]** were excavated along the length of the boundary ditch, which had been seen in the earlier evaluation as [**63004**], Wessex 2016). The feature appears to have been a single construction with a straight sided, narrowed concave base in profile (Plate 9, Figure 6). The smaller terminus **[1056]** formed field entranceways with termini **[1035]** and **[1043]**. It contained a single fill described as a mid-brown sandy silt fill, seen as **(1020**, **1022**, **1030**, **1048**, **1057)** from which only two small fragments of very corroded iron came, possibly a nail in fill **(1030)**. Although the iron fragments could not be dated it does indicate the date is likely to be Roman or later, rather than prehistoric.

5.5.8 To the immediate southeast was ditch **[1082]**, which was on the same alignment as ditch **[1081]** and effectively formed a continuation on the other side of the field entrance. Ditch **[1082]** extended over 22m from the terminus **[1043]** at the northeast end to the limit of excavation to the southeast.

5.5.9 Three sections **[1031**=**1033**=**1043]**, (**[1031]** was double numbered as **[1050]**) were investigated in ditch **[1082]**. The feature appears to have been a single construction with a gently concave sides and base forming a U-shaped profile (Plate 10, Figure 6).

Ditch **[1082]** measured 0.65-1.1m wide by 0.22-0.35m deep. It contained a single mid brown silty sand fill with occasional stone inclusions, seen as **(1032**, **1034** and **1044)** which contained no artefactual material.

5.6 Undated Features

5.6.1 There were two short stretches of ditch not directly connected to the field system, ditches **[1039]** and **[1052]**. Ditch **[1039]** was parallel to and east of ditch **[1082]**, (Plate 11). It was only seen for a short 12m length and although it was 0.86m wide it was very shallow (0.09m) and the ends were not well defined. The single fill **(1040)** was a mid-brown sandy silt with occasional small stones, but no artefactual material. The ambiguity of the feature means that it may have been a shallow ditch or possibly a hedge line or a worn linear depression.

5.6.2 The second possible ditch **[1052]** lay within the confines of the field system and on an east-west alignment, at variance to the field system. Ditch **[1052]** was approximately 21m long, 0.86m wide, very shallow (0.08m), and also had poorly defined ends (Plate 12). The single fill **(1053)** was a mid-brown sandy silt with occasional small stones, but no artefactual material. The ambiguity of the feature means that it may have been a shallow ditch, possibly a hedge line, plant bedding trench or a worn linear depression.

5.6.3 There were three undated, isolated, discrete features within the field system **[1041]**, **[1045]** and **[1058]** (Plates 13 and 14). These features of variable size with the largest pit **[1041]** at 1.2m wide and the other two were approximately 0.7m wide (Figure 3h). They were all of a similar 0.2m depth. The features were interpreted as pits but, as they were somewhat ambiguous, they may have been tree throws or other naturally infilled depressions. They were of variable concave profiles, amorphous and were not unequivocally deliberate in characteristics.

5.6.4 Further south in L3 South there were two isolated discrete features with possible archaeological origin **[1009]** and **[1017]**. Feature **[1009]** appeared to be a possible pit 0.73m wide by 0.3m deep, with regular concave sides and base (Plate 15). The single fill **(1010)** of light brown sandy clay contained occasional medium rounded stones and a low frequency of charcoal.

5.6.5 Feature **[1017]**, to the west, was the base of a possible posthole 0.27m wide by 0.1m deep. The single fill **(1018)** contained no artefactual material.

5.6.6 Mention must be made of the annular feature identified by geophysical survey. The feature, thought to be c. 35m in diameter, and targeted by Trenches 525, 524 and

1235 (Wessex Archaeology 2018) was only visible in Trench 525 where a feature c.3.15m wide and c.1m deep was investigated. After the site stripping it could not be observed as an archaeological cut feature and there was no feature correlating to the geophysical survey, which may have been the result of natural activity. The feature has been described as lying on marshy land and there was a natural spring in its centre (Wessex 2016, 41) and moisture might be a factor of its transient existence.

6 FINDS ASSESSMENT

6.1 Introduction and Methodology

6.1.1 A total of five artefacts, weighing 11g, were recovered from four contexts as bulk finds from an archaeological investigation on Area 1. The finds were in poor to moderate condition. No finds were recovered from environmental samples.

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 2020b). 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 1/35-2016.

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 (CIfA Cymru/Wales 2017).

6.1.4 Quantification of bulk finds by material and context is given in Table 6.1; quantification of lithic artefacts is given in Table 6.2.

Table 6.1: quantification of finds by material and context

Context	Material	Quantity	Weight (g)	Period / Date	Comments
1028	Flint	1	1	Period 2	Neolithic
1028	Chert	1	1	Period 2	Neolithic
1030	Iron	2	4	Roman to Post-Medieval	Heavily corroded fragments. Unidentified
1071	Chert	1	5	Period 2	Neolithic
Total		**5**	**11**		

6.2 Metal

6.2.1 Two small fragments of highly corroded iron were recovered from context **(1030)**, weighing 4g. The iron possibly represented small nail fragments although it was not possible to identify the small pieces due to their size and heavy corrosion. A broad date of Roman to post-medieval is appropriate.

6.3 Lithics

6.3.1 The assemblage recovered at Area 1 is made up of three (8.66g) worked lithics. The lithics have been rapidly assessed, quantified and individually assigned to a broad category according to debitage, core or tool type with a further distinction made using

sub-category field. The lithic assemblage was assessed using Andrefsky (2005) and Ballin (2000).

6.3.2 The condition of the assemblage is good, with no signs of re-cortication displaying only some degree of edge damage.

6.3.3 The assemblage comprises two black chert pieces, a chip **(1028)**, a core preparation edge flake **(1071)** indicating knapping activities on site and a small, heat-altered flint thumbnail scraper which probably dates to the early Neolithic **(1028)**.

6.4 Statement of potential and recommendations

6.4.1 The finds assemblage comprised a small quantity of lithic artefacts and corroded iron. The finds assemblage did not provide good dating evidence for the site and is of low archaeological potential.

6.4.2 The lithics may benefit from being considered alongside other areas with the wider project.

Table 6.2: Quantification of lithics

Context no.	Raw Material							Dimensions				Class	Category	Subcategory	Notes
	Type	Colour	Lustre	Texture	Opacity	Cortex	Patination	L (mm)	W (mm)	T (mm)	Weight (g)				
1071	Chert	Black	Dull	Fine	Opaque	Nco	None	44.6	16	10.4	5.57	Debitage	Core preparation flake	Core edge preparation flake	1071 burnt mound
1028	Flint	Orange	Shiny	Fine	Opaque	Nco	Medium	24	16.9	6.4	2.82	Retouched tool	Scraper	Thumbnail scraper	Heat altered. Distal fragment
1028	Chert	Black	Dull	Fine	Opaque	Nco	None	13.2	9.9	2.3	0.27	Debitage	Chip	Chip	
Total											**8.66**				

Key: Nco - No core present

7 PALAEOENVIRONMENTAL ASSESSMENT

7.1 Introduction

7.1.1 A total of seven environmental samples comprising a total weight of 346kg (169l) of sediment was processed for this stage of works. Further details for each sample can be found in Table 7.1.

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 methodologies presented in Wardell Armstrong (2018, 2019). 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.

7.2.2 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. cf. Table 7.1. 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, cf. Table 7.2. Once fully sorted and any palaeoenvironmental and artefactual material (if present) 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 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).

7.3 Results

7.3.1 Sandy silty clay dominated the sediment matrix of most samples with lesser quantities of sandy silt sediments. The flot and finds data is presented in Table 7.2, along with artefactual material recovered from the dried residues, which were minimal but contained examples of fired clay.

7.3.2 **CPR**: no charred plant remains (CPR) were observed.

7.3.3 **Charcoal**: Charcoal was present in all seven samples and was in relatively good condition. From the samples two yielded more than 50g which were: **(1072)** <1002> and **(1071)** <1004>; both from burnt mound spreads.

7.3.4 **Shell**: no molluscan material was observed.

7.3.5 **Bone**: no bone was present within the samples.

7.3.6 **Magnetic matter**: Magnetised material was recovered from all seven samples, with no sample yielding more than 1g. The material was examined under a microscope (x45 magnification) for microslags, of which none were present; the material consisted entirely of small naturally occurring stone.

7.4 Discussion

7.4.1 The paucity of ecofactual material from Area 1 is not that uncommon from Welsh assemblages; in particular, animal bone (Bale *et al.* 2017). Charred plant remains and charcoal are more robust and would be less likely subjected to taphonomic processes that would enhance their decay. With only being presented with charcoal from this area would suggest that crop processing and/or cooking is not being undertaken in the vicinity.

7.4.2 The presence of charcoal from an area with burnt mounds present was not surprising and is likely to have been in their primary deposition location.

7.5 Radiocarbon Samples

7.5.1 Two charcoal samples were submitted to Beta Analytic for radiocarbon determination. The full results are to be found in Appendix 5.

7.5.2 The samples were treated according to Beta Analytics (Beta Radiocarbon Dating unpub.). The calibrated results followed Riemer et al. (2013) and was calibrated to the calendar timescale following Bronk Ramsey (2009).

7.5.3 A sample of Guelder Rose (*Viburnum opulus*) charcoal from sample <1003> of fill **(1074)** from trough **[1073]** provided a radiocarbon age of 3750+30 BP (lab number Beta-553547, 95.4% probability 2281- 2038 calBC). Therefore, the accepted date range is 2281-2038 calBC, which falls in the Late Neolithic to Early Bronze Age (Period 2) and is consistent with the accepted date range for burnt mound type features in North Wales.

A sample of Guelder Rose charcoal from sample <1004> which came from the burnt mound deposit **(1071)**, provided a radiocarbon age of 3740+30 BP (lab number Beta-553548, 95.4% probability 2275- 2035calBC). Therefore, the accepted date range is 2275-2035 calBC, which falls in the Late Neolithic to Early Bronze Age (Period 2).

7.6 Statement of potential and recommendations

7.6.1 Further analysis of the charcoal is essential to be able to examine woodland composition and exploitation of local woodlands. To this end it is recommended that the charcoal be fully analysed which would follow that outlined in Huntley (2010: 57-60). Each sample's charcoal assemblage, prior to analysis, must be securely dated; either through association, typologically or absolute means.

7.6.2 Radiocarbon suitability: charcoal from all but sample <1001> 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.

7.6.3 Retention and discard: all the charcoal should be retained within the site archive to allow for further analysis to be undertaken in the future.

7.6.4 The magnetic matter from all samples may be discarded as it offers no further potential

Table 7.1 sample information

C	<>	TQ	Cut	Desc	Matrix	PW	PV	SW	SV
1068	1001	4	1067	Fill of trough	Sandy clay	46	21	27958	16500
1072	1002	4		Burnt mound spread	Sandy clay	59	27	25616	18000
1074	1003	4	1073	Fill of trough	Silty sand	44	18	16564	10460
1071	1004	4		Burnt mound spread	Silty sand	60	32	33648	24850
1070	1005	4		Burnt mound spread	Sandy clay	45	24	18304	123660
1077	1006	4	1078	Fill of lining	Silty clay	53	21	18990	12540
1071	1007	4		Burnt mound spread	Sandy clay	39	26	28658	21350

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(l); SW=sorted weight(g); SV=sorted volume(ml)

Table 7.2 flot and finds from sample information

		Flot		Retent		
C	<>	WF	VF	Ch	FC	MM
1068	1001	5.5	25	1	360	<1
1072	1002	35	100	93	8	<1
1074	1003	3.1	10	3		<1
1071	1004	7.8	25	95		<1
1070	1005	2.9	20	8		1
1077	1006			17		<1
1071	1007	0.7	10	10		1

Key: C=context; <>=sample number; WF=weight of flot(g); VF=volume of flot(ml); Ch=charcoal(g); FC=fired clay(g); MM=magnetised material(g)

8 DISCUSSION

8.1 Interpretation

8.1.1 The archaeological excavation of Area 1 in Fields L3 and L4, within the proposed development site of a new nuclear power station at Wylfa Newydd, Anglesey, allowed the investigation and recording of the archaeological potential revealed by the geophysical survey and the results of the trial trenching programme. The geophysical survey (ASWYAS 2015, GAT 2011a, 2011b and 2012a) revealed the potential existence of a ring ditch feature, and while the presence of a ditch was substantiated in one evaluation trench, others targeting this feature failed to find it (Wessex 2016) leaving the results requiring further work.

8.1.2 The archaeology revealed in the open area excavation consisted of linear ditch features, spreads of burnt material with associate pits/troughs and a small number of isolated, discrete features.

8.1.3 The remains were located in the eastern part of L3 North and across L4, with only two probable features seen in L3 south. The features in L4 were ditches that extended over 60m and beyond the limits of the excavated area. The spreads and pit features in L3 North were entirely contained within a small 30m by 25m area.

8.1.4 The three spreads of material showed evidence of being heat affected with small portions of charcoal present amongst discoloured and fractured stones. The deposits were not overly deep, and this may be a factor of preservation, truncation by modern agriculture or it may reflect the short-lived, expedient nature of the activity. The spreads were generally rounded in plan and positioned on the outer edges of each area were three associated pits. The two clearer pits were fairly deep, and each pit contained an initial clay layer interpreted as a lining. Above this a fill almost identical to the spreads had been deposited, being rich in heat affected stones with moderate charcoal inclusions, but no noted charred plant remains in the form of seeds, grains etc.

8.1.5 The group of features is interpreted as the remains of three burnt mounds and their troughs, morphologically similar to compatible features seen across the region. The radiocarbon dating from one burnt mound spread and a fill from its associated trough have produced two very similar dates 2281-2038 and 2275-2035 calibrated BC within the Late Neolithic to Early Bronze Age date range, at 95.4% probability. The exact dates of the other two mounds and their associated troughs are therefore likely to be

of similar date, but this remains to be tested.

8.1.6 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 heated in a nearby fire and then immersed in water-filled troughs, 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 (e.g. Kenney 2012, 270), but equally viable suggestions include saunas, dyeing, bathing, tanning and brewing (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.

8.1.7 Approximately 15-20m to the northeast of the burnt mounds, were the four identified ditches that formed a rectilinear field system on a northwest-southeast alignment. Due to the restricted area exposed it was unclear whether the field system was designed to provide a number of focused small, enclosed fields with specific functional use or whether they were more extensive and reflected land ownership. The field system does not correlate with any historic mapping and apart from two fragments of iron from one fill there was no artefactual evidence by which to date it.

8.1.8 There was no clear evidence for occupation, such as features or discarded rubbish, within the enclosed areas, and the fields may have been used for either arable production or for pastoral use (grazing or segregating stock). The field system is most likely to date to the Romano-British era, medieval period or later but this is based on morphological similarities to such features in the region, and the date remains open to reinterpretation. In addition, there is a late Roman to early medieval hilltop enclosure to the southeast spanning Fields L8 and L12 and the field system may be linked with land subdivisions originating in this era. The ditches are not on quite the same alignment as the current ones which can be traced back through historical mapping.

8.1.9 Due to the nature of the archaeological remains it was not possible to establish a relationship between the burnt mound activity and the rectilinear field system. It could be argued that the characteristics of each imply that they were not contemporary. Burnt mounds are not often enclosed within their landscapes and such straight field boundaries, are less common in the Bronze Age. It seems more likely that they are from separate eras with different functional origins, and that the field system

may post-date the burnt mounds.

8.1.10 The archaeological remains in Area 1 were seen to demonstrate a simple stratigraphic sequence with all features sealed by the subsoil and truncating the natural substrate. There were no intercutting features either discrete or linear in form and very few features had more than one fill. For each Period present on the site there was only one observable phase of activity. The features may therefore be single entities established for a short duration.

8.1.11 There was a lack of artefactual material from all contexts which meant that specific dating of the deposits or features identified on this basis was not possible. By their nature it is hypothesised that the burnt mounds and associated troughs are of Bronze Age date and the accurate dating by scientific means, namely radiocarbon of one burnt mound and trough demonstrates, a Late Neolithic to Early Bronze Age date.

9 STATEMENT OF POTENTIAL

9.1 Significance

9.1.1 The two main categories of remains within Area 1, the burnt mounds and the rectilinear field system, form part of the wider setting of the prehistoric and later remains. Other elements are seen in the nearby fields to the west (L1), south west (K1, K4, C10 and C15) and south (L8 and L12).

9.1.2 There is some potential for the rectilinear field system in Area 1 to contribute to the understanding of Anglesey archaeology, although its significance is moderately low due to the undated nature of the remains. Without being able to confirm an independent date then it only has a limited scope to fit into the development of the wider historic landscape. If the date can be established, then the suggested interpretation of the field system as being related to pastoral function increases the significance. This is because the further understanding and identification of pastureland in locations other than upland locations, particularly such locations as coastal wetlands, is one of the research aims (CIfA Cymru/Wales 2017). The field system may form an extension of fields established or related to the enclosure seen in L8 and L12. As such they would play a significant part in understanding how sites work in the landscape, permanent versus seasonal use and understanding the social role of hillforts (Gale, 2010).

9.1.3 The remains associated with the burnt mounds are of regional significance and can contribute to general published research aims (CIfA Cymru/Wales 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.

9.1.4 The cluster of three burnt mounds in Area 1, discovered during the excavation, provided virtually no datable artefacts. From the previous evaluation phase similar features were dated by a prehistoric potsherd (Trench 233; field A12) and an Early Bronze Age radiocarbon date (Trench 875; field K4), (Wessex 2016, 14-15). The excavation phase has produced two more very similar radiocarbon dates, both from the one mound and its underlying tough fill, corroborating the Late Neolithic to Early Bronze Age date (widest range 2281-2035 BC). 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 to Early Bronze Age transition

(Kenney 2012, 266). This could indicate that it is less of a transition and part of a distinct activity pattern for that specific community at that date.

9.1.5 A recent analysis of burnt mounds in northwest Wales (Kenney 2012) has highlighted the important relationships between burnt mounds and contemporary settlement and it stated that large-scale development archaeology could be a means to resolve it (Kenney 2012, 270). Therefore, the Area 1 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, confirmed by radiocarbon dating in one instance (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 Wales/Cymru 2017).

9.1.6 The three Area 1 burnt mounds are similar to those seen in Field K4, which comprised four separate mound deposits that may have been elements of a single mound or such as in Field K11 where they may have represented separate episodes of activity at the same location. The Area 1 trough/pits were, however, not identical to those in Field K4 as they were not fire-reddened, and the fills contained only low concentrations of charcoal and no fragments of fired clay. In comparison to the burnt mounds in Field K11, Area 3 of Middle to Late Bronze date, the Area 1 remains were of an earlier Late Neolithic to Early Bronze Age date, demonstrating that there are variations.

9.1.7 There were variations between the grouped burnt mounds encountered during the project. There was one cluster in a valley containing a confluence of streams around the edges of a probable former mere (Fields A7, 8, 10, O15, 18, 19 and 21; Wessex 2016, Figures 6.2, 6.3). There was a second concentration further northwest closer to the coast (Fields L1, C13, C16 and K4 and K11). The contrasting patterns in the distributions, size and forms of burnt mounds and artefact scatters (pottery, flints etc) between the two areas suggest that their land use and character differed in prehistory and it is hypothesised that the north-western group, in fields, might be more domestic in character due to the association with other features and higher pottery concentrations.

9.1.8 Burnt mounds are repositories of palaeoenvironmental data. There is particular emphasis on obtaining accurate radiocarbon dates in order that the chronology of

sites and ceramic sequences can ascertained. The soil samples from the features contained quantities of charcoal. 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 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.

9.1.9 Due to the lack of artefactual evidence from Area 1 it is difficult to gain further insights on many aspects that rely on material culture such as social change during the Late Neolithic to Bronze Age, or later, eras or understanding regional, national and international trade and how the development of social networks fitted into this. The finds assemblage comprised a small quantity of lithic artefacts and corroded iron. The finds assemblage did not provide good dating evidence for the site and is of low archaeological potential.

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

9.2.3 The excavation of the Late Neolithic to Bronze Age burnt mounds, associated pits/troughs and the recovery of ecofactual material requires full analysis. This will provide fuller dating, characterisation and distribution of burnt mounds which will contribute to research aims on the wider setting of prehistoric sites and exploitation of the natural environment. In particular, the Area 1 burnt mound data should be

combined with data from Fields L1, C13, C16 and K4 and K11 and the cluster to the southwest and will further enhance the recent regional review carried out by Kenney (2012).

9.2.4 A full analysis of the charcoal from environmental samples will provide insights into the wider exploitation of the natural environment. This will be particularly focused on the Late Neolithic to Bronze Age since the secure data relates to that era. This would include submitting any further material suitable for radiocarbon dating to compare the dates of the three mounds and to produce a better understanding of the dating, particularly through the use of Bayesian statistics (Whittle *et al.* 2011).

9.2.5 The extremely small finds assemblages warrant no further work other than that the lithics should be considered alongside other areas with the wider project.

9.2.6 The dating, characterisation and pattern of historic field systems is identified as a specific research aim in the WSI (HNP 2015, 2016) and full analysis of the environmental evidence from the rectilinear field system may assist with providing a date and remains for the remains which would help in understanding the development and degree of continuity of land divisions in Anglesey.

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

Bale, R., Bates, M., Bell, M., Carruthers, W., Davies, T., Grant, F., Madgwick, R., Mighall, T., Mulville, J., Nayling, N. and Treasure, E. 2017. Refresh of the Research Agenda for Wales: Palaeoenvironments

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*, English Heritage, Portsmouth

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.

CIfA 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, F 2010. Summary of comments on Late Bronze Age/Iron Age Research Agenda: Review of the Research Framework for the Archaeology of Wales Responses to Research Framework Questions 18/08/2010
https://www.archaeoleg.org.uk/pdf/reviewdocs/laterbronzereview.pdf

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) 2017. Technical Update to the Written Scheme of Investigation for Archaeological Trial Trenching and Excavation: Investigation of Ring ditch Site (Fields L3 and L4), unpublished report

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.

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

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

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

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

Stace C, 2010. *New Flora of the British Isles* (3rd Ed.), C.U.P., Cambridge

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

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

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

Wessex Archaeology (Wessex) 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**: 198-202

APPENDICES

APPENDIX 1: CONTEXT INDEX

Context Number	Context Type	Description	Width	Height/Depth	Discussion
1001	Layer	Dark brown silty sand	N/A	0.17-0.36m	Topsoil
1002	Layer	Mid brown silty sand	N/A	0.1-0.38m	Subsoil
1003	Layer	Light to mid orangey brown sandy clay	N/A		Natural Geology
1004	Layer	unknown			Colluvium
1005	Cut	Sub-circular in plan with gently concave sides and base	0.77m	0.25m	Pit, filled by 1006
1006	Fill	Light to mid brown sandy clay, moderately frequent sub-angular stone and flint fragments	0.77m	0.25m	Fill of pit [1005]
1007	Cut	elongated oval, N-S aligned, with slightly asymmetrical concave sides and base	2.7m	0.4m	Tree Throw, filled by 1008, 1015 and 1016
1008	Fill	Mid brownish grey silty sand, rare pebbles+E48	2.7m	0.19m	Lower fill in [1007]
1009	Cut	Oval feature with concave sides and base.	0.73m	0.3m	Pit, filled by 1010
1010	Fill	Light greyish brown sandy clay with low frequency of charcoal and occasional medium sub-angular stones	0.73m	0.3m	Fill of pit [1009] with burnt inclusions
1011	Cut	Irregular oval, E-W aligned, concave sides and base	0.59m	0.16m	Tree Throw, filled by 1012
1012	Fill	Mid yellowish-brown silty clay with moderately frequent rounded stone inclusions	0.59m	0.16m	Natural fill within 1011
1013	Fill	Light greyish brown silty sand, with moderate charcoal inclusions	0.52m	0.15m	Fill of tree throw [1014]
1014	Cut	Irregular oval, E-W aligned, concave sides and base	0.52m	0.15m	Tree Throw, filled by 1013
1015	Fill	Dark greyish black silty sand with occasional charcoal	2.7m	0.04m	Fill within [1007]
1016	Fill	unknown	2.7m	0.13m	Upper fill within [1007]
1017	Cut	Small sub-circular feature with concave sides and base	0.27m	0.1m	Posthole, filled by 1018
1018	Fill	Dark blackish brown silty clay, moderate gravel inclusions	0.27m	0.1m	Posthole, fill of [1017]
1019	Cut	NW-SE aligned ditch, moderately steep straight sides, concave base	1.1m	0.38m	Ditch, filled by 1020

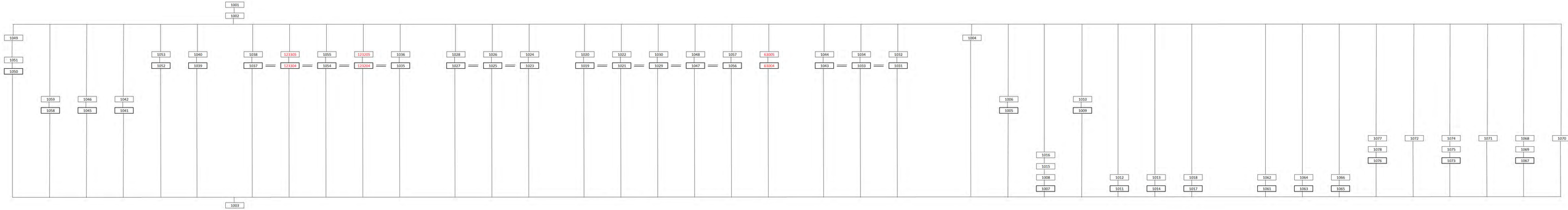
Context Number	Context Type	Description	Width	Height/Depth	Discussion
1020	Fill	Mid greyish orange silty sand, occasional small stones	1.1m	0.38m	Fill of ditch [1019]
1021	Cut	NW-SE aligned ditch, moderately steep straight sides, narrow concave base	1.3m	0.5m	Ditch, filled by 1021
1022	Fill	Mid greyish orange sandy silt, occasional small stones	1.3m	0.5m	Fill of ditch [1021]
1023	Cut	NW-SE aligned ditch, moderately steep straight sides, concave base	0.8m	0.2m	Ditch, filled by 1024
1024	Fill	unknown	0.8m	0.2m	Fill of ditch [1023]
1025	Cut	NW-SE aligned ditch, gentle gradient straight sides, concave base	0.9m	0.2m	Ditch, filled by 1026
1026	Fill	Mid brown sandy silt, occasional small stones	0.9m	0.2m	Fill of ditch [1025]
1027	Cut	NW-SE aligned ditch, gentle gradient straight sides, concave base	0.64m	0.17m	Ditch, filled by 1028
1028	Fill	Mid greyish brown sandy clay, occasional small stones	0.64m	0.17m	Fill of ditch [1027]
1029	Cut	NW-SE aligned ditch, moderately steep straight sides, concave base	1.4m	0.56m	Ditch, filled by 1030
1030	Fill	Mid reddish-brown silty sand with moderate gravel and small stones	1.4m	0.56m	Fill of ditch [1029]
1031	Cut	NW-SE aligned ditch, concave sides and base	0.9m	0.25m	Ditch, filled by 1032
1032	Fill	Mid reddish-brown silty sand, moderate frequency of small sub-angular stones	0.9m	0.25m	Fill of ditch [1031]
1033	Cut	NW-SE aligned ditch, concave sides and base	1.1m	0.35m	Ditch, filled by 1034
1034	Fill	Dark greyish brown sandy silt, occasional small sub-angular stones	1.1m	0.35m	Fill of ditch [1033]
1035	Cut	NE-SW aligned ditch, moderately steep concave sides and base, possible terminus	0.7m	0.15m	Ditch, filled by 1036
1036	Fill	Dark greyish brown sandy silt, occasional small sub-angular stones	0.7m	0.15m	Fill of ditch [1035]
1037	Cut	NE-SW aligned ditch, moderately steep concave sides and base, possible terminus	1.1m	0.35m	Ditch, filled by 1038

Context Number	Context Type	Description	Width	Height/Depth	Discussion
1038	Fill	Dark orangey brown sandy silt, moderate frequency small sub-angular stones	1.1m	0.35m	Fill of ditch [1037]
1039	Cut	NE-SW aligned ditch, shallow, gently concave sides and flat base	0.86m	0.09m	Ditch, filled by 1040
1040	Fill	Mid brown sandy silt, occasional small stones	0.86m	0.09m	Fill of ditch [1039]
1041	Cut	Sub-circular in plan with gently concave sides and base	1.2m	0.25m	Pit, filled by 1042
1042	Fill	Mid orangey brown silty sand, occasional small stones	1.2m	0.25m	Fill of pit [1041]
1043	Cut	NW-SE aligned ditch, concave sides and base, possible terminus	0.65m	0.22m	Ditch, filled by 1044
1044	Fill	Mid brown silty sand, occasional grit and small	0.65m	0.22m	Fill of ditch [1043]
1045	Cut	Sub-circular in plan with gently concave sides and base	0.73m	0.18m	Pit, filled by 1046
1046	Fill	Mid yellowish-brown silty sand, occasional small stones	0.73m	0.18m	Fill of pit [1045]
1047	Cut	NW-SE aligned ditch, moderately steep straight sides, narrow concave base	1.4m	0.6m	Ditch, filled by 1048
1048	Fill	Mid brown silty sand, moderate small stones	1.4m	0.6m	Fill of ditch [1047]
1049	Layer	Mid brown sandy silt with gravel inclusions		0.1m	Colluvium
1050	Cut	N-S aligned ditch, concave sides and base		0.2m	Ditch, filled by 1051
1051	Fill	Mid greyish brown sandy silt		0.2m	Fill of ditch [1050]
1052	Cut	E-W aligned shallow ditch, concave sides and base	0.86m	0.08m	Ditch, filled by 1053
1053	Fill	Mid greyish brown sandy silt	0.86m	0.08m	Fill of ditch [1052]
1054	Cut	NE-SW aligned ditch, moderately steep straight sides and narrow flattish base	1.4m	0.65m	Ditch, filled by 1055
1055	Fill	unknown	1.4m	0.65m	Fill of ditch [1054]
1056	Cut	NW-SE aligned ditch, moderately steep straight sides, narrow concave base	0.5m	0.33m	Ditch, filled by 1057
1057	Fill	unknown	0.5m	0.33m	Fill of ditch [1056]
1058	Cut	Circular in plan, concave sides and base	0.7m	0.17m	Pit, filled by 1059
1059	Fill	Mid greyish brown silty sand	0.7m	0.17m	Fill of pit [1058]
1060	Layer	unknown		0.4m	Colluvium

Context Number	Context Type	Description	Width	Height/Depth	Discussion
1061	Cut	Sub-circular in plan with gently concave sides and base	0.45m	0.15m	Tree Throw, filled by 1062
1062	Fill	Dark blackish brown sandy silt	0.45m	0.15m	Fill within [1061]
1063	Cut	Sub-circular in plan with gently concave sides and base	1m	0.15m	Tree Throw, filled by 1064
1064	Fill	Mid greyish brown sandy silt	1m	0.15m	Fill within [1063]
1065	Cut	Sub-circular in plan with irregular sides and base	0.8m	0.28m	Tree Throw, filled by 1066
1066	Fill	Mid brown sand	0.8m	0.28m	Fill within [1065]
1067	Cut	Oval feature with moderately steep concave sides and a flat base.	1.3m	0.35m	Pit or Trough filled by 1068 and 1069
1068	Fill	Dark brownish black sandy silt, frequent small to medium sub-angular stones, some discoloured pink, some cracked	1.3m	0.3m	Fill of pit [1067], heat affected stony deposit
1069	Fill	Mid yellowish-brown silty clay	0.08m	0.08m	Fill of pit [1067], possible clay lining
1070	Layer	Blackish grey silty clay, frequent inclusions of burnt stones and charcoal	2.8m	0.1m	Burnt mound
1071	Layer	Black silty clay, frequent inclusions of burnt stones	2.8m	0.1m	Burnt mound
1072	Layer	Dark greyish brown sandy silt, frequent inclusions of burnt stones	2.65m	0.11m	Burnt mound
1073	Cut	Circular feature with moderately steep concave sides and gently concave base.	0.6m	0.37m	Pit or Trough filled by 1074 and 1075
1074	Fill	Dark greyish black sandy silt, frequent small to medium sub-angular stones, some discoloured pink, brittle and cracked	0.6m	0.25m	Fill of pit [1073], heat affected stony deposit
1075	Fill	Mid greyish yellow silty clay	0.04m	0.04m	Fill of pit [1073], possible clay lining
1076	Cut	Oval feature with gently concave sides and base.	1.5m	0.15m	Pit or Trough filled by 1077 and 1078
1077	Fill	Mid greyish brown sandy silt	1.5m	0.15m	Fill of pit [1076]
1078	Fill	Mid brownish grey sandy clay	0.07m	0.07m	Fill of pit [1076], possible clay lining
1079	Group	NW-SE aligned boundary ditch, interventions 1023, 1025, 1027	N/A	N/A	NW-SE boundary ditch

Context Number	Context Type	Description	Width	Height/Depth	Discussion
1080	Group	NE-SW aligned boundary ditch, interventions 1035, 1037, 1054 (and evals 123204, 123304)	N/A	N/A	NE-SW boundary ditch
1081	Group	NW-SE aligned boundary ditch, interventions 1079, 1021, 1029, 1047, 1056 (and eval 6304)	N/A	N/A	NW-SE boundary ditch
1082	Group	NW-SE aligned boundary ditch, interventions 1031, 1033, 1043	N/A	N/A	NW-SE boundary ditch

APPENDIX 2: HARRIS MATRIX



11111 Wessex excavation number
22222 Wessex or Headland evaluation number

APPENDIX 3: PLATES

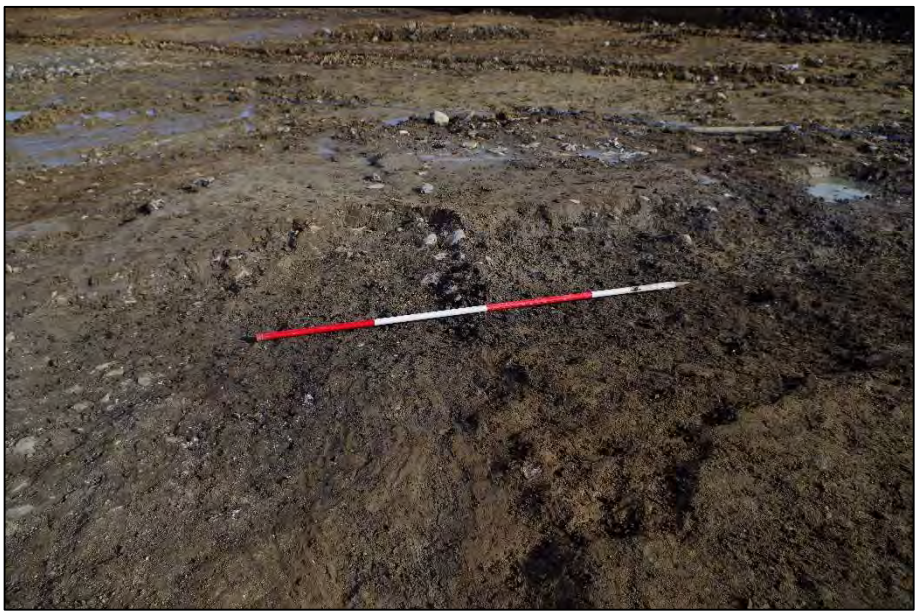


Plate 1; Spread / burnt mound **(1070)**, facing WNW, 2m scale

Plate 2; Pit/trough **[1067]**, facing NE, 0.5m scale

Plate 3; Spread / burnt mound **(1071)**, and pit/trough **[1073]**, (fully excavated) facing E, 1m scale

Plate 4; Pit / trough **[1073]** part-excavated, facing E, 0.5m scale

Plate 5; Spread / burnt mound **(1072)**, facing SE, 1m scale

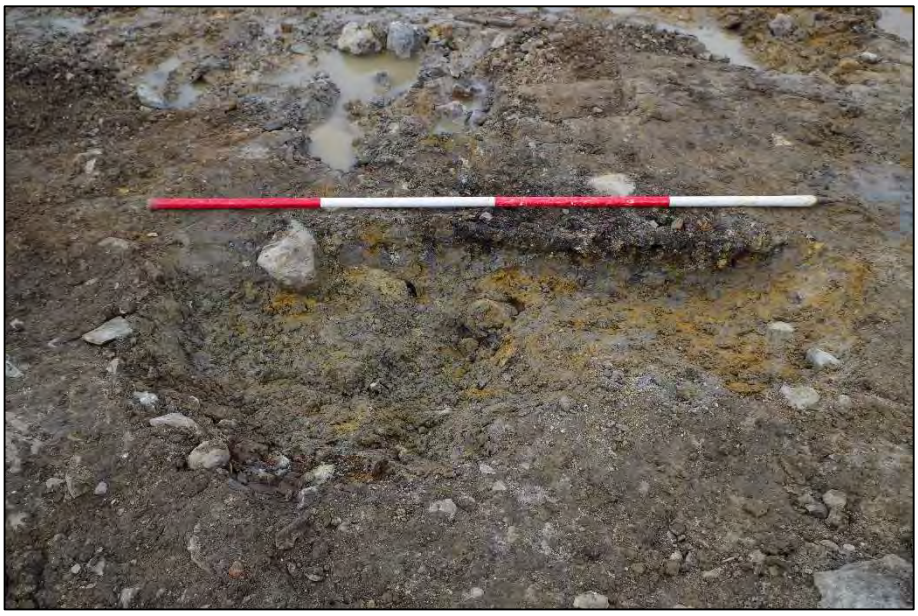


Plate 6; Pit / trough **[1076]**, facing WNW, 2m scale

Plate 7; Ditch **[1025]**, facing N, 0.5m scale

Plate 8; Ditch **[1037]**, facing W, 0.5m scale

Plate 9; Ditch **[1021]**, facing SE, 1m scale

Plate 10; Ditch **[1031]**, facing SE, 0.5m scale

Plate 11; Ditch **[1039]**, facing N, 0.5m scale

Plate 12; Ditch **[1052]**, facing W, 0.5m scale

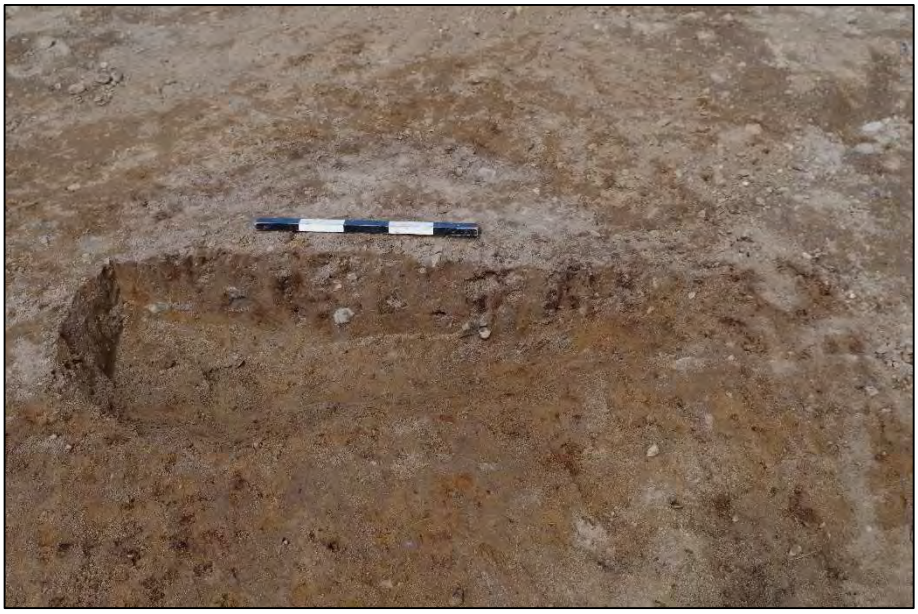


Plate 13; Pit **[1041]**, facing E, 0.5m scale

Plate 14; Pit **[1045]**, facing S, 1m scale

Plate 15; Pit **[1009]**, facing WNW, 1m scale

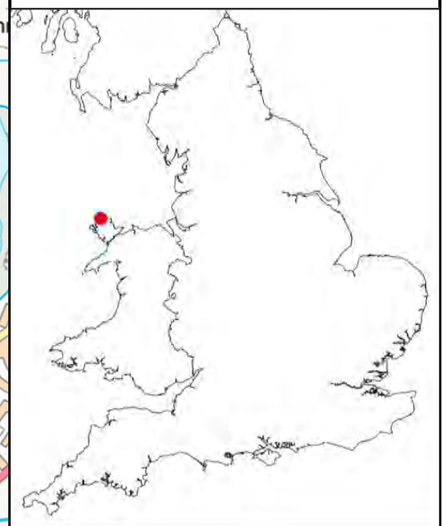
APPENDIX 4: FIGURES

DO NOT SCALE FROM THIS DRAWING

Wylfa Newydd development area

Excavation area

Hot spots



Mynydd y Wylfa
Cemaes Bay
Cemlyn Bay
Cerrig Brith
Porth-y-Pistyll
Porth y Wylfa
Wylfa Head
Penrhyn
Fford Y Traeth
Cemaes
High Street
Tormar Cottage
Felin Gafnan
Maen Y Bugail
Tyddyn-Goronwy
Tyddyn Sydney
Swn Y Mor
Cafnan
Tregele
EV9
Fford Y Felin
Cemlyn Lodge
Caerdegog Isaf
Mynydd-Lthel
Nanner
Foel Fawr
Gors
Caerdegog Uchaf
Groes-Fechan
Tyn Cae
The Bungalow
Cromlech

Area 9 (F1)
Area 11 L1(w)
Area 12 L1(c)
Area 13 L1(e)
Area 14 (L1/L20)
Area 1 (L3/L4)
Area 17 (L2)
Area 16 (K2)
Area 2 (L8/L12/L16)
Area 3 (K11)
Area 5 (A1)
Area 4 (E3)
Area 7 (A3)
Area 8 (A9)
Area 18 O6
Area 19 O5(n)
Area 20 O5(s)

234000/392000
237000/392000

0 1km

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

CLIENT
Horizon Nuclear Power

PROJECT
Area 1,
Wylfa Newydd, Anglesey

DRAWING TITLE
Figure 1:
Wylfa Newydd development area and excavated sites

DRG No.	REV
CL12283-101	A

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

DRAWN BY	CHECKED BY	APPROVED BY
HP	DAC	FG

wardell armstrong
CARLISLE | TEL 01228 550 575
WWW.WARDELL-ARMSTRONG.COM
BIRMINGHAM LEEDS
BOLTON LONDON
CARDIFF MANCHESTER
EDINBURGH N-U-T
GLASGOW STOKE ON TRENT

N:\CP\CL12283 - WYLFA POSTEX ASSESSMENT\03 - DESIGN\AUTOCAD\AREA 1\CL12283-101-A.DWG

Coastal Slope

Path (um)

Path (um)

Scattered Rock

Area 1 (L3/L4)

Path (um)

Coastal Slope

Path (um)

236150/393550

Area 17 (L2)

Area 2 (L8/L12/L16)

236450/393550

0

100m

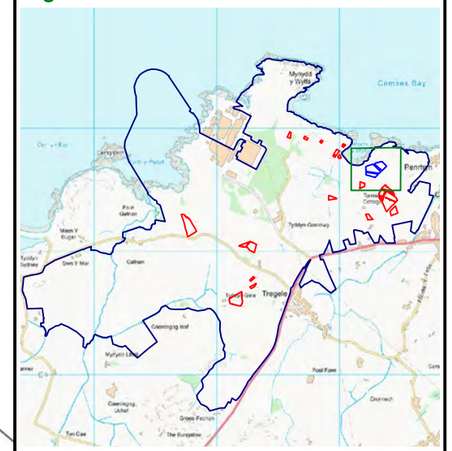
DO NOT SCALE FROM THIS DRAWING

Wylfa Newydd development area

Excavation area

Excavation areas in vicinity

Figure location:



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

CLIENT

Horizon Nuclear Power

PROJECT

Area 1,
Wylfa Newydd, Anglesey

DRAWING TITLE

Figure 2:
Detailed site location

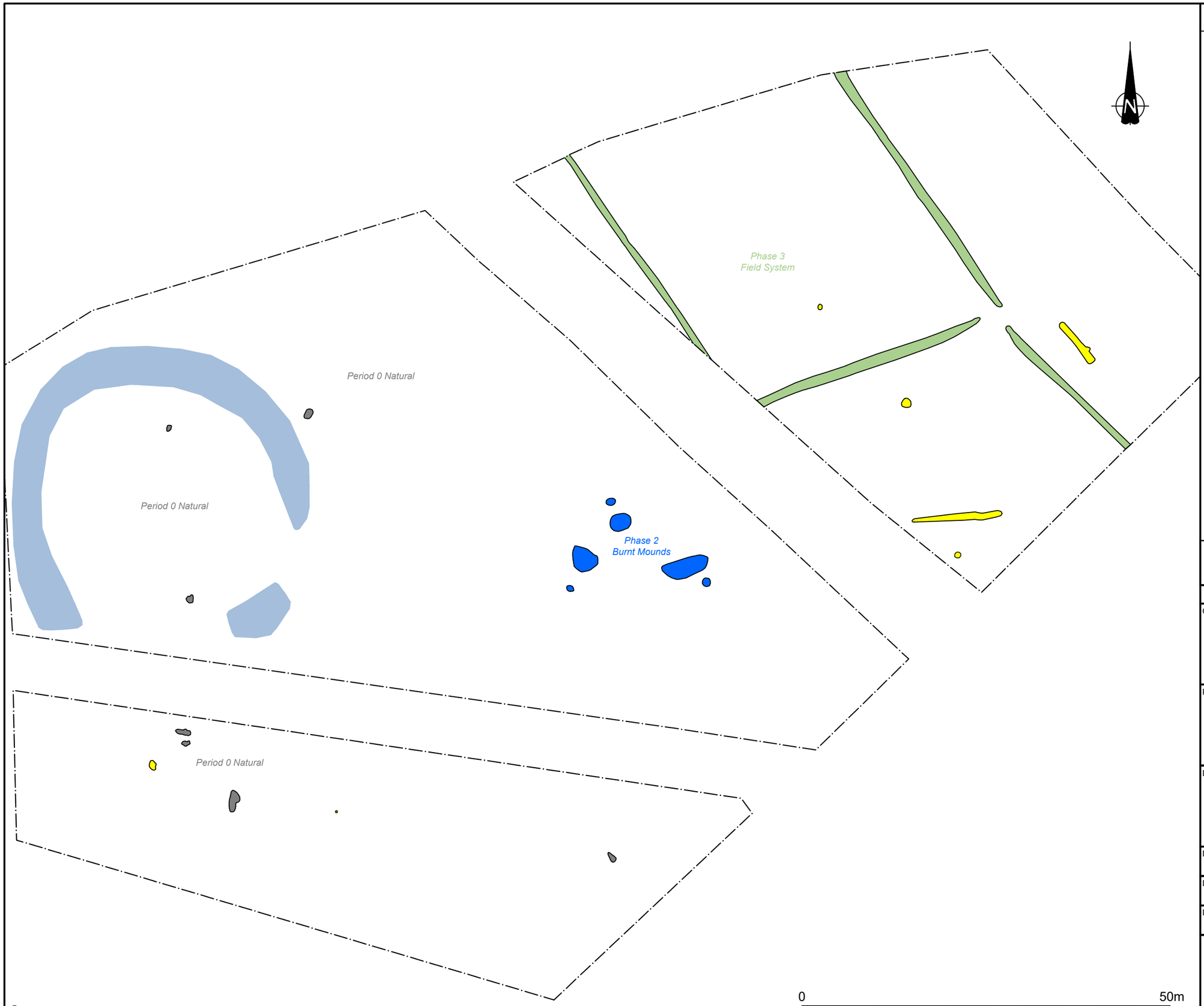
DRG No.		REV
CL12283-102		A
DRG SIZE	SCALE	DATE
A3	1:1,250	Jan 2020
DRAWN BY	CHECKED BY	APPROVED BY
HP	FG	FG

wardell armstrong

CARLISLE | TEL 01228 550 575
WWW.WARDELL-ARMSTRONG.COM

BIRMINGHAM, BOLTON, CARDIFF, EDINBURGH, GLASGOW, LEEDS, LONDON, MANCHESTER, N-U-T, STOKE ON TRENT

N:\CP\CL12283 - WYLFA POSTEX ASSESSMENT\03 - DESIGN\AUTOCAD\AREA 1\CL12283-102-A.DWG



DO NOT SCALE FROM THIS DRAWING

Limit of excavation

Henge noted in 2012 Fugro Aperio report

Trench location

Period referenced in text:

Period 0 Natural

Period 2 Neolithic and Early Bronze Age 4000 – 1500 BC

Period 4-7 Post-prehistoric

Undated

REVISION	DETAILS	DATE	DR'N	CHK'D	APP'D
B	Edits from county archaeolgist	22/04/21	HP	LG	FG

CLIENT

Horizon Nuclear Power

PROJECT

Area 1,
Wylfa Newydd, Anglesey

DRAWING TITLE

Figure 3:
Area 1; Period plan

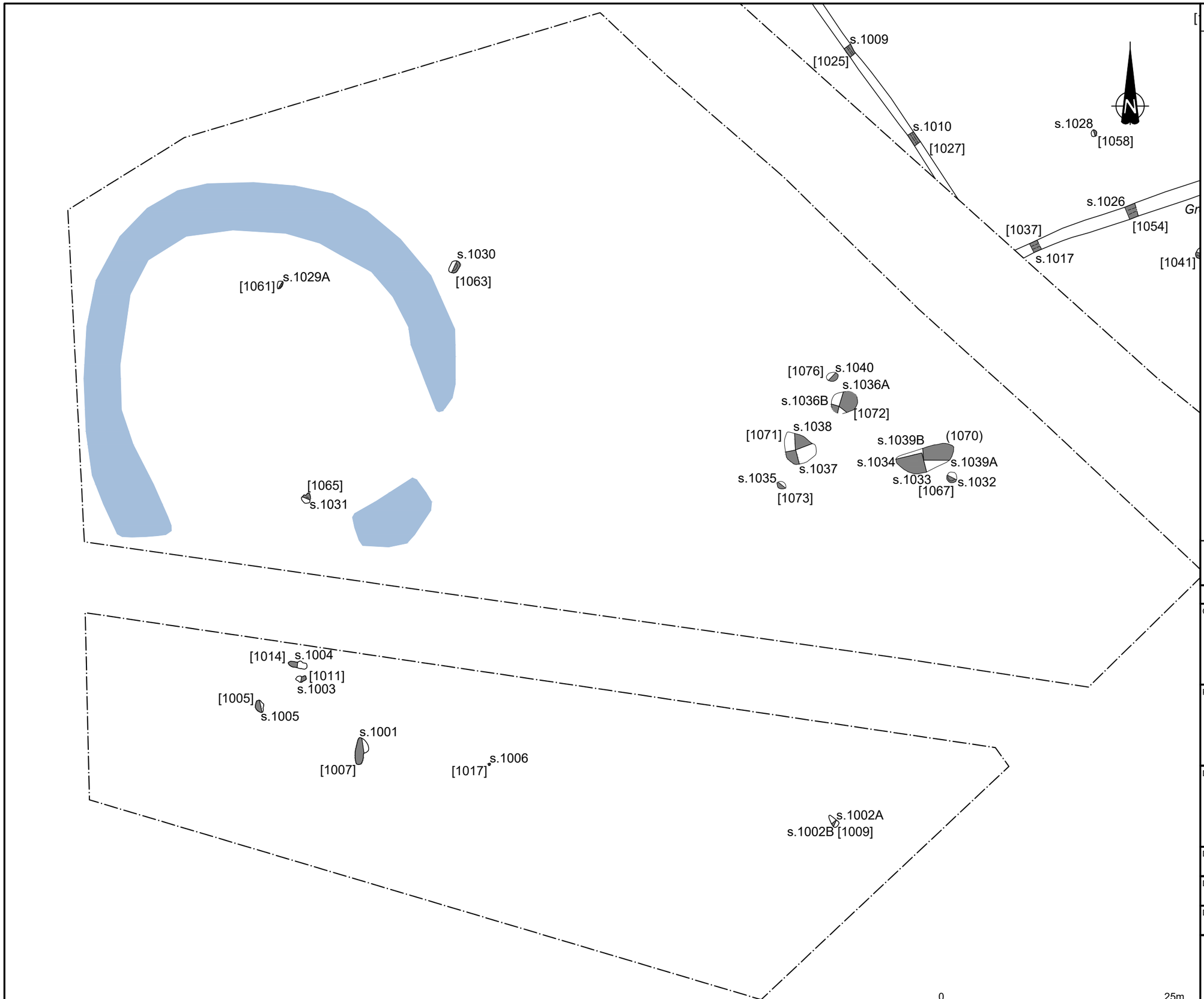
DRG No.	REV
CL12283-103	A

DRG SIZE	SCALE	DATE
A3	1:500	Feb 2020

DRAWN BY	CHECKED BY	APPROVED BY
VT/HP	FG	FG

wardell armstrong
CARLISLE | TEL 01228 550 575
WWW.WARDELL-ARMSTRONG.COM
BIRMINGHAM, BOLTON, CARDIFF, EDINBURGH, GLASGOW, LEEDS, LONDON, MANCHESTER, N-U-T, STOKE ON TRENT

N:\CP\CL12283 - WYLFA POSTEX ASSESSMENT\03 - DESIGN\AUTOCAD\AREA 1\CL12283-103-105-B.DWG



DO NOT SCALE FROM THIS DRAWING

(1000) Context numbers

Sections shown in further figures

Sections not shown in further figures

Limit of excavation

Excavated area

Henge noted in 2012 Fugro Aperio report

REVISION	DETAILS	DATE	DR'N	CHK'D	APP'D
B	Edits from county archaeolgist	22/04/21	HP	LG	FG

CLIENT

Horizon Nuclear Power

PROJECT

Area 1,
Wylfa Newydd, Anglesey

DRAWING TITLE

Figure 4:
Area 1; detailed plan (south-west)

DRG No.	REV
CL12283-104	A

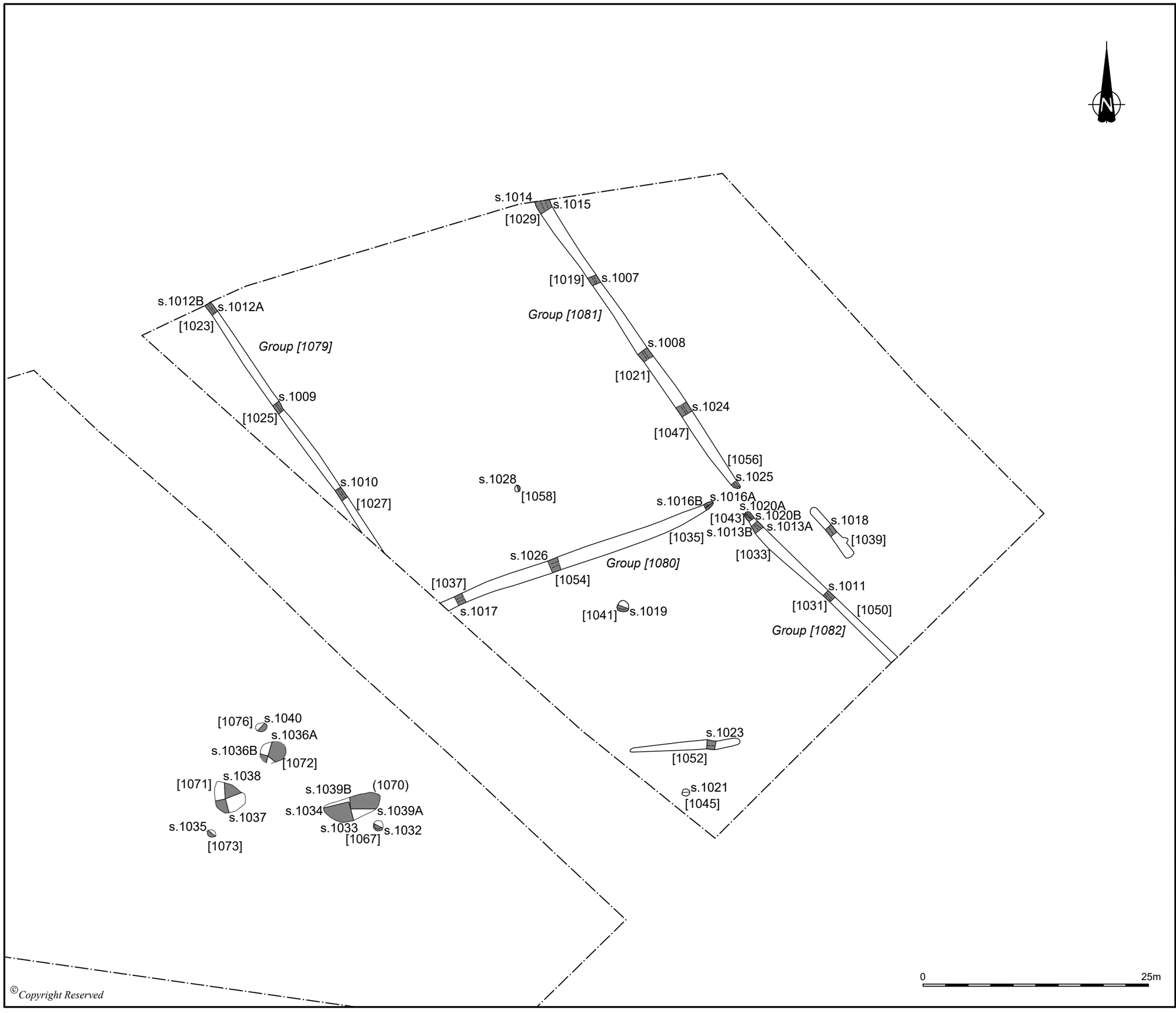
DRG SIZE	SCALE	DATE
A3	1:400	Feb 2020

DRAWN BY	CHECKED BY	APPROVED BY
VT/HP	FG	FG

wardell armstrong
CARLISLE | TEL 01228 550 575
WWW.WARDELL-ARMSTRONG.COM
BIRMINGHAM LEEDS
BOLTON LONDON
CARDIFF MANCHESTER
EDINBURGH N-U-T
GLASGOW STOKE ON TRENT

N:\CP\CL12283 - WYLFA POSTEX ASSESSMENT\03 - DESIGN\AUTOCAD\AREA 1\CL12283-103-105-B.DWG

DO NOT SCALE FROM THIS DRAWING



(1000) Context numbers

Sections shown in further figures

Sections not shown in further figures

Limit of excavation

Excavated area

REVISION	DETAILS	DATE	DR'N	CHK'D	APP'D
B	Edits from county archaeolgist	22/04/21	HP	LG	FG

CLIENT

Horizon Nuclear Power

PROJECT

Area 1,
Wylfa Newydd, Anglesey

DRAWING TITLE

Figure 5:
Area 1; detailed plan (south-east)

DRG No.	REV
CL12283-105	A

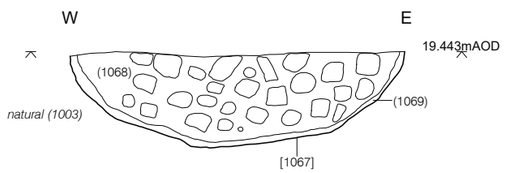
DRG SIZE	SCALE	DATE
A3	1:400	Feb 2020

DRAWN BY	CHECKED BY	APPROVED BY
VT/HP	FG	FG

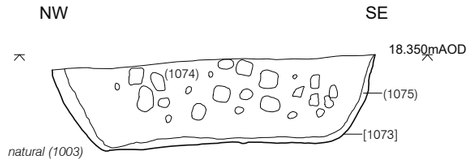
wardell armstrong
CARLISLE | TEL 01228 550 575
WWW.WARDELL-ARMSTRONG.COM
BIRMINGHAM, BOLTON, CARDIFF, EDINBURGH, GLASGOW, LEEDS, LONDON, MANCHESTER, N-U-T, STOKE ON TRENT

N:\CP\CL12283 - WYLFA POSTEX ASSESSMENT\03 - DESIGN\AUTOCAD\AREA 1\CL12283-103-105-B.DWG

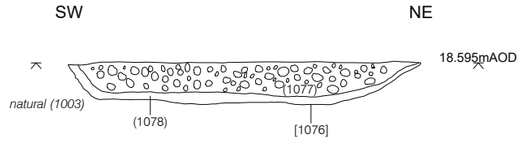
Period 2 sections:



Section 1032. South facing section across feature [1067].

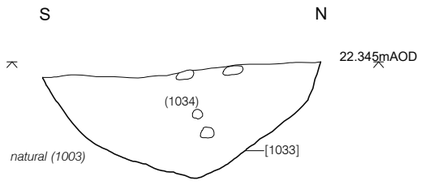


Section 1035. South-west facing section across feature [1073].

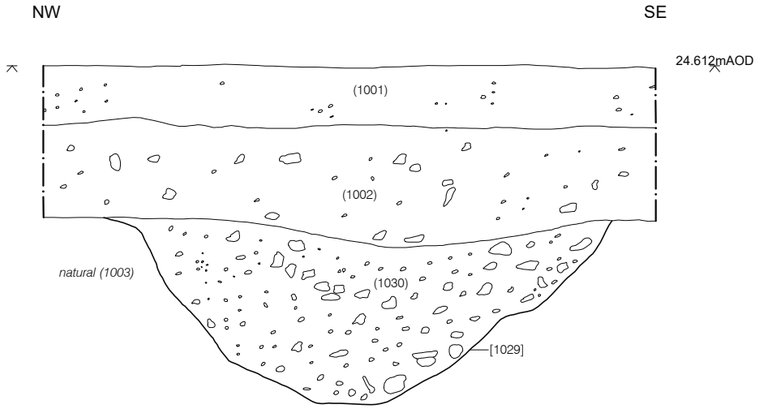


Section 1040. South-east facing section across feature [1076].

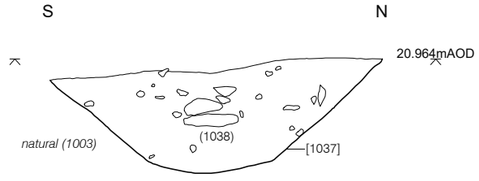
Period 4 sections:



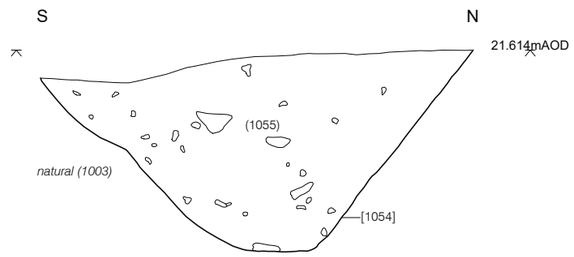
Section 1013B. South-east facing section across ditch [1033].



Section 1014. South-west facing section across ditch [1029].

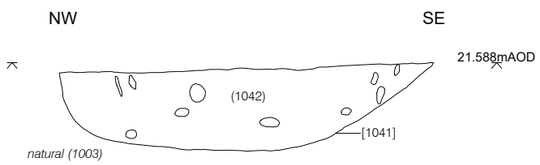


Section 1017. East facing section across ditch [1037].



Section 1026. East facing section across ditch [1054].

Undated section:



Section 1019. South-west facing section across feature [1041].

0 2m

DO NOT SCALE FROM THIS DRAWING

(1000) Context numbers

Limit of excavation

Height mAOD

Stones

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

CLIENT

Horizon Nuclear Power

PROJECT

Area 1,
Wylfa Newydd,
Anglesey

DRAWING TITLE

Figure 6:
Area 1; sections

DRG No.	REV
CL12283-506	A

DRG SIZE	SCALE	DATE
A3	1:20	Feb 2020

DRAWN BY	CHECKED BY	APPROVED BY
VT/HP	FG	FG

wardell armstrong
CARLISLE | TEL 01228 550 575
WWW.WARDELL-ARMSTRONG.COM
BIRMINGHAM LEEDS
BOLTON LONDON
CARDIFF MANCHESTER
EDINBURGH N-U-T
GLASGOW STOKE ON TRENT

N:\CP\CL12283 - WYLFA POSTEX ASSESSMENT\03 - DESIGN\AUTOCAD\AREA 1\CL12283-106-A.DWG

APPENDIX 5: RADIOCARBON CERTIFICATES

BetaCal 3.21

Calibration of Radiocarbon Age to Calendar Years

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

(Variables: d13C = -25.2 o/oo)

Laboratory number **Beta-553547**

Conventional radiocarbon age **3750 ± 30 BP**

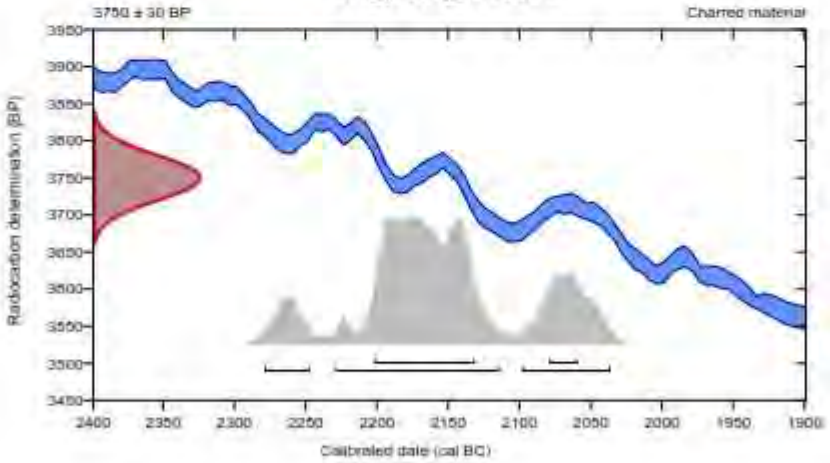
95.4% probability

(66.7%)	2231 - 2116 cal BC	(4180 - 4065 cal BP)
(21%)	2100 - 2038 cal BC	(4049 - 3987 cal BP)
(7.7%)	2281 - 2249 cal BC	(4230 - 4198 cal BP)

68.2% probability

(58.3%)	2204 - 2133 cal BC	(4153 - 4082 cal BP)
(9.9%)	2081 - 2061 cal BC	(4030 - 4010 cal BP)

A1_(1074)_< 1003 >



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 = -25.8 o/oo)

Laboratory number **Beta-553548**

Conventional radiocarbon age **3740 ± 30 BP**

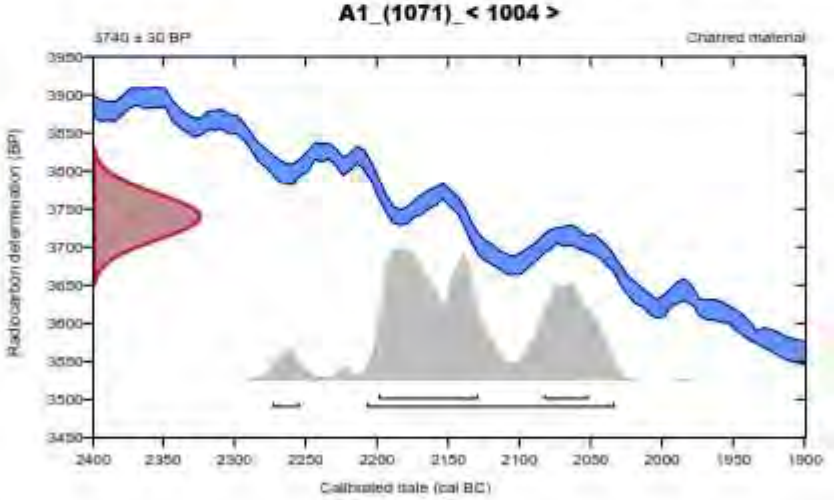
95.4% probability

(92.1%)	2209 - 2035 cal BC	(4158 - 3984 cal BP)
(3.3%)	2275 - 2256 cal BC	(4224 - 4205 cal BP)

68.2% probability

(50.2%)	2201 - 2131 cal BC	(4150 - 4080 cal BP)
(18%)	2085 - 2054 cal BC	(4034 - 4003 cal BP)

A1_(1071)_< 1004 >



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

APPENDIX 6: GAZETTEER OF FEATURES ENCOUNTERED IN AREA 1

Feature	*Date*	*Description*	*easting, northing*
Burnt Mounds	Neolithic to Early Bronze Age (4000-1500BC)	A cluster of three burnt mounds in the form of three spreads, each with an associated pit / trough	236302,393667
Rectilinear Field System	Most likely Romano-British era (AD43-410), or medieval to post-medieval period, based on morphological similarities to such features in the region	Rectilinear field system aligned northwest to southeast	236322,393712

APPENDIX 7: POST-EXCAVATION ASSESSMENT METHOD STATEMENT

wardell-armstrong.com

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

HORIZON

WYLFA NEWYDD

POST EXCAVATION ASSESSMENT METHOD STATEMENT

APRIL 2019

wardell armstrong

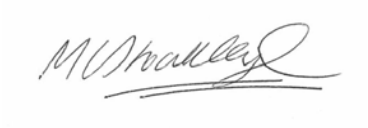
Wardell Armstrong LLP
Marconi Road, Burgh Road Industrial Estate, Carlisle, Cumbria CA2 7NA, United Kingdom
Telephone: +44 (0)1228 550575 www.wardell-armstrong.com

DATE ISSUED: April 2019

JOB NUMBER: **CL12271**

PREPARED BY:

Megan Stoakley — Finds and Archive Specialist



Lynne Gardiner — Senior Environmental Archaeologist

APPROVED BY:

Frank Giecco — Technical Director

Wardell Armstrong LLP is the trading name of Wardell Armstrong LLP, Registered in England No. OC307138.

Registered office: Sir Henry Doulton House, Forge Lane, Etruria, Stoke-on-Trent, ST1 5BD, United Kingdom

UK Offices: Stoke-on-Trent, Cardiff, Carlisle, Edinburgh, Greater Manchester, London, Newcastle upon Tyne, Sheffield, Taunton, Truro, West Bromwich. International Offices: Almaty, Moscow

WYLFA NEWYDD POST EXCAVATION ASSESSMENT METHODOLOGY

Introduction

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

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

Requirement for and Purpose of the Post Excavation Assessment

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

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

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

Post Excavation Assessment Stages and Outputs

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

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

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

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

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

Stage 1 Processing

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

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

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

Stage 2 Archival Preparation

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

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

Stage 3 Data Assessment

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

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

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

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

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

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

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

Report Template

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

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

2. **Introduction**

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

2.2 Scope of the project.

2.3 Dates/duration of fieldwork.

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

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

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

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

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

3. **Summary of the excavation methodology**

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

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

3.3 Site planning strategy with justifications for the applied methodology.

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

4. **Site archive**

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

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

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

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

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

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

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

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

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

5. Stratigraphic data

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

5.2 Statement of significance of the stratigraphic data.

5.3 *Final pre-excavation plan.*

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

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

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

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

6. Artefacts

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

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

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

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

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

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

7. **Palaeoenvironment**

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

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

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

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

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

7.6 *Representative photographs of key assemblages*.

8. **Human remains**

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

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

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

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

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

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

9. **Discussion**

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

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

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

10. **Statement of potential**

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

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

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

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

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

11 Bibliography of sources used in the compilation of the PXA

12. Updated Project Design

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

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

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

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

12.4 Detail of illustrations required to support the stratigraphic analysis.

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

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

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

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

12.9 Details of illustrations required to support the artefact analysis.

12.10 Requirement for conservation works on material archive.

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

12.12 Details of resultant technical/archive report.

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

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

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

Task breakdown for PXA

1. **Processing**

1.1 Environmental sample processing

1.2 Cleaning human remains

1.3 Bulk finds cleaning

1.4 Small finds cleaning

1.5 Artefact stabilisation

2. **Archival preparation**

2.1 Finds marking

2.2 X-raying metal objects

2.3 Archive box purchase

2.4 Boxing

2.5 Site record checking and cross-referencing

2.6 Compilation of list of archival sources

2.7 Records scanning

3. **Data assessment**

3.1 Zooarchaeological remains

3.2 Insects

3.3 Snails

3.4 Shells

3.5 Plant macrofossils

3.6 Pollen

APPENDIX 1 METHOD STATEMENT: STAGE 1 FINDS PROCESSING

Finds processing and assessment summary

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

Washing and cleaning

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

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

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

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

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 500µm sieve and washing the sample through until all of the sediment has been removed. The latter is essential or the fluid in which the sample is stored will become cloudy. Once clean the sample is removed from the sieve to an airtight jar and stored in ethanol (95% alcohol).

Paraffin Flotation

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

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

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

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

METHOD STATEMENT STAGES 2 AND 3 FINDS ASSESSMENT

Summary

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

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

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

Stage 2

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

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

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

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

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

Time estimates for finds marking and bagging and boxing

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

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

Stage 3

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

Time estimates for preliminary recording

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

Materials costs to be considered to PXA

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

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

wardell-armstrong.com

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 9LJ
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

wardell-armstrong.com

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 9LJ
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