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HORIZON NUCLEAR POWER

WYLFA NEWYDD, ANGLESEY

AREA 16

ARCHAEOLOGICAL POST-EXCAVATION ASSESSMENT REPORT

DECEMBER 2021

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HORIZON NUCLEAR POWER

WYLFA NEWYDD, ANGLESEY

AREA 16 ARCHAEOLOGICAL POST-EXCAVATION ASSESSMENT REPORT

DECEMBER 20211

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SUMMARY

Wardell Armstrong LLP (WA) was commissioned by Horizon Nuclear Power to undertake the post-excavation assessment for archaeological excavations at the new nuclear power station at Wylfa Newydd, Anglesey, Wales, centred on National Grid Reference (NGR): SH 35950 93450. The archaeological fieldwork programme was undertaken in support of a Development Consent Order application (EN010007). The overall fieldwork programme was divided into defined areas and this report details the results of the archaeological excavation at Area 16, which was undertaken in accordance with a Written Scheme of Investigation (WSI) (Horizon Nuclear Power (HNP) 2015), the Technical Update (HNP 2017a) and Community Dig Scope (HNP 2017b). All documents were agreed with Gwynedd Archaeological Planning Services, the archaeological planning advisors to the Isle of Anglesey County Council.

The archaeological work was undertaken over four (4) days between the 4th and the 7th September 2017 and comprised the excavation of an area of 1,312m². The investigation revealed an extensive series of ditches crossing the Site. Furthermore, it was established that these ditches most likely related to an Industrial period field-system. The investigation also identified a single prehistoric pit surviving the Industrial period disturbance.

CRYNODEB

Comisiynwyd Wardell Armstrong LLP (WA) gan Horizon Nuclear Power i gyflawni asesiad ol-gloddio archaeolegol ar gyfer cloddfau archaeolegol ar safle arfaethedig gorsaf bŵer niwclear Wylfa Newydd, Ynys Môn, Cymru, wedi ei ganoli ar Cyfeirnod Grid Cenedlaethol (NGR): SH 36350 93450. Ymgymerwyd ar y rhaglen waith maes archaeolegol i gefnogi cais Orchymyn Cydsyniad Datblygu (EN010007). Rhannwyd y rhaglen gwaith maes i lecynnau diffiniol ac mae'r adroddiad hwn yn manylu canlyniadau cloddfa archaeolegol yn Area 16. Cwblhawyd y gwaith yn unol â'r Cynllun Ymchwiliad Ysgrifenedig (CYY/WSI) (Horizon Nuclear Power (HNP) 2015), y Technical Update (HNP 2017a) a'r Community Dig Scope (HNP 2017b). Cytunwyd pob dogfen â Gwasanaeth Cynllunio Archaeolegol Gwynedd, ymgynghorwyr cynllunio archaeolegol Cyngor Sir Ynys Môn.

Cwblhawyd y gwaith maes archaeolegol dros bedwar diwrnod rhwng y 4ydd a'r 7fed o Fedi 2017, roedd y gloddfa yn mesur o 1,312m². Yn ystod yr ymchwiliad nodwyd nifer helaeth o ffosydd yn croesi'r safle. Sefydlwyd bod y ffosydd yn debygol o fod yn gysylltiedig â chyfundrefn gaeau o'r cyfnod diwydiannol. Hefyd, nodwyd un pydew cynhanesyddol yn goroesi'r aflonyddwch o'r cyfnod diwydiannol.

ACKNOWLEDGEMENTS

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

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

The assessment report was written by Callum Allsop. The figures were produced by Helen Phillips. The finds assessment was undertaken by Miguel Gonzalez and Sue Thompson; the palaeoenvironmental assessment was by Lynne Gardiner. Freddie Sisson supervised the environmental team, which consisted of Katherine Bostock and Megan Lowrie. The project was managed by Damion Churchill and Frank Giecco, and the report was edited by Cat Peters and Frank Giecco.

1 INTRODUCTION

1.1 Project Circumstances and Planning Background

1.1.1 In September 2017, Wessex Archaeology undertook an archaeological excavation in Area 16, Field K2, at Wylfa Newydd, Anglesey (NGR: SH 35950 93450; 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 on the site for which a Development Consent Order application has been submitted to The Planning Inspectorate (EN010007).

1.2 Primary Reference Numbers (PRNs)

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

Table 1.1: PRN gazetteer

PRN	Description	Associated context numbers/PRN
PRN91983	Pit, Palaeolithic and Mesolithic	[16008]
PRN91985	Pit (undated)	[16057]
PRN91986	Pits, uncertain date	[16024], [16036]
PRN91987	Posthole and pit, uncertain date	Posthole [16045], pit [16053]
PRN91984	Rectilinear field system (undated)	Four ditches [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, 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 work undertaken on site at Area 16, the subsequent programme of post-excavation assessment, and the results of this scheme of archaeological excavation.

2 EXCAVATION METHODOLOGY

2.1 Standards and Guidance

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

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

2.2 Documentary Research

2.2.1 An archaeological desk-based assessment was prepared by Cooke *et al* (2012), 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 (2018) to support the DCO application.

2.3 Archaeological Excavation

2.3.1 The excavation of Area 16 comprised the strip map and sample of an area measuring 69 m in length by 39 m in width situated in Field K2 in the eastern part of the proposed development area, encompassing an area of 1,312m^2 (Figures 1 and 2). Area 16, with the other defined areas, had been identified for archaeological excavation based on the results of previous geophysical survey and trial trench evaluation. Features identified in previous trial trenching comprised boundary ditches interpreted as a field system of unknown date (Headland 2017, 11).

2.3.2 The general aims of these investigations 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.*

Research objectives contained in the Framework for the Archaeology of Wales (CIfA Cymru/Wales 2017) were identified in the Technical Update to the WSI (Hounsell 2016, 9):

- *Confirmation of the date, nature, character and extent of potential medieval and prehistoric sites in an order that can be placed into the wider context of Anglesey during these periods. There is particular emphasis on obtaining accurate C14 dates in order that the chronology of sites and ceramic sequences can ascertained.*
- *There is an emphasis on understanding the wider settings of prehistoric sites – with specific reference to 'Understanding how sites work in the landscape, permanent/seasonal use and understanding the social role of hillforts' (Gale, 2010). It is possible that the remains within the proposed investigation area form part of the wider setting of the prehistoric remains seen in the adjacent field to the west (K1 and K4).*
- *To undertake detailed analysis of prehistoric and medieval artefacts and their contexts in order to understand the chronological and typographic development, and use, of the artefacts.*
- *Placing the setting of the information gained from the archaeological investigation into a broader regional and national (including Britain and Ireland) context.*
- *Gaining insights into the local farming economy and the wider exploitation of the natural environment – with particular reference to the exploitation of lakes and bogs (such as the adjacent SSSI site) and the sea.*

- *Identifying and understanding early field systems, their development and degree of continuity.*
- *Further understanding and identification of pasture land in locations other than upland locations – specifically such locations as coastal wetlands, elevated wetlands and moors.*
- *Roman – Medieval transition. Establishing the extent of continuity or discontinuity between the late Roman and Early Medieval periods via analysis of environmental evidence, the agricultural economy and land use, the type of artefacts recovered, changes in settlement patterns and types and, changes in trade patterns.*
- *Develop a better understanding of medieval towns and their impact on earlier settlements and the surrounding (agricultural) hinterlands, the proposed investigation area may well have formed part of the hinterland of the medieval activity seen to the north in field L1.*

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

2.3.4 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.

3 SITE ARCHIVE

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 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. Copies of the report will be sent to the Gwynedd Archaeological Trust HER, available upon request. The archive can be accessed under the unique project identifier WA19/CL12283/Area 16/35-2016.

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

Category	Quantification
Context Sheets	67
Small finds	0
Bulk finds	21g
Environmental samples	1 (40L)
Monochrome film	0
Digital photographs	107
Rectified photographs	0
Hand drawn plans	0
Hand drawn sections	25
GPS survey pre-excavation plans	Yes
GPS survey excavation plans	Yes
TST surveyed excavation plans	No

Table 3.1: Quantification of excavation data

4 BACKGROUND

4.1 Location and Geological Context

4.1.1 The proposed development site is located on the north Anglesey coast approximately 2km west of the village of Cemaes. The nearest village is Tregele, approximately 1km to the south-east.

4.1.2 Area 16 is located at (NGR: SH 35950 93450; Figure 1) in Field K2 in the eastern part of the proposed development area. It is situated within pasture in the Tre'r Gof wetland basin. An existing nuclear power station, built in the 1960s, lies *c.* 400m to the west. The Tre'r Gof wetland, a Site of Special Scientific Interest (SSSI) lies immediately to the north of Field K2. The area of investigation lies at a height of *c.* 12m aOD (above Ordnance Datum) with the ground sloping fairly steeply from the A5025 towards the north.

4.1.3 The site is approximately 1,312m^2 in size and is triangular (Figure 2). Prior to the excavation, the site comprised improved agricultural land characterised primarily by enclosed grazing fields.

4.1.4 The underlying solid geology within the area of investigation is mapped as schist of the Gwna Group formed during the Ediacaran and Cambrian periods between 635 and 508 million years ago. This is overlain by superficial deposits of Devensian Till deposited between 116 and 11.8 thousand years ago during the Quaternary period (BGS 2019). The natural substrate observed during the current phase of works comprised light greyish-blue mottled with yellow, sandy clay with moderate gravel and pebbles which is consistent with the mapped geologies above.

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). Two evaluation trenches (Trenches 2021 and 2022) opened by Headland Archaeology within the area recorded undated ditch features.

4.2.2 ***Period 1 - Palaeolithic and Mesolithic (25,000 – 4000 BC):*** There is no known Palaeolithic or Mesolithic activity within Area 16.

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 16. Across Anglesey remains of this date include megalithic and ceremonial sites, funerary sites, artefact scatters and find spots, with a small amount of settlement evidence from postholes and pits.

4.2.5 During this period there is a shift from communal burial practices to individual burial rites, as evidenced by 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 are found at Carrog (PRN 27515) located nearly 2km to the east of the proposed development site, and east of Penciw (PRN 3565) located nearly 6km to the east of the proposed development site (*ibid*).

4.2.7 ***Period 3 – Late Bronze Age and Iron Age (1500 BC – AD 43):*** There is no previously known Late Bronze Age and Iron Age activity within Area 16.

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

4.2.9 The archaeological evaluation trenches in fields L8 and L12 uncovered significant prehistoric activity, in the form of a hilltop ring ditch, 240m to the south-southeast (Headland Archaeology 2017).

4.2.10 ***Period 4 - Roman (AD 43 to 410):*** Anglesey was invaded in *c*. AD 60/61 by the Roman army. A number of short-lived semi-permanent military establishments from the campaign have been identified, and a Roman settlement, Tai Cochion, has been investigated north of Llanidan at the Menai Strait. Potential Roman watch towers have been recorded along the north-western coastline of Anglesey, on Holyhead and inland on the south-east of the island. Following recent archaeological fieldwork, a hilltop enclosure located just over 900m from the Wylfa Newydd Development Area has been reinterpreted as a Roman fortlet. Evidence for Roman settlement is currently absent on the northern part of Anglesey and activity in the study area is predominantly

evidenced by finds of Roman artefacts and Romano-British enclosure sites.

4.2.11 ***Period 5 - Early Medieval (AD 410 – 1066):*** There is no previously known Early Medieval activity within Area 16. Early medieval archaeology was, however, encountered about 450m to the north, on the other side of Tre'r Gof, within areas 12 and 15.

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

4.2.13 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*).

4.2.14 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.

4.2.15 ***Medieval (AD 1066 – 1540):*** By the 12th century, the study area was located within the Talybolion commote (a recognised regional unit of royal administration) with a royal manorial centre located at Cemaes. By AD 1238 Cemaes also functioned as the location of one of the small royal courts of Gwynedd. The location of this royal court (Llys) has been tentatively suggested by GAT as the present farms of Neuadd Fawr and Cemaes Fawr on the east side of Cemaes harbour, within 1km to the east of the Wylfa Newydd Development Area. A small 12th century motte without a bailey, Castell Crwn, has been identified approximately 3km to the southeast of the parish church at Llanrhwydrys and may also indicate an alternative site for the court.

4.2.16 The Talybolion commote was sub-divided into a system of smaller administrative centres or holdings called 'trefi'. Therefore, in the medieval period, a system of different administrative units, including: 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 were present within the study area. The medieval settlement pattern on Anglesey in this period is characterised by largely disparate settlements with discrete areas of nucleation.

4.2.17 This medieval pattern influenced later post-medieval and Industrial patterns, which in the study area are characterised by agricultural land, intermittent farmsteads and

small hamlets, and villages. Archaeological evidence indicates the practice of open-field farming, with narrow strips of arable pasture arranged within several large unenclosed fields in close proximity to settlements. Surviving evidence of open farming has been identified in two areas, centred on Mynachdy and Cafnan (to the north and west of the study area). A survey of the Mynachdy Estate revealed evidence for ridge-and-furrow and associated land clearance cairns, terraces and field boundaries. A series of open fields, pens and small enclosures have also been identified at Cafnan.

4.2.18 There are no surviving up-standing medieval domestic or agricultural buildings or structures within the study area, although the foundations of domestic structures have been noted at Groesfechan and a further unconfirmed site has been recorded at Cappel Newsaint. Thus, the pattern of medieval settlement has been principally identified through historical documentary research.

4.2.19 The administration of medieval Anglesey, and the legal status of the system of townships and parishes, resulted in a number of corn mills identified within the study area having been recorded in documentary sources. There is a notable concentration of mill sites at Cefn Coch, approximately 2km to the south-west of the Wylfa Newydd Development Area. A documentary reference from AD 1430, coupled with current place name evidence, has been used to suggest that the earliest known fulling mill on Anglesey was in operation at Llanfechell.

4.2.20 A defining feature from the 12th century onwards is the development of ecclesiastical provisions as a series of churches and chapels were constructed on Anglesey. Elements of medieval building fabric survive within six parish churches such as St. Patrick's Church, Llanbadrig and Church of St. Rhwydrys Llanrhwydrys. The distribution of medieval churches and settlement sites within the study area reveals two very distinct patterns of activity. At Llanfechell and Bodewryd the parish churches are situated at the centre of each village or hamlet. In contrast, churches at Llanfflewyn, Llanbadrig and Llanrhwydrys occupy more liminal positions on the edges of known settlement sites. Within the study area this is perhaps most visible in the association between holy wells and liminally located churches, such as St. Patrick's Church, Llanbadrig and adjacent Ffynnon Badrig Holy Well.

4.2.21 ***Post-medieval (AD 1539 – 1750):*** During the 17th and 18th centuries, Cemaes and Cemlyn Bay became centres of shipbuilding, fishing and later brickmaking and copper mining. By the 17th century, a small number of landowners controlled larger areas of

land on Anglesey and the landscape changed with the formation of estates. One of the earliest was the estate of Caerau, comprising a large 17th century house and gardens.

4.2.22 Although the rural landscape established during the medieval period continued into the post-medieval period, these changes in proprietorial patterns resulted in a number of new houses and farmsteads. Examples include; Plas Bodewryd, built in the early 16th century; Wylfa House, recorded in AD 1660; Cafnan Farm, recorded in 1631; Simdda-Wen, recorded in the later 17th century; Porth-y-pistyll, recorded by 1735; Yr Wylfa Wen, Yr Wylfa Newydd and Yr Wylfa Goch, recorded in the later 18th century. A further number of undated post-medieval farms were also created in this period, including Galen Ddu, Pen Pistyll Bryn Tinon and Tre'r Gof Isaf.

4.2.23 Archaeological evidence suggests that the enclosure of medieval open-field systems as well as wastes and commons, as noted at Pant-y-Gist and surrounding the village of Llanfechell, continued in this period. A series of 'smallholdings' were created from newly enclosed land, for example, Cae'r Brehin, Tan yr Allt and Pen y Groes. Post-medieval farm buildings and cottages associated with smallholdings typically comprised one or two-storey farmhouses with rubble-built walls, slate roofs with slate gable coping and square chimney stacks. A small proportion of these buildings, such as Wylfa Farm were constructed with enhanced decoration, such as classical gatepiers. Many of these farm buildings have been extensively remodelled at various stages throughout the post-medieval period, but especially in the 19th century.

4.2.24 ***Industrial to Modern (AD 1750 - Present):*** In the 19th century a series of larger country houses and farmhouses were constructed or extensively remodelled as part of the small-scale gentrification of the Anglesey countryside. The remodelling of Plas Cemlyn and Park Lodge provide two such examples of this type of alteration works within the study area.

4.2.25 A series of Industrial land improvements on Anglesey increased the agricultural potential of land. One notable documented example was the draining of bog-land at Cors-Tre'r Gof and Cors'r Wylfa in AD 1791 From the late 18th century onwards, industrial activity on Anglesey had dramatically increased. In this period Cemaes Bay had become the most important landing place on Anglesey's north coast and was the centre for fishing, shipbuilding and salting of herrings. The later 18th century also marked a period of increasing mining activity and the development of several prospecting copper and ironstone mines at Porth Llanlleiana, Porth Padrig and Carmel Head.

4.2.26 ***Previous Archaeological Work:*** The desk-based assessment (DBA) concluded that there was a reasonable likelihood that archaeological remains of all periods may be present across the proposed development site (Cooke et al 2012).

4.2.27 The desk-based assessment summary for archaeological potential was divided into 15 zones, of which Area 16 was within Zone K, a 0.17 km^2 area centred on NGR: SH 36080 93260 in the east of the proposed development area.

4.2.28 The summary concluded that Zone K had been undisturbed by the construction of the existing power station. Late 18^{th} to 19^{th} century land improvements had probably removed most earlier surface and buried near surface features, although fairly deep soils may have protected features cut into the substrata.

4.2.29 The area was known as Tre'r Gof ("township of the smith"), documented from the 12^{th} century, and it is thought to have been an early medieval township or hamlet, although the precise location is now lost. Another upstanding building of historical interest is within the zone; Nant Orman, documented from the 16^{th} century.

4.2.30 The potential for archaeological remains is reduced to the south of the area due to steep slopes from the A5025 towards the Tre'r Gof marsh. Flat land towards the edge of the wetland is favourable for undefended settlement, especially in proximity to two open watercourses towards the west and centre of the site. There is the potential for Bronze Age burnt mounds to have existed towards the north due to the proximity of water sources (Cooke et al 2012).

4.2.31 Previous archaeological works undertaken in Area 16 include a geophysical survey which identified no anomalies (Hopewell 2012).

4.2.32 Evaluation trial trenching took place in 2016 where a total of 15 trenches were excavated within Field K2. One northeast to southwest orientated trench, 2021, and one northwest to southeast oriented trench, 2022, identified four separate ditches all of which extended beyond the limits of excavation (Headland Archaeology 2017). It was suggested that these ditches demarked boundaries, representative of a wider field system of unknown date.

5 ARCHAEOLOGICAL EXCAVATION RESULTS

5.1 Introduction

5.1.1 The excavation of Area 16 was undertaken between the 4th and 7th September, in Field K2 of the proposed development site. The excavation was designed to investigate a series of possible linear features recorded during the previous geophysical survey / evaluation trial trenching as specified in the Methodology (Section 2). A full description of contexts is given in Appendix 1.

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

5.2 Results

5.2.1 The area of excavation measured 69m in length and 39m in width and was excavated to a maximum depth of 0.38m. The geological substrate **(16003)** consisted of a light greyish-blue, mottled with yellow, sandy clay with moderate gravel and pebble inclusions. This was overlain by a 0.30m thick subsoil comprising a mid to light greyish-brown silty loam with gravel and pebble inclusions **(16002)**. The site was sealed by a topsoil **(16001)**, a mid greyish-brown sandy silt with moderate gravel and pebble inclusions.

5.2.2 The archaeology identified within Area 16, comprised nine ditches, and seven discrete features comprising pits and post-holes.

Period 0 Natural Features

5.2.3 ***Phase 1:*** The earliest of these features was a meandering palaeochannel, **[16064]**, that ran north to south towards the western extent of the Site and most likely ran downhill towards the Tre'r Gof wetland to the north (Figure 3). Palaeochannel **[16064]** was over 16.00m long, 1.30-2.09m wide, and 0.22-0.33m deep, with shallow sides and a flat to irregular base (Figures 4 and 5; Plate 1). The palaeochannel contained a single fill each, **(16015=16028=16035)**, broadly comprising a mid greyish-brown, silty sand or silty clay with rare charcoal and sparse angular gravel and cobble inclusions. No archaeological finds were present in palaeochannel **[16064]** and no fills were suitable for environmental sampling.

Period 1 Palaeolithic and Mesolithic 250 000 – 4000 BC

5.2.4 **Phase 2:** To the east of palaeochannel **[16064]** was pit **[16008]**. Pit **[16008]** was oval with moderate concave sides and a flat base, and measured 1.63m long, 1.00m wide,

and 0.30m deep (Figure 4; Plate 15), PRN91983. Pit **[16008]** contained a dark greyish-brown, silty loam **(16009),** the defining characteristic of which was its very frequent stone inclusions.

5.2.5 The pit contained one fragment of local chert and a possible flint bladelet and heavily abraded fired clay was recovered from the environmental sample taken from fill **(16009)**. A small amount of charcoal was also retrieved from the environmental sample and, when viewed alongside the artefactual evidence from the feature, could indicate a small level of early prehistoric activity on the Site.

Undated features

5.2.6 Phase 3: Part of what may represent a former field system (PRN91984) comprising four ditch features **[1079**, **1080**, **1081** and **1082]** was observed in Field K2 and may relate to similar field systems recorded in nearby Fields L3/4, K11 and L2 (Areas 1, 3 and 17). Although none of these ditches were dated they have been placed in Period 4-7 on stylistic similarities with similar dated ditches in adjacent field forming field systems that predate the current extant field systems and lost boundaries recorded on historic mapping.

5.2.7 Towards the northwest corner of the site were two parallel ditches, **[16065]** and **[16066]**, both running east to west, approximately 1.00m apart (Figure 3). The northernmost, ditch **[16065],** measured over 18.00m long, 1.20-1.40m wide, and 0.15-0.30m deep and was concave in profile (Figure 4; Plate 2). The ditch contained a single fill, **(16005=16017=16023)** broadly comprising a mid brown, silty sand or silty clay with sparse boulders and moderate sub-angular gravels.

5.2.8 Ditch **[16065]** clearly cut the infilled palaeochannel **[16064]** (Plate 3). No archaeological finds were present in ditch **[16065]** and no fills were suitable for environmental sampling.

5.2.9 To the south of ditch **[16065]**, ran a parallel ditch **[16066]** measured over 30m in length, 1.10-1.17m in width and 0.14-0.33m in depth. Ditch **[16066]** had sharp concave sides and a concave to flat base (Figures 4-6; Plate 4). The ditch was filled by a single fill each, **(16011=16033=16050)**, broadly consisting of a firm, mid greyish-brown sandy clay with rare to abundant small sub-angular and angular stone inclusions.

5.2.10 Ditch **[16066]** also cut palaeochannel **[16064]** (Figure 5; Plate 5). No archaeological finds were identified in ditch **[16066]** and no fills were suitable for environmental

sampling.

5.2.11 Towards the eastern extent of the Site, ditch **[16066]** truncated a smaller ditch, **[16047]**, at intervention **[16049]** (Figure 3). Ditch **[16047]** was orientated northeast to southwest with sharp concave sides and a concave base that measured over 1.00m in length, 1.10m in width and 0.27m in depth (Figure 6). Ditch **[16047]** contained a single fill, **(16048)**, consisting of a mid greyish-brown, sandy silt with no inclusions.

5.2.12 No archaeological remains were present in ditch **[16047]** and no fills were suitable for environmental sampling.

5.2.13 Ditch, **[16029=16042]**, truncated palaeochannel **[16064]** towards the southern extent of the Site (Figure 3). Ditch **[16029= 16042]** ran northeast to southwest and measured 10.98m in length, 1.21-1.28m in width and 0.17-0.24m in depth. The ditch had shallow concave sides and an irregular base, and the northeast terminus, **[16042]**, was rounded with gentle irregular sides and a flat base (Figure 6; Plates 6 and 7). The ditch was filled by two fills, **(16030)** and **(16031)**. The lower fill, **(16030)**, was a light greyish-brown silty clay with moderate small angular stone inclusions, and the upper fill, **(16031)**, was a light blueish-grey silty clay with abundant medium angular stone inclusions. Both fills had a maximum thickness of 0.24m. The two fills ditch fills differed slightly towards the northeast terminus, **[16042]**, with the lower fill, **(16044)**, consisting of a firm, light brownish-grey silty clay, mottled with orange and yellow, clay, 0.12m thick, the upper fill, **(16043)**, was a firm, light brownish-grey silty clay with moderate small sub-angular and sub-rounded stones, 0.05m thick.

5.2.14 No archaeological finds were identified in ditch **[16029=16042]** and no fills were suitable for environmental sampling.

5.2.15 To the west of palaeochannel **[16064]**, ditch **[16040=16055]** ran east to west and measured 14.00m in length, 1.42-1.50m in width and 0.08-0.10m in depth. The ditch had a clear eastern terminus **[16055]** (Figure 3) and had an irregular profile with shallow irregular sides and a flat base, and east terminus **[16055]** was rounded with shallow concave sides and an irregular base (Figure 6; Plate 8). The ditch contained a single fill, **(16041=16056)**, which consisted of a loose, light orangish-brown to brown silty clay with rare charcoal inclusions.

5.2.16 The east terminus **[16055]** of the ditch also truncated palaeochannel **[16064]**, (Plate 9). No archaeological finds were present in ditch **[16040=16055]** and no fills were suitable for environmental sampling.

5.2.17 Towards the eastern half of the Site, ditch **[16067]** ran northwest to southeast and measured 25.07m long, 1.80-2.52m wide, and 0.35-0.60m deep (Figure 3). Ditch **[16064]** had a profile that varied from moderately concave to steep straight sides, and had a uniform concave to flat base (Figures 4, 5 and 6; Plate 10). At the northwest terminus, **[16006]**, and the southeast intervention, **[16012]**, a single fill was present, **(16007=16013)**, which consisted of a dark yellowish-brown to orangish-brown silty clay with sparse small angular gravel inclusions. At intervention **[16051]**, the ditch contained two fills, **(16052)** and **(16062)** (Figure 6; Plate 11).

5.2.18 The lower fill, **(16062)**, comprised a 0.11m thick layer of redeposited natural substrate comprising a hard, dark purplish-grey clay and the overlying upper fill, **(16052)**, consisted of a mid-orangish brown sandy clay 0.39m thick with sparse sub-angular stone inclusions. Approximately 1.00m to the southeast of intervention **[16051]**, intervention **[16060]** also contained two fills, **(16061)** and **(16063)**, that differed to the fills at intervention **[16051]** (Figure 6). The lower fill, **(16063)**, was a mid-greyish-brown silty clay 0.08m thick with sparse angular stone inclusions and the overlying upper fill, **(16061)**, comprised a light greyish-brown silty clay 0.32m thick with moderate angular stones and sparse sub-rounded and sub-angular cobble inclusions.

5.2.19 No archaeological finds were present in ditch **[16067]** and no fills were suitable for environmental sampling.

5.2.20 A number of features were present at the northern extent of ditch **[16067]** including ditches **[16020]**, **[16018]**and pit **[16057]**, (Figure 3, Plate 12).

5.2.21 Ditch **[16020]** was orientated northeast to southwest, with gentle concave sides and a concave base that measured 1.40m long, 1.14m wide and 0.35m deep (Figure 4; Plate 13). Ditch **[16020]** contained a single fill, **(16021)**, comprising a mid orangish-brown silty clay.

5.2.22 Located 0.20m to the east of ditch **[16020]** was ditch terminus **[16018],** which was 1.40m long, 2.00m wide, and 0.35m deep, and was orientated north to south with gentle concave sides and a concave base (Figure 4, Plate 14). Ditch terminus **[16018]** had a single fill, **(16019)**, consisting of a mid reddish-brown silty clay with moderate chert inclusions.

5.2.23 No archaeological finds were present in either ditch terminus **[16018]** or ditch **[16020]** and no fills were suitable for environmental sampling.

5.2.24 Separated to the south of ditch terminus **[16018]** by a 0.20m wide spur of natural

substrate, **(16003)**, and truncating ditches **[16020]** and **[16067]** was sub-square pit **[16057]**. Pit **[16057]**, PRN91985, was orientated northeast to southwest and measured 4.10m long, 1.63m wide, and 0.34m deep with steep irregular sides and an irregular base (Figure 6; Plate 12). Pit **[16057]** contained a single fill, **(16059)**, comprising a light greyish-brown, silty clay with moderate small to medium cobbles.

5.2.25 No archaeological finds were recovered from pit **[16057]** and no fills were suitable for environmental sampling.

Undated Features

5.2.26 Five other discrete features were dispersed across the southern half of the Site (Figure 3). These comprised pits, **[16024]**, **[16036]**, and **[16053]**, post-hole, **[16045]**, and bioturbation, **[16038]**.

5.2.27 To the east of ditch terminus **[16042]**, were pits **[16024]**, **[16036]**, and bioturbation **[16038]**. Pit **[16024]**, PRN91986, was sub-circular and measured 0.90m in length, 0.80m in width and 0.30m in depth with steep straight sides and a flat base (Figure 5; Plate 16). **[16024]** contained two fills, **(16025)** and **(16026)**. The lower fill, **(16025)**, was a firm, light brownish-grey, silty clay with a maximum thickness of 0.26m and moderate sub-angular gravels. The overlying upper fill, **(16026)**, comprised a loose, light greyish-brown, silty clay with a maximum thickness of 0.25m.

5.2.28 Pit **[16036]** was sub-circular and was 1.24m long, 1.10m wide, 0.25m deep, with steep concave sides and a flat base (Figure 5, Plate 17), PRN91986. Pit **[16036]** contained a single fill, **(16037)**, comprising a mid brown, sandy.

5.2.29 A probable tree throw **[16038]** was located just to the north west of pit **[16036]** and measured 2.10m long, 1.70m wide and 0.22m deep with gradual irregular concave sides and base (Figure 5; Plate 17) and contained a single fill, **(16039)**, comprising a mid orangish-brown, sandy clay.

5.2.30 To the south of ditch **[16040 / 16055]**, were post-hole **[16045]** and elongated pit or possible linear feature **[16053]** (though possibly created by the machine dragging a stone when removing the overburden from the site; Headland 2017); both assigned PRN91987. Post-hole **[16045]** was sub-circular with steep straight sides and a flat base, and was 0.45m long, 0.25m wide and 0.20m deep (Figure 6, Plate 18). Post-hole **[16045]** contained a single fill, **(16046)**, comprising a loose, dark brown, clayey silt with rare sub-angular gravel inclusions. Elongated pit **[16053]** was ovoid and orientated west to east with moderate concave sides and an irregular base, measuring 3.00m

long, 0.39m wide, and 0.08m deep (Figure 6, Plate 19). Elongated pit **[16053]** contained a single fill, **(16054)**, comprising mid greyish-brown, sandy silt with moderate small and sparse large sub-rounded gravels.

5.2.31 No archaeological finds or suitable environmental samples were present in pits, **[16024]**, **[16036]**, and **[16053]**, post-hole, **[16045]**, and bioturbation, **[16038]**.

6 FINDS ASSESSMENT

6.1 Introduction and Methodology

6.1.1 A total of five artefacts, weighing 65g, were recovered from a single context during an archaeological investigation on Area 16.

6.1.2 It is noted that the Wessex site summary mentions a single flint artefact weighing 3g, while Wessex preliminary finds quantification tables recorded one fragment of chert weighing 1g and four stone fragments weighing 64g. It is possible that the stone was previously assessed as natural and discarded.

6.1.3 All finds were dealt with according to the recommendations made by Watkinson & Neal (1998) and in line with guidance issued by the Chartered Institute for Archaeologists (CIfA 2014b). All artefacts have been boxed according to material type and conforming to the deposition guidelines recommended by Brown (2011), EAC (2014) and Oriel Ynys Môn. The project has the unique identifier WA19/CL12283/Area 16/35-2016. 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 below in Table 1.

Table 1: Finds quantification by material and context

Context	Raw Material						
	Type	Colour	Lustre	Texture	Opacity	Cortex	Pat.
16009	Chert	Black	Dull	Medium	Opaque	Nco	None
16009	Flint	Beige	Shiny	Fine	Opaque	Nco	None

Context	Measurements				Class	Category	Subcategory
	L	W	T	Wgt			
16009	20	25.8	3.5	1.57	Debitage	Chip	Chip
16009	33.1	10.2	2.5	1.32	Debitage	Blade	Bladelet

6.2 Lithics

6.2.1 The assemblage recovered at Area 16 consists of two (2.89g) 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 assemblage comprises one chip made of black local chert **(16009)**

and a bladelet made of beige flint. This type of flit working technology can be dated to the Mesolithic and Early Neolithic period. The condition of the assemblage is good, with no signs of re-cortication displaying only some degree of edge damage. Should the charcoal recovered with this flint be suitable for C14 dating this date range may well be refined.

6.3 Finds from Environmental Samples

6.3.1 A total of 18g of heavily abraded fired clay, was recovered from <16001> **(16009)**. The fired clay artefacts are small and highly fragmentary. Upon specialist analysis, the material has been identified as heat-affected stone, and no further analysis is recommended.

6.4 Statement of Potential

6.4.1 The assemblage is generally of low archaeological potential and no further work would be required at assessment stage. The flints may be considered with the other material assemblages from the other archaeological sites at Wylfa.

7 PALAEOENVIRONMENTAL ASSESSMENT

7.1 Introduction

7.1.1 A single bulk sample was taken during the excavation on Area 16, Wylfa Newydd Nuclear Power Plant, Anglesey, North Wales. A total weight of 42kg (25l) of sediment was processed for this stage of works. Further details for each sample can be found in Table 7.1.

7.1.2 This environmental reported was prepared by Lynne F. Gardiner.

7.2 Methodology

7.2.1 This report presents the results of the assessment of the environmental samples, palaeobotanical and charcoal remains in accordance with Campbell et al. (2011) and English Heritage (2008). 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 any 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 was 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 all relevant material removed the flots were discarded.

7.2.4 The four common palaeoenvironmental materials (namely plant remains, charcoal, shell and bone), along with magnetic matter, will be listed within the results section and where none were present this will be stated.

7.2.5 Methodology employed for the treatment of the samples is fully expanded upon in the Wardell Armstrong LLP Technical Manual No 2. (2018) and determined by Wardell Armstrong (2019).

7.3 Results

7.3.1 The sample's sediment matrix was silty clay, further data can be observed in Table 7.1.

7.3.2 Flot and finds data is presented in Table 7.2.

7.3.3 Artefactual material recovered from the dried residues were minimal but contained examples of fired clay.

7.3.4 The only ecofactual material recovered was charcoal (10g). This was highly abraded and silted. No identifications were undertaken due to no radiocarbon date being required.

7.3.5 The magnetised matter contained no microslags.

7.4 Discussion

7.4.1 The paucity of ecofactual material offered no potential for discussion.

7.5 Statement of potential and recommendations

7.5.1 There is insufficient ecofactual material from this site that would allow for furthering of any palaeoenvironmental knowledge stated in the regional research framework (2017).

7.5.2 *Radiocarbon suitability*: the charcoal should be suitable but identification should be undertaken prior to submission.

7.5.5 *Retention and discard*: retain the charcoal until it is determined that no radiocarbon dating is required at a later stage of the project. The magnetised matter can be discarded.

7.6 Acknowledgments

7.6.1 Freddie Sisson supervised the environmental team who consisted of Megan Lowrie and Katherine Bostock.

Table 7.1: sample data

C	<>	Cut	Desc	TQ	PW	PV	SW	SV
16009	16001	16008	Pit fill	4	42	25	20842	14300

Key: c= context, <>= sample number, TQ= quantity of tubs in sample, PW= weight (kg) of pre-processed sediment, PV= volume of pre-processed sediment, SW= weight (g) of dried retent residue, SV= volume (ml) of dried retent residue

Table 7.2: flot and finds data

		Flot		Retent		
C	<>	WF	VF	Ch	FC	MM
16009	16001	23.8	100	10	18	<1

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

8 CONCLUSIONS

8.1 Interpretation

8.1.1 Area 16 in Field K2 was located within the proposed development site of a new nuclear power station at Wylfa Newydd, Anglesey, and was one of multiple targeted areas of investigation, Area 16 accounting for 1,312m^2 of the proposed 407.23ha development area.

8.1.2 The purpose of the excavation was to investigate the remains of a series of linear features identified during previous archaeological works at the site in advance of the development and to establish how the archaeological remains can expand on our understanding of the archaeology of the Isle of Anglesey regarding the regional research framework of Wales (CIfA Cymru/Wales 2017).

8.1.3 The site was excavated down to the top of the natural substrate. Archaeological remains were identified extending beyond the limits of the previous evaluation trial trenches (TR2021 and TR2022). The remains were encountered across the whole of Area 16 and were dominated by ditches which would have formed a series of small enclosed fields. 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. There is sparse evidence of early prehistoric activity. A single pit containing lithics, charcoal, and heat-affected stones represented early prehistoric activity that may date to the Mesolithic and could relate to a small refuse pit.

8.1.4 The survival of the archaeological features was moderate with some features surviving better than others, dependent on type and age (i.e. ditches), or disturbance.

8.2 Significance

8.2.1 While each of the archaeological sites encountered within the Wylfa Newydd development area needs to be recognised in in its own right, the significance of the archaeology recorded in Area 16 (Field K2) has been negatively affected by a lack of sampling. There is some potential for the rectilinear field system in Area 16 to contribute to the understanding of Anglesey's archaeology, but its significance is reduced due to the lack of dating. If the date could 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 pasture land in locations other than upland locations particularly such locations as coastal wetlands is one of the research aims (IFA Wales 2003, 2011, CIfA Cymru/Wales 2017).Whether or not the field system related to the enclosure seen in Fields L2, L3/4, L8, L12 and K11 must, however, remain speculative.

8.3 Recommendations

8.3.1 The results of the Area 16 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.

8.3.2 The finds assemblage warrants no further work other, with one exception. The lithics should be considered alongside other areas from the wider project.

8.3.3 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.

8.3.4 An attempt should be made to date the isolated, potentially Mesolithic pit. Similar pits have been dated elsewhere on the site and may start to reveal a pattern of Mesolithic activity on the Wylfa Newydd site that is currently largely absent.

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APPENDICES

APPENDIX 1: CONTEXT INDEX

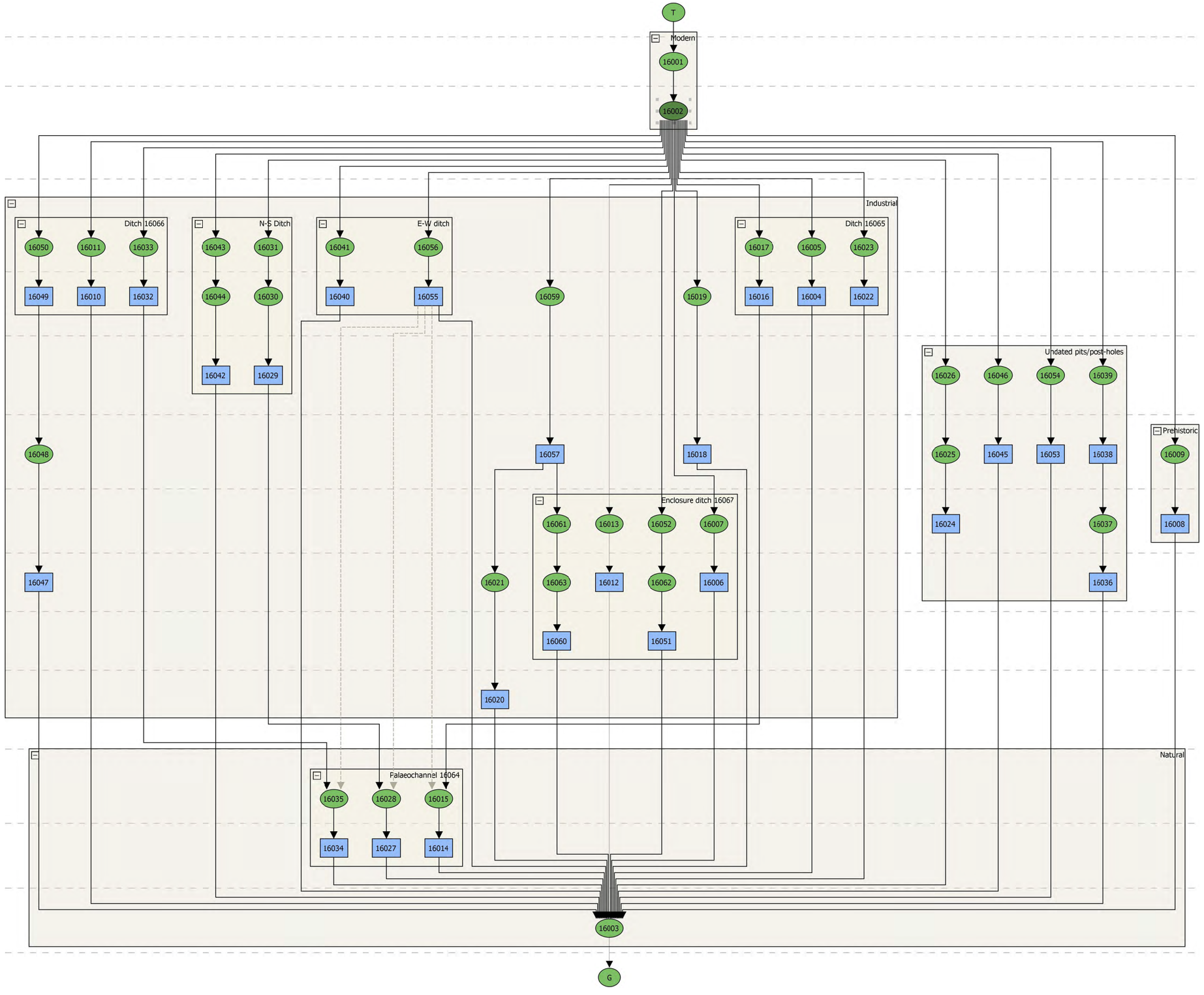
Context Number	Context Type	Description	Height/Depth	Discussion
16001	Deposit	Mid greyish-brown, sandy silt with moderate gravel and pebbles	0.08m thick	Topsoil
16002	Deposit	Mid to light greyish-brown, silty loam with gravel and pebbles	0.30m thick	Subsoil
16003	Deposit	Light greyish-blue mottled with yellow, sandy clay with moderate gravel and pebbles	0.38m BPGL	Natural Substrate
16004	Cut	Linear cut orientated E-W with shallow irregular sides and irregular base	1.00m long, 1.40m wide, 0.30m deep	Cut of ditch, part of [16065]
16005	Fill	Mid brown, sandy silt with sparse boulders and moderate gravels	0.30m thick	Single fill of ditch [16004]
16006	Cut	Linear cut orientated W-E with moderate concave sides and concave base	1.00m long, 1.80m wide, 0.41m deep	Cut of NW ditch terminus, part of [16067]
16007	Fill	Orangish-brown, silty clay with sparse small angular gravels	0.41m thick	Single fill of ditch terminus [16006]
16008	Cut	Oval cut with moderate concave sides and flat base	1.63m long, 1.00m wide, 0.30m deep	Cut of pit
16009	Fill	Dark greyish-brown, silty loam with abundant gravels and cobbles	0.30 thick	Single fill of pit[16008]
16010	Cut	Linear cut orientated E-W with gradual concave sides and concave base	1.00m long, 1.17m wide, 0.14m deep	Cut of ditch, part of [16066]
16011	Fill	Mid yellowish-brown, sandy clay with abundant small sub-angular and angular stones	0.14m thick	Single fill of ditch [16010]
16012	Cut	Linear cut orientated NW-SE with moderate concave sides and flat base	1.00m long, 2.20m wide, 0.35m deep	Cut of ditch, part of [16067]
16013	Fill	Dark yellowish-brown, silty loam with sparse gravels	0.35m thick	Secondary fill of ditch [16012]
16014	Cut	Linear cut orientated NE-SW with gentle concave sides and flat base	1.00m long, 1.30m wide, 0.27m deep	Cut of palaeochannel, part of [16064]
16015	Fill	Mid greyish-brown, silty sand	0.27m thick	Single fill of palaeochannel [16014]
16016	Cut	Linear cut orientated NW-SE with gentle concave sides and concave base	1.00m long, 1.30m wide, 0.25m deep	Cut of ditch, part of [16065]
16017	Fill	Mid greyish-brown, silty sand	0.25m thick	Single fill of ditch [16016]
16018	Cut	Linear terminal cut orientated N-S with gentle concave sides and concave base	1.40m long, 2.00m wide, 0.35m deep	Cut of ditch terminus
16019	Fill	Mid reddish-brown, silty clay with moderate chert	0.35m thick	Single fill of ditch terminus [16018]
16020	Cut	Linear cut orientated NE-SW with gentle	2.40m long,	Cut of ditch

Context Number	Context Type	Description	Height/Depth	Discussion
		concave sides and concave base	0.80m wide, 0.35m deep	
16021	Fill	Mid orangish-brown, silty clay	0.35m thick	Single fill of ditch [16020]
16022	Cut	Linear cut orientated W-E with moderate concave sides and concave base	1.00m long, 1.20m wide, 0.15m deep	Cut of ditch, part of [16065]
16023	Fill	Light brown, silty clay with sub-angular gravels	0.15m thick	Secondary fill of ditch [16022]
16024	Cut	Sub-circular cut with steep straight sides and flat base	0.90m long, 0.80m wide, 0.30m deep	Cut of pit
16025	Fill	Firm, light brownish-grey, silty clay with moderate sub-angular gravels	0.26m thick MAX	Lower secondary fill of pit [16024]
16026	Fill	Loose, light greyish-brown, silty clay with rare rooting	0.25m thick MAX	Upper secondary fill of pit [16024]
16027	Cut	Linear cut orientated NW-SE with shallow concave sides and irregular base	1.00m long, 2.09m wide, 0.22m deep	Cut of palaeochannel, part of [16064]
16028	Fill	Mid greyish-brown, silty clay with moderate small angular stones	0.22m thick	Fill of palaeochannel [16027]
16029	Cut	Linear cut orientated NE-SW with shallow concave sides and irregular base	2.59m long, 1.28m wide, 0.24m deep	Cut of ditch, same as [16042]
16030	Fill	Light greyish-brown, silty clay with moderate small angular stones	0.24m thick MAX	Lower fill of ditch [16029]
16031	Fill	Light blueish-grey, silty clay with abundant medium angular stones	0.24m thick MAX	Upper fill of ditch [16029]
16032	Cut	Linear cut orientated E-W with moderate straight sides and flat base	1.00m long, 1.15m wide, 0.33m deep	Cut of ditch, part of [16066]
16033	Fill	Firm, mid greyish-brown, sandy clay with rare angular gravels	0.33m thick	Secondary fill of ditch [16032]
16034	Cut	Linear cut orientated N-S with moderate concave sides and flat base	1.00m long, 1.50m wide, 0.33m deep	Cut of palaeochannel, part of [16064]
16035	Fill	Mid greyish-brown, sandy clay with rare charcoal and sparse angular gravels and cobbles	0.33m thick	Secondary fill of palaeochannel [16034]
16036	Cut	Sub-circular cut with steep concave sides and flat base	1.24m long, 1.10m wide, 0.25m deep	Cut of pit
16037	Fill	Mid brown, sandy clay with abundant medium sub-angular and angular stones	0.25m thick	Secondary fill of pit [16036]
16038	Cut	Sub-circular cut with gradual concave sides and irregular base	2.10m long, 1.70m wide, 0.22m deep	Cut of bioturbation
16039	Fill	Mid orangish-brown, sandy clay with moderate sub-angular and angular stones, and charcoal	0.22m thick	Single fill of bioturbation [16038]

Context Number	Context Type	Description	Height/Depth	Discussion
16040	Cut	Linear cut orientated E-W with shallow irregular sides and flat base	1.00m long, 1.42m wide, 0.08m deep	Cut of ditch, same as [16055]
16041	Fill	Brown, silty clay with stones	0.08m thick	Secondary fill of ditch [16040]
16042	Cut	Linear terminal cut orientated NE-SW with gentle irregular sides and flat base	1.13m long, 1.21m wide, 0.17m deep	Cut of NE ditch terminus, same as [16029]
16043	Fill	Firm, light brownish-grey, silty clay with moderate small sub-angular and sub-rounded stones	0.05m thick	Upper fill of terminal ditch cut [16042]
16044	Fill	Firm, light brownish-grey mottled with orange and yellow, silty clay with moderate small sub-angular and sub-rounded stones	0.12m thick	Lower fill of terminal ditch cut [16042]
16045	Cut	Sub-circular cut with steep straight sides and flat base	0.45m long, 0.25m wide, 0.20m deep	Cut of post-hole
16046	Fill	Loose, dark brown, clayey silt with rare sub-angular gravel	0.20m thick	Secondary fill of post-hole [16045]
16047	Cut	Linear cut orientated NE-SW with gentle concave sides and concave base	1.00m long, 1.10m wide, 0.25m deep	Cut of ditch
16048	Fill	Mid greyish-brown, sandy silt	0.25m thick	Single fill of ditch [16047]
16049	Cut	Linear cut orientated NE-SW with sharp concave sides and concave base	1.00m long, 1.10m wide, 0.27m deep	Cut of ditch, part of [16066]
16050	Fill	Mid greyish-brown, sandy silt	0.27m thick	Single fill of ditch [16049]
16051	Cut	Linear cut orientated W-E with gentle concave sides and concave base	1.00m long, 2.52m wide, 0.60m deep	Cut of ditch, part of [16067]
16052	Fill	Mid orangish-brown, sandy clay with sparse sub-angular stones	0.39m thick	Upper fill of ditch [16051]
16053	Cut	Ovoid cut orientated W-E with moderate concave sides and irregular base	3.00m long, 0.39m wide, 0.08m deep	Cut of ovoid pit
16054	Fill	Mid greyish-brown, sandy silt with moderate small and sparse large sub-rounded gravels	0.08m thick	Single fill of pit cut [16053]
16055	Cut	Linear terminal cut orientated W-E with shallow concave sides and irregular base	1.00m long, 1.50m wide, 0.10m deep	Cut of E ditch terminus, same as [16040]
16056	Fill	Loose, light orangey-brown, clayey silt with rare charcoal	0.10m thick	Secondary fill of terminal cut [16055]
16057	Cut	Sub-square cut orientated NE-SW with steep irregular sides and irregular base	4.10m long, 1.63m wide, 0.34m deep	Cut of pit
16058	VOID	VOID	VOID	VOID
16059	Fill	Light greyish-brown, silty clay with moderate small to medium cobbles	0.34m thick	Single fill of pit [16057]

Context Number	Context Type	Description	Height/Depth	Discussion
16060	Cut	Linear cut orientated NW-SE with steep straight sides and irregular base	1.00m long, 2.42m wide, 0.40m deep	Cut of ditch, part of [16067]
16061	Fill	Light greyish-brown, silty clay with moderate angular stones, and sparse sub-rounded and sub-angular cobbles	0.32m thick	Upper fill of ditch [16060]
16062	Fill	Hard, dark purplish-grey, clay	0.11m thick	Lower fill of ditch [16051]
16063	Fill	Mid greyish-brown, silty clay with sparse angular stones	0.08m thick	Lower fill of ditch [16060]
16064	Group	Group number for palaeochannel comprising [16014], [16027] and [16034]	16.00m long, 1.30 – 2.09m wide, 0.22 – 0.33m deep	Palaeochannel
16065	Group	Group number for ditch associated with [16066] comprising [16004], [16016] and [16022]	18.00m long, 1.20 – 1.40m wide, 0.15 – 0.30m deep	Double ditch
16066	Group	Group number for ditch associated with [16065] comprising [16010], [16032] and [16049]	30m long, 1.10 – 1.17m wide, 0.14 – 0.33m deep	Double ditch
16067	Group	Group number for enclosure ditch comprising [16006], [16012], [16051] and [16060]	25.07m long, 1.80 – 2.52m wide, 0.35 – 0.60 m deep	Enclosure ditch

APPENDIX 2: HARRIS MATRIX


T
Modern
16001
16002
Industrial
Ditch 16066
16050
16011
16033
16049
16010
16032
16048
16047
N-S Ditch
16043
16031
16044
16030
16042
16029
E-W ditch
16041
16056
16040
16055
16059
16057
16021
Enclosure ditch 16067
16061
16013
16052
16007
16063
16012
16062
16006
16060
16051
16020
16019
16018
Ditch 16065
16017
16005
16023
16016
16004
16022
Undated pits/post-holes
16026
16046
16054
16039
16025
16045
16053
16038
16024
16037
16036
Prehistoric
16009
16008
Natural
Palaeochannel 16064
16035
16028
16015
16034
16027
16014
16003
G

APPENDIX 3: PLATES

Plate 1; South facing section of intervention [16014], looking north with one 1m scale.

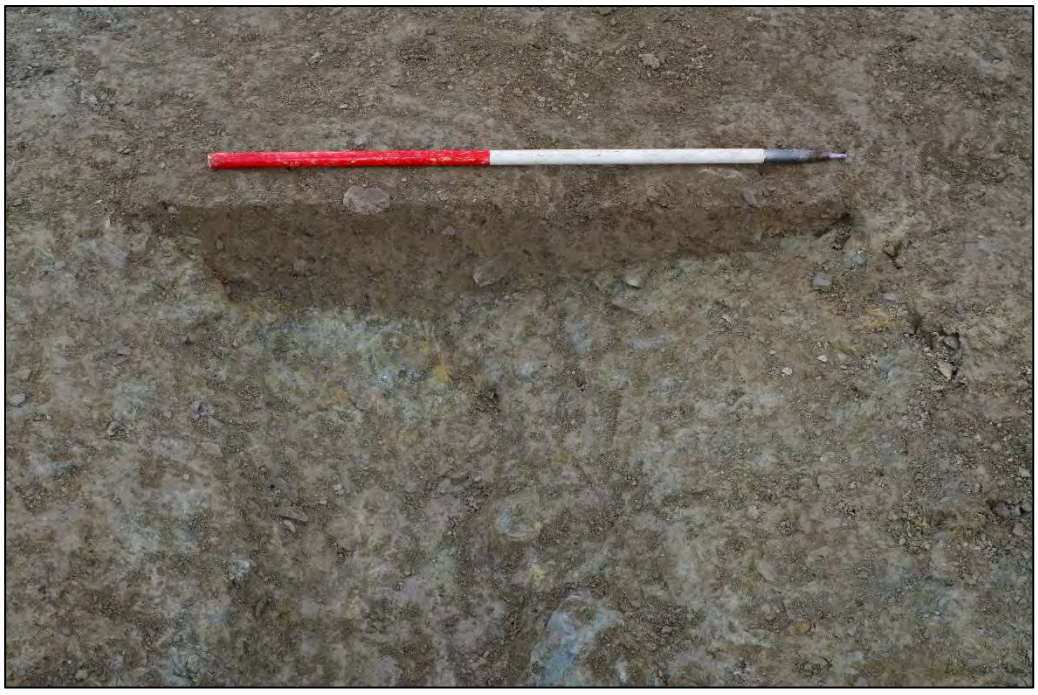


Plate 2; West facing section of intervention [16004], looking east with one 1m scale.

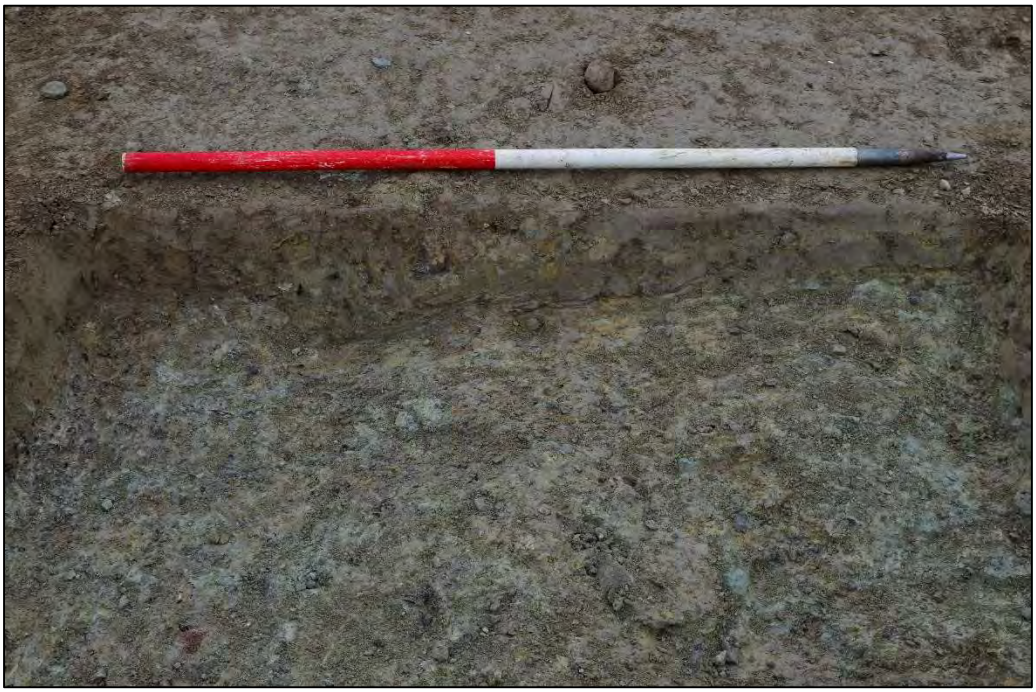


Plate 3; Southeast facing section of intervention [16016], looking northwest with one 1m scale.

Plate 4; Oblique shot of intervention [16010], looking northeast with one 1m scale.

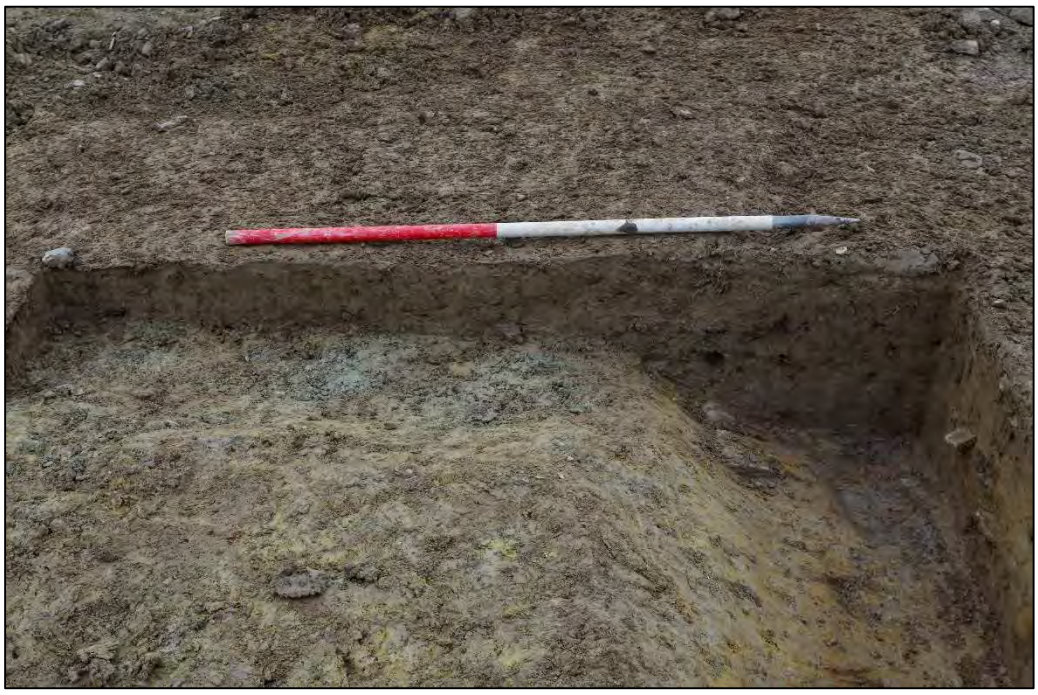


Plate 5; North facing section of intervention [16032] and [16034], looking south with one 1m scale.

Plate 6; Northwest facing section of intervention [16029] looking southeast with one 1m scale.

Plate 7; Northwest facing section of ditch terminus [16042], looking southeast with one 1m scale.

Plate 8; West facing section of ditch [16040], looking east with one 1m scale.

Plate 9; East facing section of ditch terminus [16055], looking west with one 0.4m scale.

Plate 10; Northwest facing section of intervention [16012], looking southeast with one 1m scale.

Plate 11; Southeast facing section of intervention [16051], looking northwest with one 1m scale.

Plate 12; Post-excavation shot of ditch terminus [16018], ditch [16020], pit [16057] and intervention [16060], looking north with one 1m scale.

Plate 13; South facing section of ditch [16020], looking north with one 1m scale.

Plate 14; South facing section of ditch terminus [16018], looking north with one 1m scale.

Plate 15; Northwest facing section of pit [16008], looking southeast with one 1m scale.

Plate 16; Southeast facing section of pit [16024], looking northwest with one 1m scale.

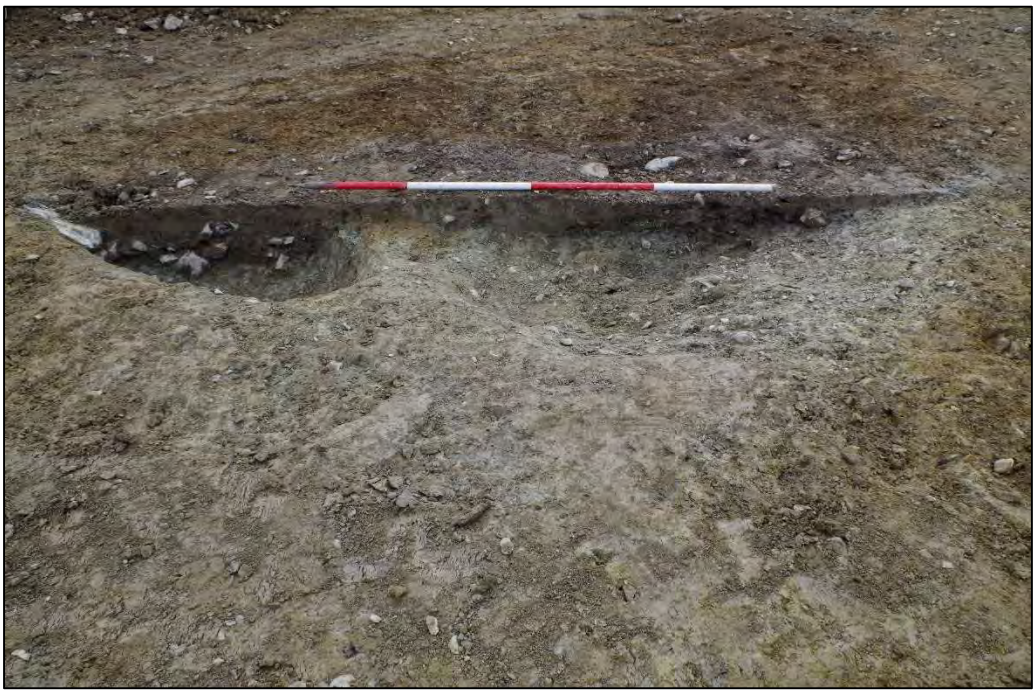


Plate 17; North facing section of pit [16036] and bioturbation [16038], looking south with one 2m scale.

Plate 18; East facing section of post-hole [16045], looking west with one 0.4m scale.

Plate 19; East facing section of pit [16053], looking west with one 0.4m scale.

APPENDIX 4: FIGURES

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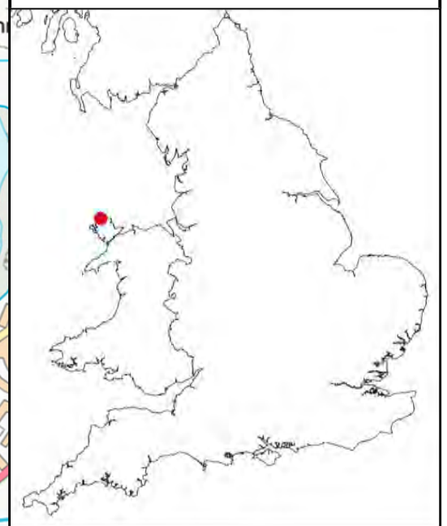
Wylfa Newydd development area

Excavation area

Hot spots



Mynydd y Wylfa
Cemaes Bay
Cemlyn Bay
Cerrig Brith
Porth-y-Pistyll
Area 9 (F1)
Area 11 L1(w)
Area 12 L1(c)
Area 13 L1(e)
Porth y Wylfa
Wylfa Head
Area 14 (L1/L20)
Area 1 (L3/L4)
Penrhyn
Fford Y Traeth
Area 17 (L2)
Area 16 (K2)
Tormar Cottage
Cemaes
Area 2 (L8/L12/L16)
High Street
Felin Gafnan
Area 5 (A1)
Area 3 (K11)
Tyddyn-Goronwy
Maen Y Bugail
Area 4 (E3)
Tyddyn Sydney
Swn Y Mor
Cafnan
Area 7 (A3)
Area 8 (A9)
Area 18 O6
Area 19 O5(n)
Tregele
EV9
Area 20 O5(s)
Fford-Y-Felin
Cemlyn Lodge
Caerdegog Isaf
Mynydd-Lthel
Nanner
234000/392000
Foel Fawr
Gors
237000/392000
Caerdegog Uchaf
Cromlech
Groes-Fechan
Tyn Cae
The Bungalow
0
1km

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

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Area 16,
Wylfa Newydd, Anglesey

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Figure 1:
Wylfa Newydd development area and excavated sites

DRG No.	REV
CL12283-1601	A

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

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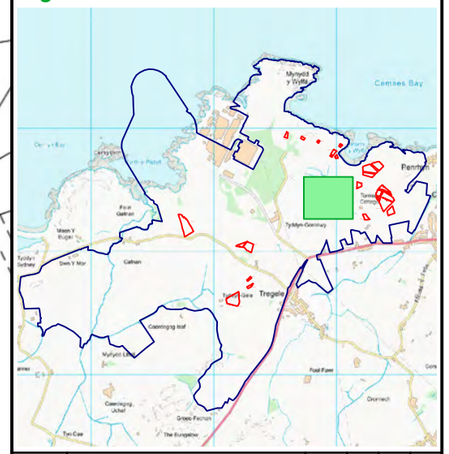
Wylfa Newydd development area

Excavation area

Excavation areas in vicinity

Figure location:



Drain

Pond

Well

Drain

Area 16 (K2)

235800/393325

236075/393325

Drain

FB

Well

0

100m

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

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Figure 2:
Detailed site location

DRG No.		REV
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DRG SIZE	SCALE	DATE
A3	1:1,250	Jan 2020
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(16000) Context numbers

Section location

Limit of excavation

Excavated area

Trench location

Natural features

Undated features

Group [16064]
Group [16065]
Group [16066]
Group [16067]
natural (16003)
Trench 2021
Trench 2022
s.16003
s.16004A
s.16004B
s.16007
s.16011
s.16002
s.16017
s.16009A
s.16009B
s.16005
s.16023
s.16022B
s.16014A
s.16014B
s.16021
s.16001
s.16015A
s.16015B
s.16010
s.16020
s.16016
s.16012A
s.16012B
s.16006
s.16013
[16004]
[16014]
[16016]
[16022]
[16034]
[16032]
[16047]
[16049]
[16010]
[16006]
[16020]
[16018]
[16051]
[16057]
[16060]
[16040]
[16055]
[16042]
[16008]
[16045]
[16053]
[16027]
[16029]
[16024]
[16038]
[16036]
[16012]

0 20m

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REVISION	DETAILS	DATE	DR'N	CHK'D	APP'D
B	Revision of periods	13/05/21	HP	MH	MH

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Area 16,
Wylfa Newydd, Anglesey

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Figure 3:
Area 16; Period plan

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DRG SIZE	SCALE	DATE
A3	1:200	Feb 2020

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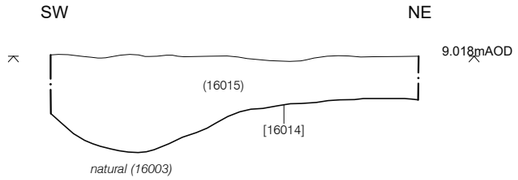
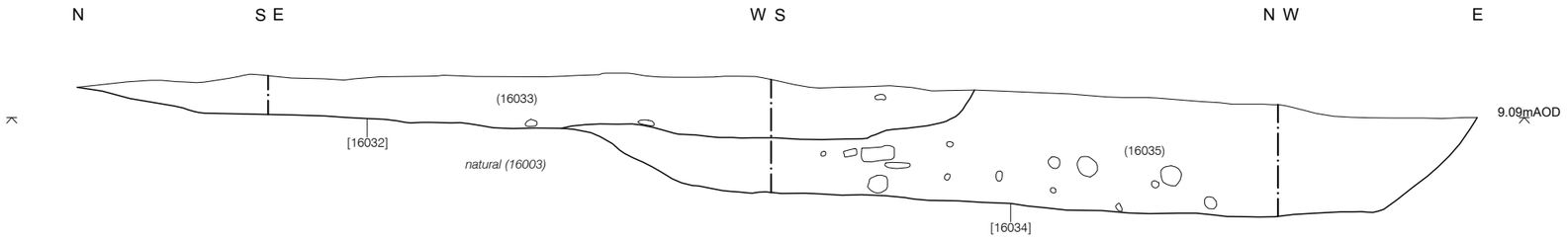
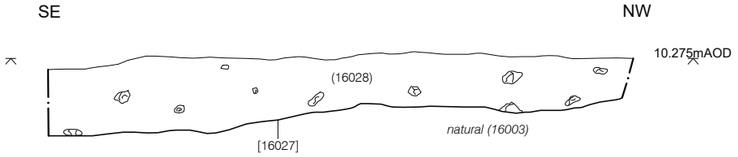
Phase 1 sections:



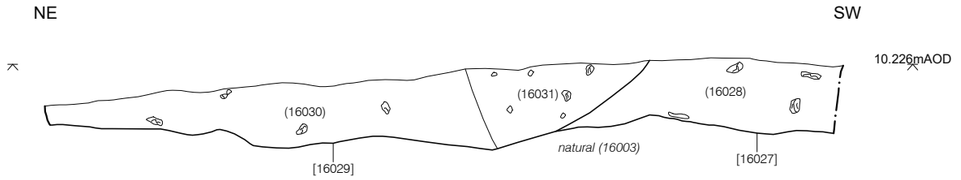
Section 16004A. South-east facing section of cut [16014], part of group [16064].



Section 16011. South-east facing section across cut [16032], part of group [16066] and cut [16034], part of group [16064].

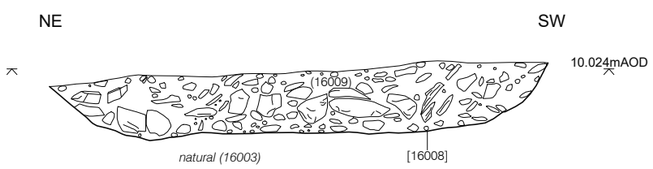


Section 16012A. North-east facing section across cut [16027], part of group [16064].



Section 16012B. North-west facing section across cut [16027], part of group [16064] and ditch [16029].

Undated sections:



Section 16001. North-west facing section across pit [16008].

0 2m

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(16000) Context numbers

Limit of excavation

Height mAOD

Stones

REVISION	DETAILS	DATE	DR'N	CHK'D	APP'D
B	Phase 2 changed to Undated	14/05/21	HP	MH	MH

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Figure 4:
Area 16; Phase 1 and Undated sections

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A3	1:20	Feb 2020

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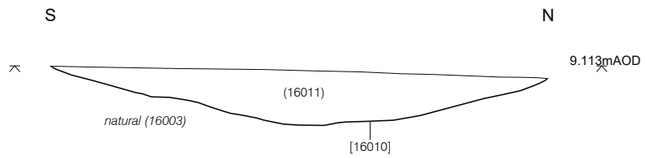
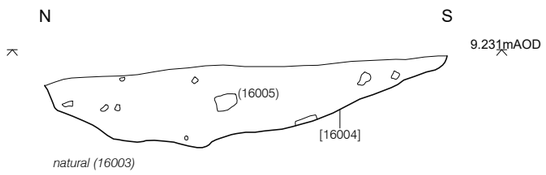
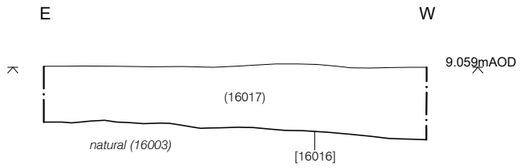
Undated sections (continued):



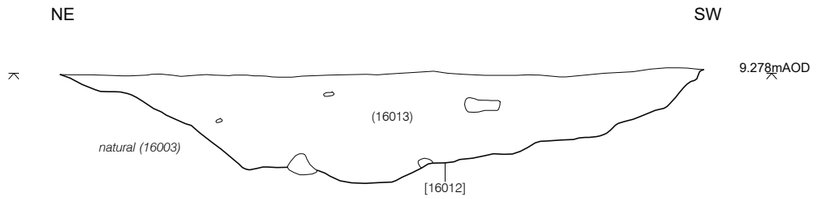
Section 16002. East facing section across ditch [16010].



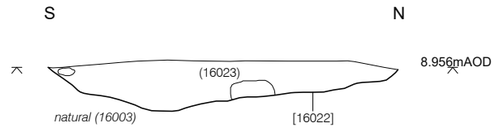
Section 16003. West facing section across cut [16004], part of group [16065].



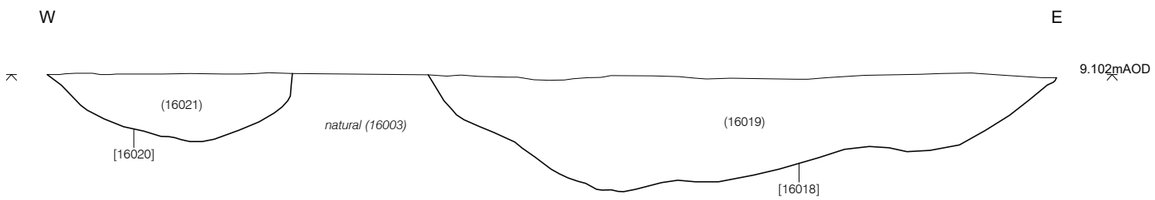
Section 16004B. North facing section of cut [16016], part of group [16065].



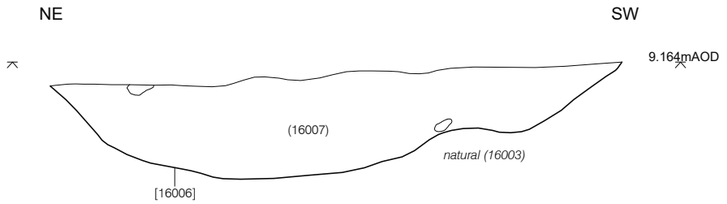
Section 16006. North-west facing section across cut [16012], part of group [16067].



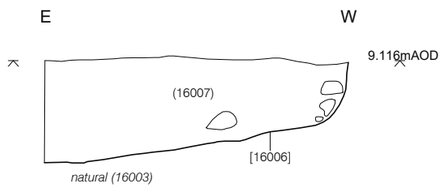
Section 16007. East facing section across cut [16022], part of group [16065].



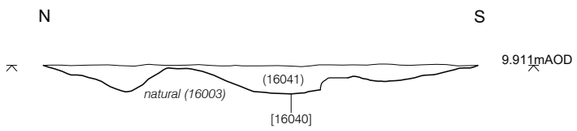
Section 16005. South facing section across ditches [16018] and [16020].



Section 16009B. North-west facing section across cut [16006], part of group [16067].



Section 16009A. North-east facing section across cut [16006], part of group [16067].



Section 16014A. West facing section across ditch [16040].

0 2m

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(16000) Context numbers

Limit of excavation

Height mAOD

Stones

REVISION	DETAILS	DATE	DR'N	CHK'D	APP'D
B	Phase changed to Undated	14/05/21	HP	MH	MH

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Figure 5:
Area 16; Undated sections (1)

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A3	1:20	Feb 2020

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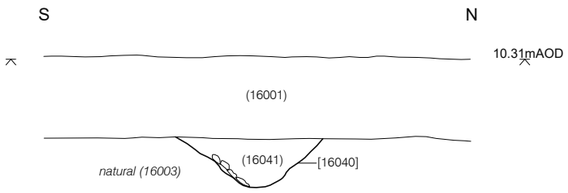
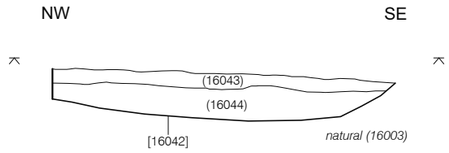
N:\CP\CL12283 - WYLFA POSTEX ASSESSMENT\03 - DESIGN\AUTOCAD\AREA 16\CL12283-1604-1607-B.DWG

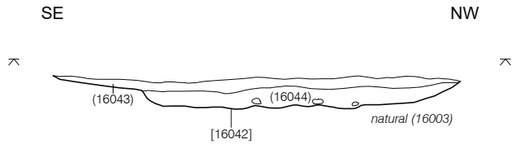
Undated sections (continued):



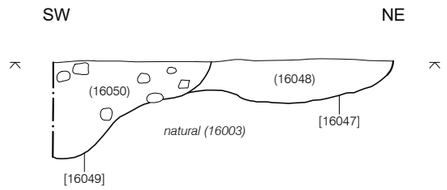
Section 16014B. East facing section across ditch [16040].



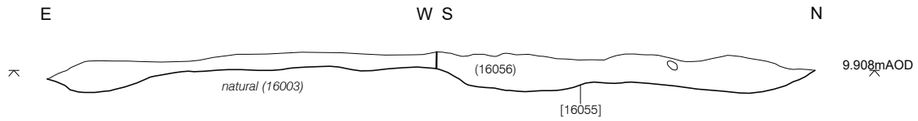
Section 16015A. South-east facing profile of ditch terminus [16042].



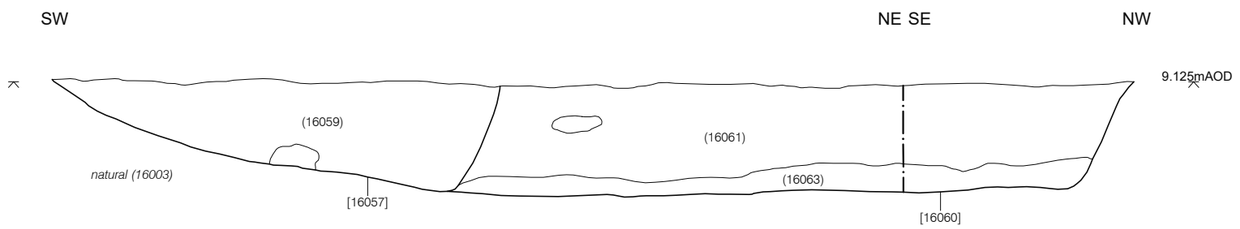
Section 16015B. North-east facing section across ditch [16042].



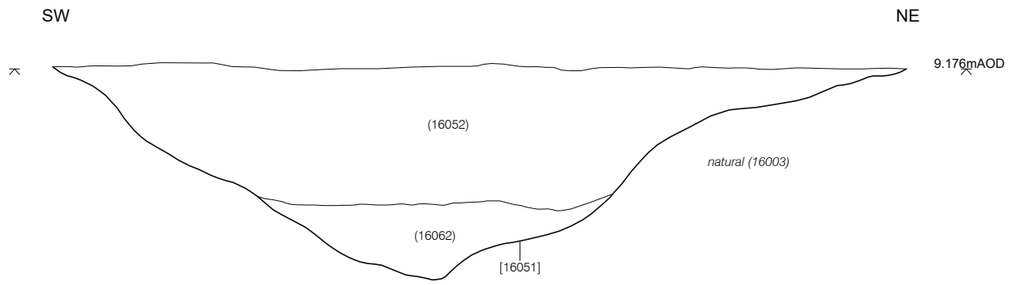
Section 16017. South-east facing section across ditch [16047] and cut [16049], part of group [16066].



Section 16021. East and north facing section across ditch terminus [16055].



Section 16022B. North-east and south-east facing section across ditches [16057] and [16060].



Section 16023. South-east facing section across cut [16051], part of group [16067].

0 2m

DO NOT SCALE FROM THIS DRAWING

(16000) Context numbers

Limit of excavation

Height mAOD

Stones

REVISION	DETAILS	DATE	DR'N	CHK'D	APP'D
B	Phase changed to Undated	14/05/21	HP	MH	MH

CLIENT

Horizon Nuclear Power

PROJECT

Area 16,
Wylfa Newydd, Anglesey

DRAWING TITLE

Figure 6:
Area 16; Undated sections (2)

DRG No.	REV
CL12283-1606	B

DRG SIZE	SCALE	DATE
A3	1:20	Feb 2020

DRAWN BY	CHECKED BY	APPROVED BY
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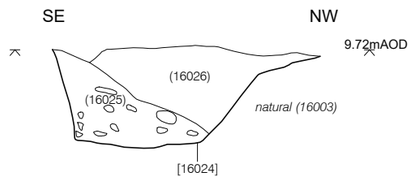
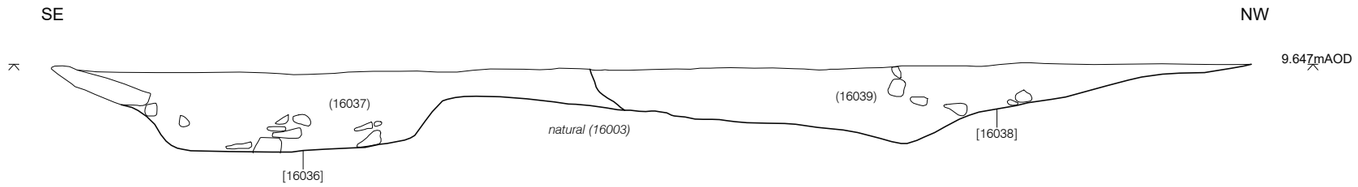
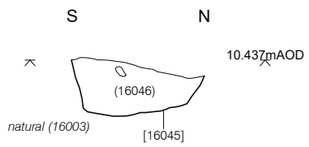
Undated sections (continued):



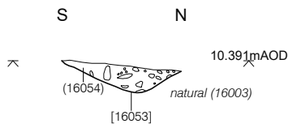
Section 16010. North-east facing section across pit [16024].



Section 16013. North-east facing section across pits [16036] and [16038].



Section 16016. East facing section across pit [16045].



Section 16020. East facing section across feature [16053].

0 2m

DO NOT SCALE FROM THIS DRAWING

(16000) Context numbers

Limit of excavation

Height mAOD

Stones

REVISION	DETAILS	DATE	DR'N	CHK'D	APP'D
B	Phase 2 changed to Undated	14/05/21	HP	MH	MH

CLIENT

Horizon Nuclear Power

PROJECT

Area 16,
Wylfa Newydd, Anglesey

DRAWING TITLE

Figure 7:
Area 16; Undated sections (3)

DRG No.	REV
CL12283-1607	B

DRG SIZE	SCALE	DATE
A3	1:20	Feb 2020

DRAWN BY	CHECKED BY	APPROVED BY
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APPENDIX 5: GAZETTEER OF FEATURES ENCOUNTERED IN AREA 16

Feature	*Date*	*Description*	*Easting, northing*
Pit	Prehistoric	Possible Mesolithic discrete refuse pit	235935,393435
Field system	Undated	A complex of ditches defining a series of small fields, extending beyond the area of excavation in all directions	235932,393444

APPENDIX 6: POST-EXCAVATION ASSESSMENT METHOD STATEMENT

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

HORIZON

WYLFA NEWYDD

POST EXCAVATION ASSESSMENT METHOD STATEMENT

APRIL 2019

wardell armstrong

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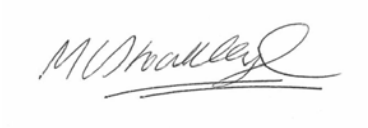
DATE ISSUED: April 2019

JOB NUMBER: **CL12271**

PREPARED BY:

Megan Stoakley — Finds and Archive Specialist



Lynne Gardiner — Senior Environmental Archaeologist

APPROVED BY:

Frank Giecco — Technical Director

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WYLFA NEWYDD POST EXCAVATION ASSESSMENT METHODOLOGY

Introduction

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

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

Requirement for and Purpose of the Post Excavation Assessment

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

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

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

Post Excavation Assessment Stages and Outputs

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

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

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

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

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

Stage 1 Processing

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

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

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

Stage 2 Archival Preparation

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

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

Stage 3 Data Assessment

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

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

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

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

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

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

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

Report Template

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

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

2. **Introduction**

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

2.2 Scope of the project.

2.3 Dates/duration of fieldwork.

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

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

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

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

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

3. **Summary of the excavation methodology**

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

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

3.3 Site planning strategy with justifications for the applied methodology.

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

4. **Site archive**

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

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

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

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

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

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

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

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

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

5. Stratigraphic data

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

5.2 Statement of significance of the stratigraphic data.

5.3 *Final pre-excavation plan.*

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

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

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

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

6. Artefacts

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

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

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

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

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

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

7. **Palaeoenvironment**

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

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

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

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

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

7.6 *Representative photographs of key assemblages*.

8. **Human remains**

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

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

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

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

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

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

9. **Discussion**

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

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

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

10. **Statement of potential**

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

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

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

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

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

11 Bibliography of sources used in the compilation of the PXA

12. Updated Project Design

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

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

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

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

12.4 Detail of illustrations required to support the stratigraphic analysis.

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

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

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

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

12.9 Details of illustrations required to support the artefact analysis.

12.10 Requirement for conservation works on material archive.

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

12.12 Details of resultant technical/archive report.

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

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

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

Task breakdown for PXA

1. **Processing**

1.1 Environmental sample processing

1.2 Cleaning human remains

1.3 Bulk finds cleaning

1.4 Small finds cleaning

1.5 Artefact stabilisation

2. **Archival preparation**

2.1 Finds marking

2.2 X-raying metal objects

2.3 Archive box purchase

2.4 Boxing

2.5 Site record checking and cross-referencing

2.6 Compilation of list of archival sources

2.7 Records scanning

3. **Data assessment**

3.1 Zooarchaeological remains

3.2 Insects

3.3 Snails

3.4 Shells

3.5 Plant macrofossils

3.6 Pollen

APPENDIX 1 METHOD STATEMENT: STAGE 1 FINDS PROCESSING

Finds processing and assessment summary

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

Washing and cleaning

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

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

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

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

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.

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