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HORIZON NUCLEAR POWER

WYLFA NEWYDD, ANGLESEY

AREA 17

ARCHAEOLOGICAL POST-EXCAVATION ASSESSMENT REPORT

DECEMBER 2021

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

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HORIZON NUCLEAR POWER

WYLFA NEWYDD, ANGLESEY

AREA 17, ARCHAEOLOGICAL POST-EXCAVATION ASSESSMENT REPORT

DECEMBER 2021

PREPARED BY:

Vix Hughes Principal Archaeologist

REVIEWED BY:

Lynne Gardiner Associate Director

APPROVED BY:

Frank Giecco Technical Director

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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 36350 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 17, which was undertaken in accordance with a Written Scheme of Investigation (WSI) (Horizon Nuclear Power (HNP) 2015) and the Technical Update (HNP 2016). All documents were agreed with Gwynedd Archaeological Planning Services, the archaeological planning advisors to the Isle of Anglesey County Council.

The site consisted of a single area in Field L2, centred on NGR SH 36180 93550 and covering 1626m^2. The archaeological work was undertaken over three days between 31st July and 2nd August 2017.

Area 17 uncovered a pit which contained a small amount of burnt material and a radiocarbon date demonstrated it was of Late Mesolithic date. As such it represents a significant feature within the Wylfa landscape and illustrates the invisibility of such features without scientific analysis.

Extending across Area 17 were a number of ditches that, if contemporary, may have formed a rectilinear field system on an east-west alignment. It is thought that these features belong to a single phase of activity, and were being infilled in the medieval period, but their exact date of origin was unclear. The field system is most likely to date to the medieval period, based on morphological similarities to such features in the region. A single sherd of 13-14th century pottery recovered from the uppermost ditch fill, fragments of late medieval to early post-medieval pottery also suggested a post-Roman date.

There was little clear evidence for associated occupation, such as features or discarded rubbish, within the enclosed areas, and the fields may have been used for either arable production or for pastoral use.

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 17. Cwblhawyd y gwaith yn unol â'r Cynllun Ymchwiliad Ysgrifenedig (CYY/WSI) (Horizon Nuclear Power (HNP) 2015) a'r Technical Update (HNP 2017a). Cytunwyd pob dogfen â Gwasanaeth Cynllunio Archaeolegol Gwynedd, ymgynghorwyr cynllunio archaeolegol Cyngor Sir Ynys Môn.

Roedd Area 17 yn cynnwys un llecyn, yng nghae L2, wedi ei ganoli ar NGR SH 36180 93550 ac yn mesur 1626m². Cwblhawyd y gwaith maes archaeolegol dros dri diwrnod rhwng y 31ain o Orffennaf a'r 2il o Awst 2017.

Yn Area 17 darganfyddwyd bydew gyda nifer bach o ddeunydd llosg, dyddwyd y nodwedd i'r cyfnod Mesolithig Hwyr trwy ddulliau radiocarbon. Oherwydd y dyddiad cynnar mae'r nodwedd yn bwysig yn nhirwedd Y Wylfa ac mae'n dangos anweledigrwydd nodweddion tebyg heb ddadansoddiad gwyddonol.

Yn ymestyn trwy Area 17 roedd nifer o ffosydd. Os yw'r ffosydd yn gyfoes mae'n debyg iddynt fod yn rhan o gyfundrefn caeau petryalog wedi ei alinio dwyrain-orllewin. Mae'n debyg bod y nodweddion yn perthyn i un cyfnod o weithgaredd a'u bod wedi ei llenwi yn y cyfnod canoloesol, nid yw'n glir ym mha gyfnod sefydlwyd y ffosydd. Wrth gymharu'r gyfundrefn ag esiamplau eraill lleol mae'n debygol ei fod yn dyddio i'r cyfnod canoloesol. Darganfyddwyd un telchyn o grochenwaith a ddyddwyd i'r 13-14eg ganrif o lenwad uchaf un ffos, mae darnau o grochenwaith canoloesol hwyr i ol-ganoloesol cynnar hefyd yn awgrymu dyddiad ol-Rufeinig i'r nodweddion.

Nid oedd unrhyw dystiolaeth bendant o feddiannaeth, fel nodweddion neu sbwriel, yn y caeau. Mae'n bosib i'r caeau gael eu defnyddio ar gyfer tir âr neu fugeiliol.

ACKNOWLEDGEMENTS

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

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

The assessment report was written by Vix Hughes. The figures were produced by Helen Phillips and Valeria Tiezzi. The finds assessment was undertaken by Sue Thompson with the prehistoric pottery by Frances Lynch. Freddie Sisson supervised the environmental team which consisted of Rebecca Blakeney, Megan Lowrie, Katherine Bostock and San Tran and the palaeoenvironmental assessment was undertaken by Lynne Gardiner. The project was managed by Frank Giecco and Damion Churchill, with Cat Peters and Frank Giecco edited the initial report with this version reviewed by Lynne Gardiner and approved by Frank Giecco.

1 INTRODUCTION

1.1 Project Circumstances and Planning Background

1.1.1 Between July and August 2017, Wessex Archaeology undertook an archaeological excavation in Area 17, Field L2 at Wylfa Newydd, Anglesey, Wales, centred on National Grid Reference (NGR): SH 36180 93550 (Figure 1). This excavation was one of multiple defined areas excavated as part of a large scheme of works commissioned by the Client who intends to construct a nuclear power station, related plant and ancillary structures and offsite power station facilities for which a Development Consent Order application has been submitted to The Planning Inspectorate (EN010007).

1.2 Primary Reference Numbers (PRNs)

1.2.1 Historic Environment Record event numbers ('PRNs') were assigned following discussions between Wessex Archaeology and Nina Steele, Senior Historic Environment Record Archaeologist at Gwynedd Archaeological Trust. PRN45392 has been assigned to the Wylfa Newydd project as a whole and further event numbers have also been assigned to 'noteworthy components' of the project. Area 17 specific PRNs are presented in Table 1.1.

Table 1.1: PRN gazetteer

PRN	Description	Associated contexts/PRNs
PRN76021	Assigned to the revealed features	
PRN91980	Wide spread of burnt material, Palaeolithic to Mesolithic	(17040)
PRN91981	Oval pit, Late Bronze Age to Iron Age	[17008]
PRN91982	Probable medieval field system, consisting of ditches	{17043}, {17044} and [17010=17022]

1.3 Project Documentation

1.3.1 The project conforms to a brief prepared by HNP following consultation with the Gwynedd Archaeological Planning Service, the archaeological planning advisor to the Isle of Anglesey Council. A WSI (HNP 2015) was then produced to provide a specific methodology based on the brief for a programme of archaeological excavation. 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 17, the subsequent

programme of post-excavation assessment, and the results of this scheme of archaeological excavation. It accords with the Post-Excavation Assessment Method Statement. It follows on from a sequential series of works consisting of desk-based assessments, geophysical surveys and evaluation trenches culminating in the excavation fieldwork.

1.3.3 The excavation of Area 17 was undertaken between the 31st July and 2nd August 2017, in Field L2 (Figure 2). The area of investigation targeted features recorded during the previous trial trenching evaluation. The site consisted of a single area totalling 1626m^2.

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), in accordance with the Wessex Fieldwork Recording Manual (2015) and the *Standard and guidance for the collection, documentation, conservation and research of archaeological materials* (CIfA 2014b).

2.1.2 The fieldwork programme has been followed by an assessment of the data as set out by Historic England's Management of Research of Projects in the Historic Environment (HE MoRPHE 2015).

2.2 Archaeological Excavation

2.2.1 The archaeological excavation comprised the strip, map and sample of a single area covering 1626m^2 in Field L2, centred on NGR: SH 36180 93550. The archaeological work was undertaken over 3 days between 31st July and 2nd August 2017. Area 17 was identified for archaeological excavation to target an area of ditches revealed by the geophysical survey and archaeological evaluation.

2.2.2 Deposits considered not to be archaeologically significant were removed by a 360˚ tracked mechanical excavator with a toothless ditching bucket, under close archaeological supervision. The area was subsequently cleaned by hand. All possible features were inspected, and selected deposits were excavated by hand to retrieve artefactual material and environmental samples. In the case of identified significant spreads or extensive deposits, these were excavated in quadrants or grid squares, to aid spatial recovery. Once completed all features were recorded according to the Wessex standard procedure as set out in the Fieldwork Recording Manual (Wessex Archaeology 2015).

2.2.3 A number of the features had been previously identified during the 2017 Headland evaluation and in these cases the features were re-excavated to either fully remove the remaining fill material or to re-establish the features in the wider context of the excavation.

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

2.2.5 All finds encountered were retained on site and returned to the Wardell Armstrong (WA) Carlisle office where they were identified, quantified and dated to period. A *terminus post quem* was then produced for each stratified context under the supervision of the WA Finds Officer, and the dates were used to help determine the broad date phases for the site. On completion of the project, the finds were cleaned and packaged according to standard guidelines (Watkinson and Neal 2001). Please note, the following categories of material will be discarded after a period of six months following the submission of this report, unless there is a specific request to retain them (and subject to the collection policy of the relevant depository):

- unstratified material;
- modern pottery; and
- material that has been assessed as having no obvious grounds for retention.

2.3 Aims and objectives

2.3.1 The general aims of the project were:

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

And, specifically for the Area 17 excavation,

- *to address archaeological research objectives posed by the Research Framework for the Archaeology of Wales (CIfA Cymru/Wales 2017);*

- *to establish the true nature and function of the various archaeological remains present, specifically to identify the presence of any domestic, industrial or ritual activity and the character of such;*
- *to establish the condition, age and stratigraphic sequence, of any archaeological /historical remains identified;*
- *to gain information on the past environment of the landscape surrounding the investigation area via the recovery, and study, of micro and macro fossils from the feature fills; and*
- *to understand how the remains seen within the investigation area relate to other known features across the landscape (chronologically and stratigraphically as well as spatially), with particular reference to the ring ditch sites identified in field L3 and L8/L12 and the adjacent, extant, clawdd type field boundary on the other side of the SSSI to the north*

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

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

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

3 SITE ARCHIVE

3.1.1 A full professional archive has been compiled in accordance with the project specification, and the Archaeological Archives Forum recommendations (Brown 2011). The archive can be accessed under the unique project identifier (209730 and PRN45392), with copies of the report sent to the Gwynedd Archaeological Trust HER, available upon request. The archive can be accessed under the unique project identifier WA19/CL12283/Area 17/35-2016.

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

Table 3.1: quantification of excavation data

Category	Quantification
Context Sheets	44
Small finds	0
Bulk finds	0.265kg
Environmental samples	3 samples (85 l)
Monochrome film	0
Digital photographs	70
Rectified photographs	0
Hand drawn plans	0
Hand drawn sections	22
GPS survey pre-excavation plans	Yes
GPS survey excavation plans	Yes
TST surveyed excavation plans	No

4 BACKGROUND

4.1 Location and Geological Context

4.1.1 Area 17 is located on the north Anglesey coast, approximately 1km west of the centre of Cemaes, in the northern part of the proposed development area (Figure 1). The site comprised a single area that measured 1626m^2 in Field L2, centred at National Grid Reference (NGR): SH 36180 93550 (Figure 2). It is located 200m to the south of the coastline and the Tre'r Gof Site of Special Scientific Interest (SSSI) lies only 55m to the west.

4.1.2 Area 17 lay on undulating coastal ground at approximately 10m above Ordnance Datum (aOD), with low rocky cliffs dropping to Cemaes Bay to the north.

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

4.1.4 The underlying solid geology within the area of investigation is mapped as mica schist and psammite of the New Harbour Group formed during the Ediacaran period between 541 to 635 million years ago. This is overlain by superficial deposits of Devensian till deposited up to 2 million years ago during the Quaternary period, in a local environment dominated by ice age conditions (BGS 2019). The natural substrate observed during the works at Area 17 comprised a light yellowish grey sandy clay, which is consistent with the mapped geologies above.

4.1.5 The overlying soil is freely draining slightly acidic loam (Cranfield Soil and Agrifood Institute 2019) and was identified on the site as a mid-greyish brown silty sand, up to 0.27m thick.

4.2 Historical and Archaeological Background

4.2.1 An archaeological baseline assessment was produced to assess the known historical and archaeological background of the site and the surrounding landscape to a distance of 6km (GAT 2012b), which was later reviewed and updated (Jacobs 2015). It is not intended to repeat that information here and what follows is an overview relating directly to the immediate environs of Area 17. For further details please refer to the original documents.

4.2.2 ***Period 1 - Palaeolithic and Mesolithic (25 000 – 4000 BC):*** There is no known Palaeolithic or Mesolithic activity within Area 17.

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 17. 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 Changes and transitions occurred during the prehistoric period which included a change from communal burial practices to individual burial customs, as evidenced in 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 Prehistoric remains were uncovered during the evaluation phase in nearby fields K1, K4 and C15, 380-500m to the southwest. These consisted of a substantial burnt mound and a large number of pits which contained both prehistoric pottery and lithic tool debitage. Prehistoric activity has also been noted within field L1, (e.g. Areas 9, 12 and 14) in the form of an unusual, costal burnt mound at Area 13 (L1E), 310m to the northwest and a henge with later settlement at Area 2 (fields L3, L8 and L12) (Wessex 2016).

4.2.8 ***Period 3 – Late Bronze Age and Iron Age (1500 BC – AD 43):*** There is no previously known Late Bronze Age and Iron Age activity within Area 17.

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

4.2.10 The archaeological evaluation trenches in Fields L8 and L12 uncovered significant prehistoric activity in the form of a hilltop ring ditch, 240m to the south-southeast (Wessex 2016).

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

17. Anglesey was invaded in *c.* AD 60-61 by the Roman army and there is evidence of settlement sites, ephemeral military establishments (Jacobs 2015), scatters of Roman artefacts and Romano-British enclosure sites elsewhere across the island.

4.2.12 ***Period 5 - Early Medieval (AD 410 – 1100):*** There is no previously known Early Medieval activity within Area 17.

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

4.2.14 Significant medieval activity including a cemetery site consisting of both grave and cist burials and evidence for both domestic and industrial activity was uncovered by the trial trench evaluation in field L1, c. 500m to the west (Headland 2017, 15-18).

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

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

4.2.17 ***Period 6 - Medieval (1100 – 1539):*** By the 12th century, Area 17 was located within the *Talybolion commote* (a recognised regional unit of royal administration) with a royal manorial centre located at Cemaes (GAT 2012b).

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

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

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

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

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

4.2.23 Although the rural landscape established during the medieval period continued into the post-medieval period there were fewer landowners, controlling larger areas of land resulting in 'estate' type systems with additional houses and farmsteads established.

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

4.2.25 Agricultural land improvements to increase productivity occurred during the post-medieval period, such as draining of bog-land and changes to farming techniques, ploughing, manuring, enrichment, drainage, stock breeds and crop choices. Such late 18th to 19th century land improvements are likely to have removed any remains of earlier surface and buried near surface features, though fairly deep soils may have protected features cut into the substrata

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

4.2.27 The archaeological evaluations (Headland 2017, Wessex 2016) have demonstrated that this is not the complete picture and that there is a more complex landscape spanning the medieval to post medieval periods on Anglesey. Upstanding elements

that can survive include clawdd (plural cloddiau) which can refer to a ditch or bank, and frequently appears in place-names. Within northwest Wales, the term is usually used to describe an earthen bank, often stone-faced. An unusual feature of stoneclad cloddiau is that the facing stones are commonly laid with their long axis vertical (DSWA 2013).

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

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

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

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

4.3 Previous Work

4.3.1 ***Documentary Research:*** An archaeological desk-based assessment was prepared by Gwynedd Archaeological Trust (GAT 2012b), which set out the archaeological and historical background of the site and provided an assessment of the significance of all known and potential heritage assets up to 6km from the area of investigation to support the site preparation and clearance phase of works. An updated desk-based cultural baseline assessment was also prepared by Jacobs (2015) to support the DCO application.

4.3.2 For Area 17 the results did not suggest any specific archaeological potential other than agricultural remains such as post-medieval field boundary ditches and field systems, but that there may also be earlier ones.

4.3.3 ***Geophysical Survey:*** The survey identified only general agricultural linears in Field L2

(GAT 2011a-b and 2012a).

4.3.4 ***Archaeological Evaluation:*** A total of 15 trenches were excavated in Field L2, each measuring 1.8m wide and between 30m and 50m long (Headland 2017).

4.3.5 The highlighted results included three ditches, seen to span four of the trenches (Trenches 2127, 2128, 2129 and 2130) as well as a pit that contained a charcoal rich fill. There was little artefactual material and a single sherd of pottery suggested a 13-14th century date for one of the ditches.

5 ARCHAEOLOGICAL EXCAVATION RESULTS

5.1 Introduction

5.1.1 The excavation of Area 17 was undertaken over three days in late July and early August 2017 in Field L2 (Figure 2). The 1626m^2 area of investigation targeted features recorded during the previous archaeological evaluation. The excavation revealed a number of linear features related to a later rectilinear field system with occasional isolated pits.

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

5.2 Results

5.2.1 An average of 0.27m of mid greyish brown sandy silt topsoil **(17001)**, and up to a further 0.45m of mid reddish-brown silty sand subsoil **(17002),** was removed to reveal the archaeological horizons above the natural geological substrate. A small area of stony mid greyish brown silty clay colluvium **(17024)**, 0.06m thick, was identified on the western side. The natural geological substrate **(17003)** comprised light yellowish grey sandy clay, representing glacial till consistent with the mapped geology.

5.2.2 All features were sealed by the subsoil and truncated the underlying natural substrate.

5.3 Period 1 Palaeolithic and Mesolithic

Phase 1

5.3.1 To the north of the large ditch **{17043}** and continuing beyond the excavated limits was a 4.5m wide spread of burnt material **(17040)**, PRN91980, that consisted of charcoal and stones, 0.35m deep (Plate 1). It appeared to be within possible cut **[17039]**, although it may have been a natural infilled feature rather than a deliberately dug one. The stones within the ashy charcoal deposit **(17040)** were not heat-affected (none were observed from the environmental sample) and there was no evidence of discolouration or changes due to *in situ* burning. Deposit **(17040)** yielded two worn stones which could be whetstones or rubbing stones, a very small amount of fired clay, and a small amount of charcoal and the feature was interpreted as a refuse deposit, rather than a burnt mound. A radiocarbon date from a sample of guelder rose (*Viburnum opulus*) charcoal from fill **(17040)** of pit **[17039]** produced a radiocarbon age of 7830±30 BP (Beta-553526) which produced a date with 95.4% probability of 6747-6596 calBC which placed it in the Late Mesolithic period.

5.4 Period 3 Late Bronze Age to Iron Age

5.4.1 Only one feature could be attributed to this period. However, it is likely that there was further activity in the vicinity during this era.

5.4.2 Feature **[17008]**, PRN91981, was oval, *c*. 0.8m wide by 0.3m deep and contained a single fill **(17009)** (Plate 2), which had a proportion of heat affected stones, located towards the centre, occasional charcoal, five small fragments of late Prehistoric pottery and a possible fragment of worked chert (missing from the archive). The feature was probably a truncated pit and the environmental sample confirmed there was charcoal and heated stones, and a very small amount of undiagnostic probable Prehistoric pottery indicative of discarded fuel waste.

5.4.3 During the 2017 evaluation a small number of flint artefacts were recovered, and this, combined with the number of well-made intentional blades, points towards a similarly early date range predating the middle Neolithic (Headland 2017, 31). It may transpire that some of the undated features may belong to this period.

5.5 Period 6 Medieval

Phase 3

5.5.1 Elements of a probable former field system, PRN91982, were seen to comprise three ditch features **{17043}**, **{17044}** and **[17010=17022]**, observed across modern Field L2 (Figures 3 and 4). The field system may have been more extensive and included the more irregular ditch **[17035=17041]** but this could not be substantiated.

5.5.2 The field system was rectilinear in plan orientated east-west and it continued beyond the limits of excavation. Only the larger northern ditch **{17043}** and the southern ditch **[17010=17022]** had been identified as linear anomalies by the geophysical survey.

5.5.3 Ditch **{17043}** was aligned east-west, and exposed for *c*. 25m, along the northern side of the field system, parallel to **{17044}** to the south. A total of three sections **[17014=17027=17029]** were excavated along the length of the boundary ditch, and these were additional to three interventions seen in the earlier evaluation [**2127-005**, **2128-004** and **2130-004**] and a further non-excavated portion [**2129-004**] (Headland 2017).

5.5.4 Ditch **{17043}** measured up to 2.3m wide and 1.2m deep and there were variable fills identification. It would appear that, towards the western side there were probably three fills within the ditch **[17029],** (Plate 3; Figure 6), while at the eastern side there

was only one identified fill seen as **(17028)**. The sequence of fills suggested that the earlier lower material **(17017)** and **(17030)**, (evaluation 2127-010), may been a natural accumulation, while the 'middle' fills **(17016)** and **(17031)**, seemed to contained higher proportions of stones, potentially indicating the direction of tip from an adjacent bank. The uppermost fills **(17015)** and **(17032)** also contained stone inclusions, suggesting an ongoing gradual accumulation, mostly by natural means. None of the fills excavated contained any artefactual material though one sherd of medieval pot was retrieved from the upper fill (**2130-005**) during the evaluation trenching.

5.5.5 To the immediate south of ditch **{17043}** and approximately parallel to it was ditch **{17044}**. The ditches were not entirely parallel; 5.8m apart at the western end narrowing to a 2m gap at the eastern side. Ditch **{17044}** was generally narrower than ditch **{17043}**, at 0.6-0.9m wide, and considerably shallower at 0.2m deep. It was aligned east-west, visible for a 32m length and had a curved terminus at the western end **[17004]**.

5.5.6 Four sections **[17004**, **17006**, **17012** and **17020]** were investigated in ditch **{17044}** during the excavation phase (Plate 4). These were additional to two interventions seen in the earlier evaluation [**2128-010** and **2130-008**] and a further non-excavated portion [**2129-005**] (Headland 2017). The feature appears to have been of a single construction with a gentle U-shaped concave profile (Figure 5). It contained a single dark brown silty sand fill, seen as (**17005**, **17007**, **17013** and **17021)**. There was a suggestion that the terminus fill **(17005)** was more humic but this could not be confirmed. The fills excavated contained no artefactual material. However, one sherd of medieval pot was found during the evaluation trenching (**2128-011**, **2130-007**), along with a number of lithic artefacts and a fragment of late medieval pottery.

5.5.7 At a distance of 25m, to the south, was ditch **[17010=17022]**, which was on the same east-west alignment as ditches **{17043}** and **{17044}** and may have effectively formed a boundary on the opposing side of the field. The ditch was also seen in the evaluation as [**2127-007**]. The ditch **[17010=17022]** extended over 11m and incorporated a probable terminus at the eastern end, **[17022]**. A very small fragment of pottery was recovered from fill **(17011)** of ditch **[17010]**, which dated to the late medieval to post-medieval period.

5.5.8 The feature appears to have been a single construction with steep sides and a narrow flat base, forming an open V-shaped profile (Figure 5). This feature corresponded to a

linear anomaly seen in the geophysical survey. Ditch **[17010=17022]** measured at least 2m wide by 0.7m deep. It contained a single mid brownish grey sandy silt fill with frequent stone inclusions, particularly towards the sides and base, seen as **(17011)** and **(17023),** and contained one sherd of pottery from **(17011)** broadly dated to the late Medieval to Post-medieval era.

5.5.9 To the southeast was a possible southern return of the field enclosure, seen as ditch **[17041]**. Ditch **[17041]** ([**2127-009**] in the evaluation) was aligned northeast-southwest and exposed for 11m continuing beyond the excavated limits. The purported original feature was a single construction with a U-shaped concave profile, up to 1.1m wide and 0.23m deep. It contained a single fill, described as a mid-greyish brown silty clay **(17042),** which contained no artefactual material. It was recorded as having been truncated by feature **[17035]** (Figure 6).

Phase 4

5.5.10 There were tentative indications of slightly later activity, stratigraphically, with a small number of features being re-cut.

5.5.11 The east-west ditch **{17043}** appears to have been partly re-dug with a shallow ditch, visible as ditch **[17029]** re-cut by **[17033]**. This later ditch **[17033]** was smaller, at only 1.1m wide, and had gently concave sides and a wide flat base in profile. Records appear to show the re-cut on the northern side of the original ditch. A similar re-cut was observed in the adjacent evaluation slots with the earlier ditch [**2128-004**] being cut by [**2128-008**] and [**2127-005**] cut by [**2127-012**]. However, these are recorded as having cut the southern edge of the earlier, larger ditch (Headland 2017, 15).

5.5.12 Another ditch **[17041]** was recorded as having been re-cut by a linear feature **[17035]**. Feature **[17035]** may have been the remains of a very shallow 0.15m deep ditch, or potentially the disturbance from an adjacent hedgeline, along the western side of the small ditch **[17041]** (Figure 8).

5.6 Undated features

5.6.1 In the southern part of Area 17 was a small number of varied discrete features, **[17018]** / **[17025]** and **[17037]**.

5.6.2 To the immediate west was a much larger, 4.5m wide, feature **[17018]** which was circular and of a similar depth (Plate 5; Figure 10). The single fill **(17019)** contained frequent angular stones, derived from the underlying natural, but none were heat affected and there no charcoal inclusions or artefacts were present. The feature may

have been a natural depression / undulation in the geology which infilled with sediment accumulated by natural means.

5.6.3 Apparently truncating feature **[17018]** was a possible east-west trending linear feature **[17025]** (Plate 5; Figure 10). The feature was extremely shallow, at 0.08m deep, and may simply have been a variation of material or a small area of overlying subsoil remaining in a hollowed area. The fill **(17026)** was a paler colouration than **(17019)** and contained no artefactual material.

5.6.4 To the south, feature **[17037]** was circular, 0.3m deep, with a single fill **(17038)** and rare heat affected stones are noted (Plate 6). The feature may have been the remains of a small pit.

6 FINDS ASSESSMENT

6.1 Introduction and Methodology

6.1.1 A total of four artefacts, weighing 209g, were recovered by hand from Area 17. In addition, there was 54g of material from the samples (producing a total of 263g, but one 8g item was missing). The finds were in moderate condition with some abrasion noted. Quantification of finds by material and context is given in Table 6.1 and includes those recovered from the samples.

6.1.2 All finds were dealt with according to the recommendations made by Watkinson & Neal (1998) and professional guidance (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.

6.1.3 The material archive has been assessed for its local, regional and national potential in line with the archaeological research framework for Wales (CIfA Cymru/Wales 2017).

Table 6.1: quantification of finds by context and material

Context	Material	Quantity	Weight (g)	Period / Date	Comments
17009	Lithic	1	8	-	Missing
17009	Pottery	4	8	Late Prehistoric	Very small and abraded, from sample <17001>
17009	Stone	1	35	-	Heat affected but unworked, from sample <17001>
17011	Pottery	1	4	Late Med-Post Med	Sandy oxidised fabric with trace of external glaze
17040	Stone	2	197	Prehistoric – Roman?	Whetstones. Rounded elongated pebbles
17040	Fired clay	-	11	-	Very small and abraded, from sample <17003>
Total		**8**	**255**		

6.2 Prehistoric pottery – *by Frances Lynch*

6.2.1 This site is situated some 200m south of the shore at Porth Wylfa and to the east of the marshland of Tre'r gof. It contained portions of medieval field system ditch, as well as couple of spreads of material and a handful of discrete features. One of the burnt spreads produced three whetstones of uncertain date and the other. Pit [17008] produced 7 tiny scraps of prehistoric pottery and a chert flake. The prehistoric pottery is undatable but in the evaluation stage I saw a sherd which I suggested might belong to the earlier Bronze Age, judging by its fabric. (see note below written 2017).

Pottery from Context (17009), Sample 17001 from Pit 17008.

6.2.2 There are 4 fragments, all less than 20 x 15mm, and 3 crumbs. The outer surface is beige and the inner is black. The inner surface is smooth and the outer rather less so, because it is slightly softer. The significant features are that it is very hard and relatively thin (6mm). It contains a fair quantity of very small dark stone grits and is dense – not at all vesicular.

6.2.3 If it had been slightly vesicular and less hard it might have been Early Neolithic 'Irish Sea Ware' and if it had been simply less hard it might be similar to the not very characteristic necked sherds from the Wylfa Head site, some 500m to the west, where Neolithic stone axes have been found. I have suggested that this WH material is Early Neolithic because of the axes, though they are not directly associated. There is nothing specifically Neolithic from Area 17, to warrant making a similar suggestion here. The hardness of firing is a characteristic of the later Bronze Age material from EV9 near Tregele, the only site to produce a significant assemblage of material. But all this material is much thicker and normally red or pink in colour on the outside and black inside. It also has more and larger stone grits, very often an easily recognised rhyolite.

6.2.4 The content of Pit [17008] was small burnt stones and charcoal (Plate 2 in Wessex Report) and a 'chert flake'. None of this would help to date the pottery unless there was a good radiocarbon date, but the cost of this would scarcely be justified. The conclusion must therefore be that this pottery cannot be dated.

Pottery identified during the evaluation: Task Area 1 Zone L Field L02 Trench 2131 NGR 362 935

Context 2131-004, a fill of Pit 2131-007

6.2.5 One undecorated sherd (30 x 25 x 10mm) and a small piece of burnt stone. The sherd is smooth surfaced inside and out; the outer surface is pink; the inner one is dark grey with a sharp distinction between the two. The clay is compact, well-fired and contains sparse stone grit, both small angular dark stone and the occasional larger piece. This is essentially undatable, but the fabric suggests it could be Early Bronze Age.

6.2.6 I have looked at this again in Oriel Ynys Môn and would confirm my earlier guess that it is Early Bronze Age in date. In addition to the sherd I saw in 2017, there are 3 crumbs of red outer surface from the sieving of samples from Pit 2131.007. These clearly come from pottery similar to the complete sherd. Neither find is like the scraps from Pit

17008 which is about 22m due north of 2131.007, so they do not provide any real clue to the date of Pit 17008.

6.3 Medieval to Post-medieval Pottery

6.3.1 The pottery was examined with a x10 hand lens and recorded according to guidelines published by the Medieval Pottery Research Group (PCRG, SGRP & MPRG 2016).

6.3.2 A single abraded pottery sherd weighing 4g was recovered from context **(17011)**. The pottery sherd comprised a wheel thrown, sandy oxidised fabric, with traces of a clear glaze noted externally. A late medieval to early post-medieval date is possible, although it is difficult to be more precise with this non-diagnostic body sherd.

6.4 Lithics

6.4.1 A single struck chert recovered from context **(17008)**, weighing 8g, was missing from the finds assemblage.

6.4.2 During the evaluation stage a small number of flint pieces were recovered and a mention is made of them here, in lieu of the missing data. Some of the well-made intentional blades point towards a similarly early date range predating the middle Neolithic. The use of soft hammer reduction on pieces from this field add to the evidence of late Mesolithic to early Neolithic dates (Headland 2017, 31).

6.5 Stone

6.5.1 Two stone artefacts, weighing 197g, were recovered from context **(17040)**.

6.5.2 The stones were both elongated fine-grained pebbles measuring 145x38mm and 120x25mm, and both appear to display worn areas similar to whetstones and rubbing stones recovered during the A55 road scheme. Dating is difficult as similar objects were used over long periods, although a broad date of late prehistoric to Roman has been assigned to many similar objects from the A55 road scheme (Smith 2012, 160-164). It may be that the whetstones are of a similar date to the A55 road scheme stone finds, which were recovered from roundhouse features. Stone artefacts recovered from the A55 road scheme were used as comparative material for the Area 17 stone artefacts largely because the similarities shown between the two assemblages from these sites.

6.6 Finds from Environmental Samples

6.6.1 A very small quantity of finds, other than the prehistoric pottery already reported on above, was recovered from environmental samples, including 11g of possible fired

clay from sample <17003> of **(17040)** and 35g of heat-affected stone, from sample <17001> of fill **(17009)**. All of the finds are very small, heavily abraded and highly fragmentary.

7 PALAEOENVIRONMENTAL ASSESSMENT

7.1 Introduction

7.1.1 Three bulk samples were taken during the excavation at Area 17. A total weight of 139kg (85l) of sediment was processed for this stage of works. Further details for each sample can be found in Table 7.1.

7.2 Methodology

7.2.1 This report presents the results of the assessment of the environmental samples, palaeobotanical and charcoal remains in accordance with Campbell *et al.* (2011) and following Wardell Armstrong methodologies (2018;2019). The assessment will establish the significance of the material and will only provide identifications where it was practicable to do so, such as, small quantities of plant material or charcoal identifications where radiocarbon determinations are sought. The report will focus on the preservational qualities and note the potential of the material to warrant analysis.

7.2.2 The bulk environmental samples were processed at Wardell Armstrong LLP. The colour, lithology, weight and volume of each sample was recorded using standard Wardell Armstrong pro forma recording sheets. The samples were processed with 500-micron retention and flotation meshes using the Siraf method of flotation (Williams 1973). Once dried, the residues from the retention mesh were sieved to 4mm and the artefacts and ecofacts removed from the larger fraction and forwarded to the finds department. The smaller fraction was scanned with a magnet for microslags such as hammerscales. This fraction was then examined for smaller artefacts such as beads. Once fully sorted, and all relevant material removed, the retent residues were discarded.

7.2.3 The flot plant macrofossils and charcoal were retained and scanned using a stereo microscope (up to x45 magnification). Any non-palaeobotanical finds were noted on the flot pro forma, as seen in 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 In the absence of single growth entities such as charred plant remains and hazel nutshell fragments charcoal will be utilised for radiocarbon determinations. Charcoal was only identified to species to select the shortest-lived species for radiocarbon

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

7.3 Results

7.3.1 Sandy silt dominated the samples' sediment matrix with lesser quantities of silty clay sediments, further data can be observed in Table 7.1. Flots and finds from samples data can be observed in Table 7.2.

7.3.2 Artefactual material recovered from the dried residues were minimal but contained examples of pottery, fired clay and heated stone.

7.3.3 Charcoal was observed in two of the samples. Both were pit fills; **(17009)** <17001> from pit **[17008]** and **(17040)** <17003> from pit **[17039]**. The charcoal presented was comminuted and slightly silted. The charcoal from **<17003>** was identified, for radiocarbon purposes, and guelder rose (*Viburnum opulus*) was identified.

7.3.4 No plant remains, bone or shell was observed.

7.3.5 The magnetised matter (in all samples) contained no microslags.

7.4 Radiocarbon

7.4.1 One charcoal sample was submitted to Beta Analytic for radiocarbon determination. Full results are included in the radiocarbon certification form in Appendix 5.

7.4.2 The sample was treated according to Beta Analytics methodology (Beta Radiocarbon Dating 2020). The production of the radiocarbon age followed Reimer *et al.* (2013) and was calibrated to the calendar timescale following Bronk Ramsey (2009).

7.4.3 A sample of guelder rose (*Viburnum opulus*) charcoal from <17003> of fill **(17040)** of pit **[17039]** provided a radiocarbon age of 7830±30 BP (Beta-553526, 95.4% probability 6747-6596 calBC), which falls in the later Mesolithic Period.

7.5 Discussion

7.5.1 The very small charcoal assemblage offers little interpretative value. It is worth mentioning that very few samples were taken during the excavation and this has limited the available information and restricted the interpretation. However, the

charcoal from fill **(17009)** sample <17001> of pit **[17008]** with its association of material recovered from the sample (heat-affected stone and pottery sherds) may indicate the remnants of rubbish disposal.

7.5.2 As background information, the evaluation took six samples from the same vicinity and these included samples from the equivalent fills of Ditch Groups **{17043}** and **{17044}**. There were occasional charred plant remains in four samples from ditch fills (Headland 2017). The large numbers of grains in ditches [**2130-004**], sample <28> which was part of Ditch Group **{17043}** and (**2130-008**), sample <29> which was part of Ditch Group **{17044}** contained oats and (six-row) hulled barley, with only small amounts of free-threshing wheat grains. The grains may provide evidence on the range of cereals used on site and were probably locally cultivated (Headland Archaeology 2017, 36). The cereal assemblages from both, and the rich wild plant / weed seed assemblage from <28>, suggest a post-Roman date (*op. cit*. 41).

7.6 Statement of Potential

7.6.1 The size of the assemblages would not add any value to extant datasets nor enhance current knowledge stated in the Regional Research Framework of Wales (2017).

7.6.2 *Radiocarbon suitability*: the charcoal from <17001> also may be suitable for further dating and would require identification to species prior to submission to select the shorter lived species to mitigate against the potential 'old wood effect' that may present a radiocarbon age far older than the feature.

7.6.3 *Retention and discard*: the charcoal may be suitable for retention until radiocarbon requirements have been decided. The magnetic matter from all samples may also be discarded.

Table 7.1: sample information

C	<>	TQ	Cut	Desc	MP	PW	PV	SW	SV
17009	17001	4	17008	Fill of pit	Silty sand	57	34	15642	10000
17017	17002	4	17043	Fill of ditch	Silty clay	45	26	14179	8420
17040	17003	3	17039	Fill of pit	Sandy silt	37	25	11551	7600
					total	139	85		

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

Table 7.2: flot and finds from sample data

		Flots			Retent				
C	**<>**	**WF**	**VF**	**Ch**	**Ch**	**FC**	**HS**	**MM**	**Po**
17009	17001	84	100	0.31	9	-	29	<1	8g (5)
17017	17002	2.3	10	-	-	-	-	<1	-
17040	17003	99.2	120	-	4	11	-	<1	-

Key: WF= weight (g) of flot, VF= volume (ml) of flot, Ch= charcoal (weight g), FC= fired clay (g), HS=heat-affected stone (g), MM= magnetised matter (weight g), Po= pottery (quantity in () and weight (g)

8 DISCUSSION

8.1 Interpretation

8.1.1 The archaeological excavation of Area 17, in Field L2, within the proposed development site of a new nuclear power station at Wylfa Newydd, Anglesey, allowed the investigation and recording of the archaeological remains revealed by the strip map and sample work.

8.1.2 There are constraints on the potential full interpretations due to the nature of the excavation recording (Wessex). Some of the records are inconsistent or incomplete which has hindered an assured stratigraphic interpretation. There has been a need to incorporate the evaluation information (Headland) which has partially redressed the issue.

8.1.3 The purpose of the Area 17 excavation was to investigate the archaeological potential revealed by the geophysical survey and the results of the trial trenching programme. The geophysical survey (ASWYAS 2015, GAT 2011a, 2011b and 2012a) revealed the potential existence of a linear ditch feature. The evaluation identified the existence of linear ditch features and required full investigation.

8.1.4 The uncovered archaeology consisted of linear ditch features, and a small number of isolated, discrete features. The linear remains extended over 30m and beyond the limits of the excavated area. The few, relatively small, isolated features were scattered at a low density across the area.

8.1.5 The archaeological remains in Area 17 were seen to demonstrate a relatively simple stratigraphic sequence with all features sealed by the subsoil and truncating the natural substrate. There were few intercutting features either discrete or linear in form and very few features had more than one fill, the exceptions being the deeper ditch **{17043}**. For each Period present on the site there was only one to two observable phases of activity. The features may therefore be single entities demonstrating a sequence of establishment, use and then minimal maintenance and disuse, although the exact duration is difficult to discern.

8.1.6 There was a lack of artefactual material from the majority of contexts which meant that secure independent dating of the deposits or features identified on this basis was not possible. Further accurate dating by scientific means, namely radiocarbon, is unlikely to address this issue since only three samples were taken and two yielded charcoal. The majority of the features appeared to date to one period, the

Medieval/Post-medieval era, though C14 dating demonstrated some activity on the site during the Mesolithic period.

8.1.7 There was one confirmed early prehistoric feature **[17039]** within Area 17, and the probable pit **[17008]** may be also a candidate for prehistoric activity. The spread of burnt material and stone **(17040),** within **[17039]**, of late Mesolithic date, contained two worn utilised stones, but the form and inclusions may reflect discarded fuel waste and rubbish. The deposit was not overly thick and this may be the result of preservation, truncation by modern agriculture or it may reflect the short-lived, expedient nature of the activity. A prehistoric presence in the landscape can also be attested to from the residual stone artefacts (most found during the evaluation work), which, due to their durability, have survived.

8.1.8 Extending across Area 17 were a number of ditches that, if contemporary, may have formed a rectilinear field system on an east-west alignment. It is thought that these features belong to a single phase of activity, and were being infilled in the medieval period, but their exact date of origin was unclear. The field system is most likely to date to the medieval period but this is based on morphological similarities to such features in the region, a single sherd of 13-14th century in the uppermost fill and the broad suggestion that the cereal assemblages recovered from the two most northern ditches during the evaluation phase both suggested a post-Roman date (Headland Archaeology , 41).

8.1.9 It is difficult to be certain as to the exact associations between the ditches. Three are aligned east-west and a further much shallower linear feature was seen to be aligned northeast-southwest. Certainly, the northernmost ditch **{17043}** and ditch **[17010=17022]** to the south are comparable in form and are on exactly the same alignment. It is acceptable to assume that they form two boundaries and belong to the same field system.

8.1.10 Due to the restricted area exposed it was unclear whether the field system was designed to provide a number of focused small enclosed fields with specific functional use or whether they were more extensive and reflected land ownership. The field system does not correlate with any historic mapping and although it might be a continuation of current field layouts, this is uncertain. There was no clear evidence for occupation, such as features or discarded rubbish, within the enclosed areas, and the fields may have been used for either arable production or for pastoral use.

8.1.11 The large east-west ditch **{17043}** to the north, correlated with the geophysical survey

results but did not appear on historic mapping. The form and substantial size of the ditch indicates that it would have provided a functional boundary, allowing for spatial segregation, perhaps for controlling stock. Although it would have been visible within the landscape given that, in all likelihood, there would have been a bank, which may have been supplanted by vegetation in the form of a hedge, it probably did not provide a feasible defensive structure.

8.1.12 The form and fills also implied that the boundary itself has remained significant for a considerable period of time, infilling gradually, with no clear evidence of dumping or deliberate backfilling. No datable finds were recovered during the excavation, but one sherd of medieval pot was found during the evaluation trenching, suggesting that the ditch was being infilled by the 13-14th century, and thus the sherd of late medieval to early post-medieval date could indicate a protracted infilling process.

8.1.13 The ditch showed evidence of having been re-cut, which again suggests that it formed a significant feature in the landscape worthy of maintaining or re-establishing.

8.1.14 To the south, ditch **[17010=17022]** also corresponded to an anomaly in the geophysical survey. The evaluation concluded that the feature represented, not a ditch, but an alluvial channel, running downslope on a northeast-southwest alignment, toward the edge of the Tre'r Gof SSSI (Headland Archaeology 2017, 20). Full excavation was able to provide additional information that clearly demonstrated the feature was a deliberate ditch and probably functioned as a field boundary.

8.1.15 The third east-west ditch **{17044}** is smaller and not quite parallel and had a curved terminus. The lack of size precludes it from being an effective boundary on its own, and if they are contemporary it would seem more plausible if each served a different function. If the larger ditch was a boundary then the smaller one might have been for drainage. Alternatively, it is hypothesised that the smaller ditch was a precursor to the later ditch, and the features are not contemporary. The evaluation demonstrated that burnt crop waste / processing had been discarded into the ditch fills of both **{17043}** and **{17044}** illustrating that arable resources were part of the economy.

8.1.16 To the southeast, ditch **[17041]** and the re-cut **[17035]** is unlikely to have been the possible southern return of Ditch **[17010=17022]** and part of the field system/enclosure. It was far shallower and did not share the same form as the other ditches thought to be associated. The ambiguity of the feature means that it may have been a shallow ditch, possibly a hedgeline, plant bedding trench or a worn linear depression.

9 STATEMENT OF POTENTIAL

9.1 Significance

9.1.1 The Area 17 rectilinear field system forms part of the wider setting of land use on Anglesey. Other elements are seen in the nearby fields including further west L1 itself (Areas 11, 12 and 13), to the east (Area 1, Field L4), south (K1, K4, C10 and C16) and southeast (Area 2, Fields L8, L9, L11, L12, L13 and L16).

9.1.2 There is some potential for the rectilinear field system in Area 17 to contribute to a wider understanding of the development of enclosure in Anglesey, although its significance is low to moderate. Remains, such as those found in Area 17, that can be confidently assigned to the medieval period are not particularly well represented in the archaeological record and may contribute to published research aims (IFA Wales 2003, 2011, CIfA Cymru/Wales 2017). As an individual element of the Wylfa site, Area 17 has a limited scope to fit into the development of the wider historic landscape, but the significance is in being able to compare, contrast and thereby try and gain an understanding of early field systems, their development and degree of continuity. There are a number of other areas, with which combining the data may further this, including those in closest proximity, Area 16 to the south (Field K2) and Area 14 to the northwest (Fields L1 and L20).

9.1.3 This site can produce valuable information on land organisation and environment. There are specific research aims related to settlement, and the accumulating data is advancing the understanding of the forms, chronology, landscape setting, environmental context and function of such features.

9.1.4 Although there is a need to identify and understand pasture land in locations other than upland locations, particularly within such locations as coastal wetlands, as part of the research aims (IFA Wales 2003, 2011, CIfA Cymru/Wales 2017), the suggestion is that arable use can be demonstrated but whether pastoral use is absent or simply undetectable has yet to be considered.

9.1.5 The field system seems at variance to the prehistoric enclosure seen in L8 and L12 and the potential extended field systems, as hypothesised in Area 1, Field L4. There may also be the potential to establish whether the boundaries might have earlier origins and are part of early medieval land divisions. As such they form a significant part in understanding how the landscape has changed and developed.

9.1.6 There may be some significance in terms of prehistoric activity, if any features within

Area 17 can be dated to this era. This is possible given the small assemblage of flint artefacts recovered, (Headland Archaeology 2017, 31) though they may be residual within later features and the known pit [2131-007], seen in Trench 2131 less than 10m to the south contained four pottery sherds of Bronze Age date. The feature was in relatively close proximity to the northern edge of the Tre'r Gof SSSI, and might represent some form of activity focussed on the water body or might be an outlier to the settlement activity focussed further upslope, in Fields L3 and L8 (Headland Archaeology 2017, 43).

9.1.7 Feature fills and deposits can be repositories of palaeoenvironmental data however, the size of the Area 17 excavation assemblage can only add a limited value to extant datasets nor can it enhance current knowledge stated in the Regional Research Framework of Wales (CIfA Cymru/Wales 2017). Only three samples were taken, of which only two produced charcoal. There is little potential to identify different fuel sources and there was no evidence of charred cereal grains or chaff. Therefore, there is limited potential although this can be increased by including material from the evaluation to provide a fuller understanding of the local farming economy and the wider exploitation of the natural environment in the past. The small assemblage is of local significant but low archaeological potential.

9.2 Recommendations

9.2.1 The archaeological remains will expand on our understanding of the archaeology of the Isle of Anglesey regarding the regional research framework of Wales (CIfA Cymru/Wales 2017). In order to do this, there is a need to combine the various datasets already produced into a searchable database that can allow the information to be unified and interrogated in a rapid and meaningful manner. This could also assist in producing an accessible resource for digital deposition and public dissemination.

9.2.2 The results of the Area 17 archaeological excavation should be incorporated with the results of wider Wylfa Newydd scheme, and the results disseminated to interested parties and the public. This should be done through deposition of an ordered archive at the suitable repositories for both physical and digital material, the deposition of a detailed report at the Historic Environment Record (HER) and publication.

9.2.3 The full analysis of data from Area 17 should be utilised to consider issues discussed as part of the written scheme of investigation (HNP 2015, 2016), including the dating, characterisation and pattern of historic field systems and an examination of isolated discrete features, since there may be invisible Periods within the landscape, only

detectable from such large scale projects as this.

9.2.4 Full analysis of the evidence, incorporating the evaluation environmental data, from the rectilinear field system may assist with confirming a date and types of arable agriculture for the remains. This would help in understanding the development and degree of continuity of land divisions in Anglesey. It will also be crucial to understand how evidence for settlement fits into patterns of landuse and determining if there are detectable regional variations.

9.2.5 There is a need to further analyse the potential field systems on an expanded spatial scale. This will involve returning to historical mapping, combining other data sources and examining other examples from both similar and dissimilar topographic regions to test hypotheses of how various ditches may fit together, their relative functions, relationships to settlements or other activity foci and recreate the medieval field systems of Anglesey.

9.2.6 It is recommended that full analysis of the environmental samples from the Area 17 excavation be undertaken as although so little was gathered at least one feature is of Late Mesolithic date and dating of a second discrete feature would be possible.

9.2.7 In terms of the artefacts from Area 17 there are no recommendations for further work except for the two worn potential rubbing stones from **(17040)**. Comparison of pottery to the wider artefact assemblage

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APPENDICES

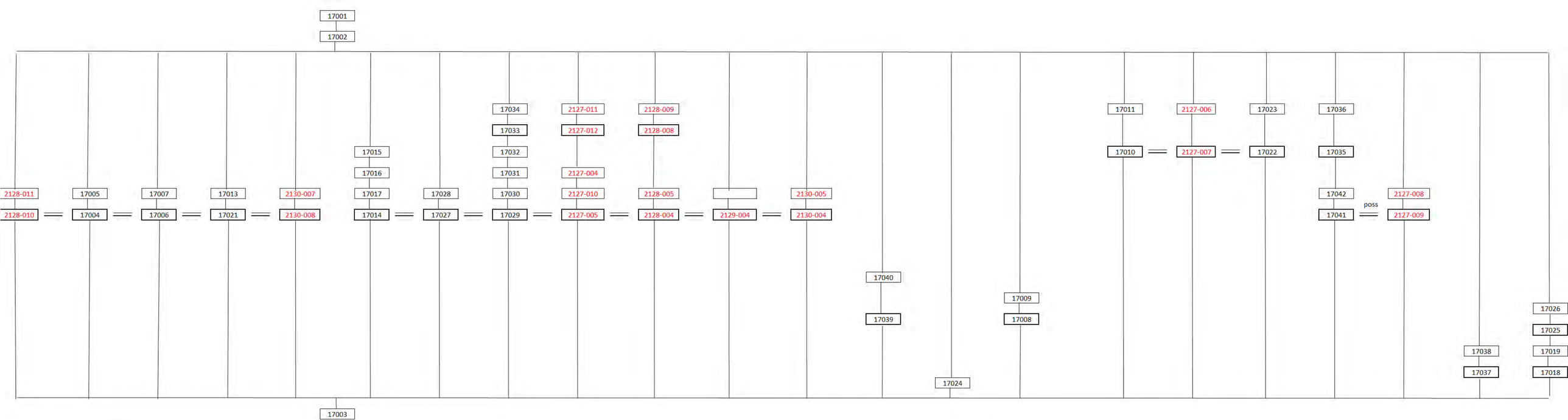
APPENDIX 1: CONTEXT INDEX

Context Number	Context Type	Description	Width	Height/Depth	Discussion
17001	Layer	Mid greyish brown sandy silt	N/A	0.27m	Topsoil
17002	Layer	Mid reddish brown silty sand, occasional charcoal inclusions	N/A	0.45m	Subsoil
17003	Layer	Light yellowish grey to brown sandy clay	N/A	N/A	Natural geology
17004	Cut	E-W aligned linear ditch, gentle U-shaped profile, concave sides and base	0.6m	0.1m	Ditch filled by 17005
17005	Fill	Dark brown silty sand, rooting	0.6m	0.1m	Fill of ditch [17004]
17006	Cut	E-W aligned linear ditch, gentle U-shaped profile, concave sides and base	0.7m	0.2m	Ditch filled by 17007
17007	Fill	Dark brown silty sand, rooting	0.7m	0.2m	Fill of ditch [17006]
17008	Cut	Oval with irregular concave sides and base	0.81m	0.3m	Pit filled by 17009
17009	Fill	Dark greyish brown sandy clay, frequent heat affected stones and charcoal inclusions	0.81m	0.3m	Fill of pit [17008]
17010	Cut	E-W aligned linear ditch, straight sided open V-shaped profile	2.4m	0.68m	Ditch filled by 17011
17011	Fill	Mid brownish grey sandy silt, frequent small sub-angular stones	2.4m	0.68m	Fill of ditch [17010]
17012	Cut	E-W aligned linear ditch, gentle U-shaped profile, concave sides and base	0.8m	0.2m	Ditch filled by 17013
17013	Fill	Dark brown silty sand, frequent small stones	0.8m	0.2m	Fill of ditch [17012]
17014	Cut	E-W aligned linear ditch, asymmetrical sides, stepped steep sides, base not seen	2.3m	1.2m	Ditch filled by 17015, 17016 and 17017
17015	Fill	Mid greyish brown sandy silt, frequent small sub-angular stones	2.3m	0.4m	Upper fill of ditch [17014]
17016	Fill	Mid brownish grey clayey sand, moderately frequent small sub-angular stones	1.8m	0.3m	Fill of ditch [17014]
17017	Fill	Mid greyish brown silty sand, frequent small sub-angular stones	1m	>0.36m	Lower fill of ditch [17014]
17018	Cut	Circular, gently concave sides and broad concave base	4.5m	0.33m	Uncertain feature, filled by 17019
17019	Fill	Dark greyish brown sandy silt, frequent small to large angular stones	4.5m	0.33m	Fill of uncertain feature [17018]

Context Number	Context Type	Description	Width	Height/Depth	Discussion
17020	Cut	E-W aligned linear ditch, gentle concave sides and base	0.9m	0.12m	Ditch filled by 17021
17021	Fill	Dark brown silty sand, frequent small stones	0.9m	0.12m	Fill of ditch [17020]
17022	Cut	E-W aligned linear ditch, straight sided V-shaped profile, narrow base	1.98m	0.87m	Ditch filled by 17023
17023	Fill	Mid brownish grey sandy silt, frequent small sub-angular stones	1.98m	0.87m	Fill of ditch [17022]
17024	Layer	Mid greyish brown silty clay, moderately frequent sub-angular stones	1.45m	0.06m	Colluvium
17025	Cut	E-W trending linear feature, gently concave sides and base	0.6m	0.08m	Uncertain linear feature, filled by 17026
17026	Fill	Light brown sandy silt, occasional angular stones	0.6m	0.08m	Fill of uncertain feature [17025]
17027	Cut	E-W aligned linear ditch, symmetrical steep sides, with a stepped profile into a vertical sided flat based slot	1.7m	0.8m	Ditch filled by 17028
17028	Fill	Mid brown sandy silt, moderately frequent small sub-angular stones	1.7m	0.8m	Fill of ditch [17027]
17029	Cut	E-W aligned linear ditch, symmetrical steep sides, with a stepped profile, base not seen	2m		Ditch filled by 17030, 17031 and 17032
17030	Fill	Mid brown clayey silt, occasional stones	0.7m	>0.28m	Lower fill of ditch [17029]
17031	Fill	Dark greyish brown silty clay, moderately frequent medium stones	1.3m	0.6m	Fill of ditch [17029]
17032	Fill	Mid yellowish brown silty clay, moderately frequent small stones	2m	0.23m	Upper fill of ditch [17029], cut by [17033]
17033	Cut	E-W aligned linear feature, gently concave sides and base	1.1m	0.2m	Ditch re-cut filled by 17034
17034	Fill	Dark greyish brown silty clay, moderately frequent small stones	1.1m	0.2m	Fill of ditch [17033]
17035	Cut	NE-SW aligned linear ditch, gently concave sides and base	0.72m	0.15m	Ditch filled by 17036, cuts 17042
17036	Fill	Mid greyish brown silty clay, frequent sub-angular stones	0.72m	0.15m	Fill of ditch [17035]
17037	Cut	Circular with gently concave sides and base	0.81m	0.3m	Pit filled by 17038

Context Number	Context Type	Description	Width	Height/Depth	Discussion
17038	Fill	Mid yellowish brown sandy silt, rare heat affected stone	0.81m	0.3m	Fill of pit [17037]
17039	Cut	Irregularly circular, gently concave sides and flat / uneven base	4.5m	0.35m	Pit filled by 17040
17040	Fill	Dark greyish brown silty sand, frequent medium angular stones, charcoal inclusions	4.5m	0.35m	Fill of pit [17039]
17041	Cut	NE-SW aligned linear ditch, asymmetrical profile, gently concave sides and base	1.1m	0.23m	Ditch filled by 17042
17042	Fill	Mid greyish brown silty clay, frequent sub-angular stones	1.1m	0.23m	Fill of ditch [17041], cut by [17035]
17043	Group	E-W aligned ditch seen as 17014, 17029, 17027 and evaluation 2127-005, 2128-005, 2129-004 and 2130-004			Field boundary ditch
17044	Group	E-W aligned ditch seen as 17004, 17006, 17012 and 17020 and evaluation 2129-005 and 2130-008			Field boundary ditch

APPENDIX 2: HARRIS MATRIX



11111 Wessex excavation number

22222 Wessex or Headland evaluation number

APPENDIX 3: PLATES

Plate 1; Deposit **(17040)** in cut **[17039]**, sealed by subsoil and topsoil, facing N, 1m scale

Plate 2; Pit **[17008]**, facing N, 2m scale

Plate 3; Ditch **[17029]**, facing W, 2m scale

Plate 4; Ditch **[17012]**, facing E, 0.5m scale

Plate 5; Features **[17018]** and **[17025]** (to left), facing N, 1m scale

Plate 6; Pit **[17037]**, facing E, 1m scale

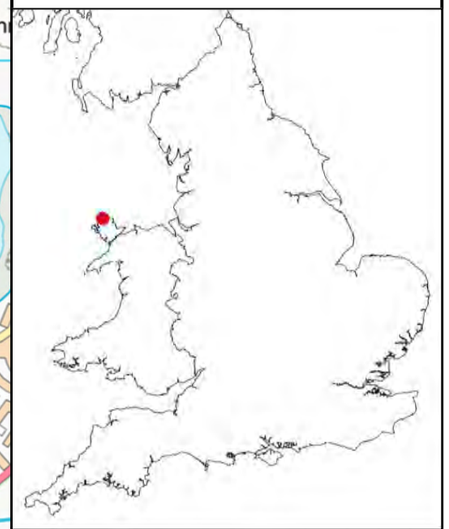
APPENDIX 4: FIGURES

DO NOT SCALE FROM THIS DRAWING

Wylfa Newydd development area

Excavation area

Hot spots



Mynydd y Wylfa

Cemaes Bay

Cemlyn Bay

Cerrig Brith

Porth-y-Pistyll

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)

10

13

11

12

8

15

7

9

6

14

5

16

17

Area 8 (A9)

Area 18 O6

Area 19 O5(n)

Tregele

EV9

Area 20 O5(s)

Fford-Y-Felin

Cemlyn Lodge

Caerdegog Isaf

Mynydd-Lthel

Nanner

234000/392000

Foel Fawr

Gors

237000/392000

Cromlech

Caerdegog Uchaf

Groes-Fechan

Tyn Cae

The Bungalow

0

1km

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

CLIENT

Horizon Nuclear Power

PROJECT

Area 17,
Wylfa Newydd, Anglesey

DRAWING TITLE

Figure 1:
Wylfa Newydd development area and excavated sites

DRG No.	REV
CL12283-1701	A

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

DRAWN BY	CHECKED BY	APPROVED BY
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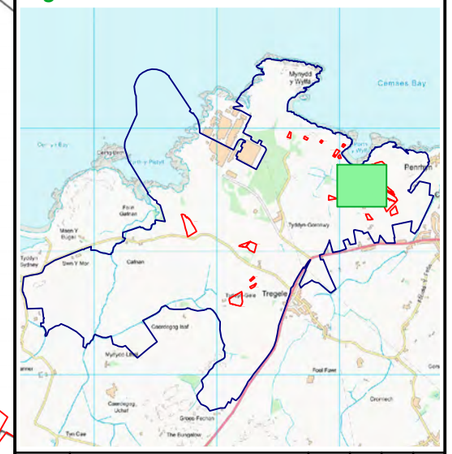
Wylfa Newydd development area

Excavation area

Excavation areas in vicinity

Figure location:



Coastal Slope

Path (um)

Path (um)

Area 1 (L3/L4)

Area 17 (L2)

Area 2 (L8/L12/L16)

Track

236050/393425

236325/393425

0

100m

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

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Figure 2:
Detailed site location

DRG No.	REV
CL12283-1702	A

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

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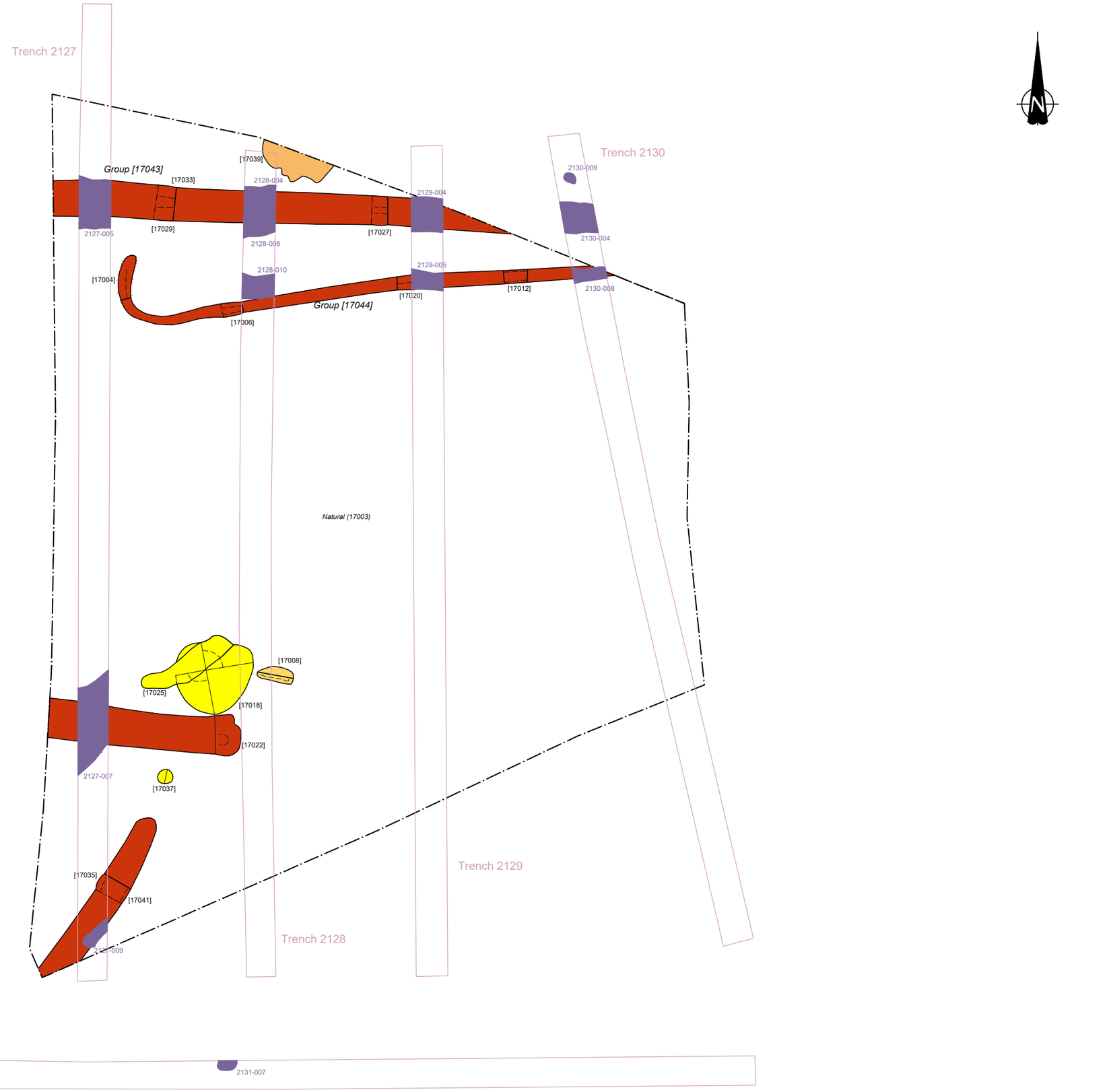

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Limit of excavation

Period referenced in text:

- Period 1 Palaeolithic and Mesolithic 250 000 – 4000 BC
- Period 3 Late Bronze Age and Iron Age 1500 BC – AD 43
- Period 6 Medieval AD 1100 - 1539
- Undated
- Trench location
- Features recorded in evaluation

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

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Area 17,
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Figure 3:
Area 17; Period plan

DRG No.	REV
CL12283-1703	B

DRG SIZE	SCALE	DATE
A3	1:250	Nov 2020

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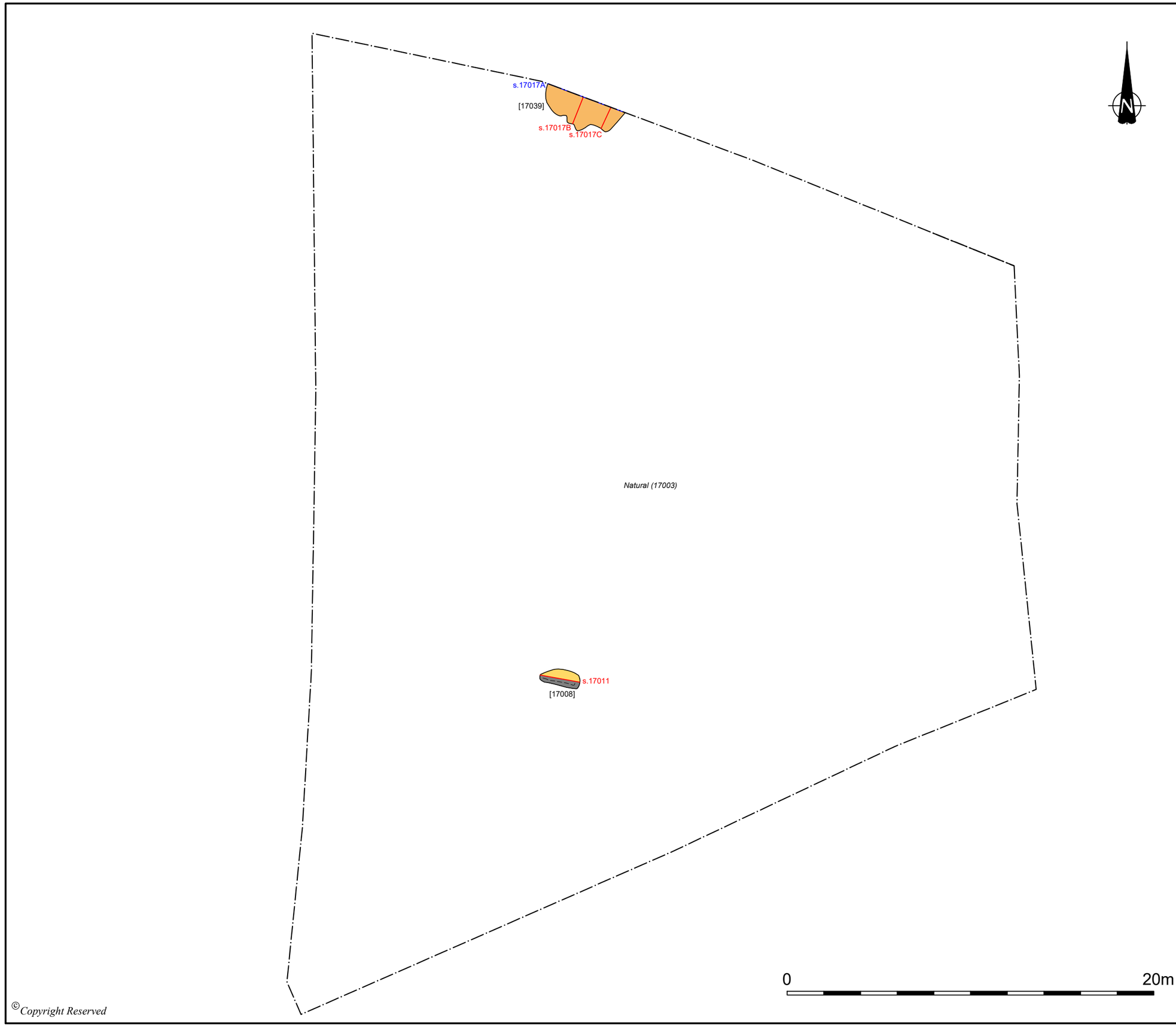

DO NOT SCALE FROM THIS DRAWING

(17000) Context numbers

Sections shown in further figures

Sections not shown in further figures

Limit of excavation

Phase 1

Phase 2

Excavated area

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

CLIENT

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PROJECT

Area 17,
Wylfa Newydd, Anglesey

DRAWING TITLE

Figure 4:
Area 17; Phase 1 and 2 plan

DRG No.	REV
CL12283-1704	A

DRG SIZE	SCALE	DATE
A3	1:200	May 2020

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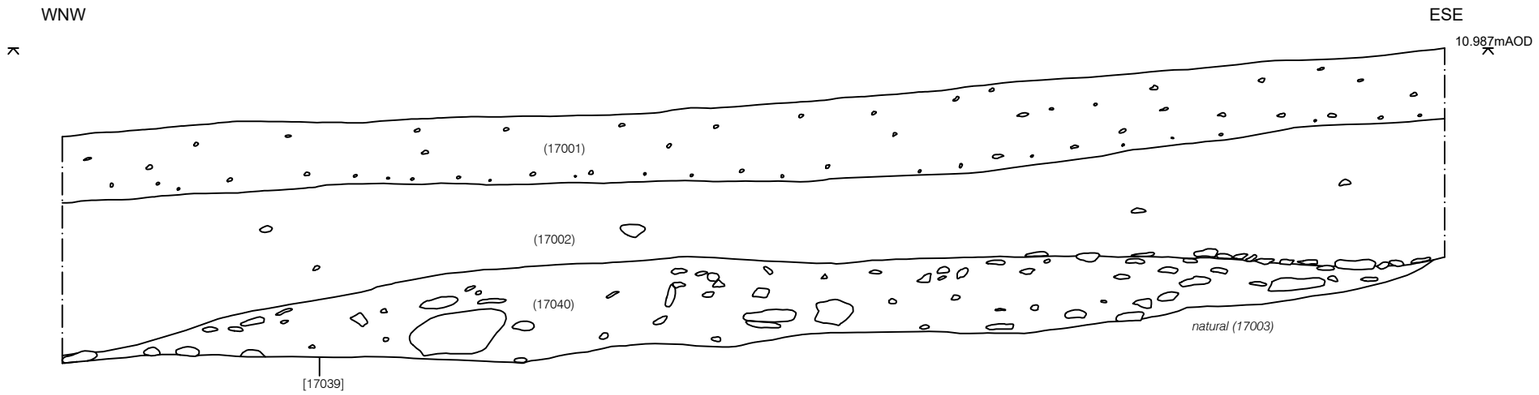

Section 17017A. SSW facing section across feature [17039].

DO NOT SCALE FROM THIS DRAWING

(17000) Context numbers

Limit of excavation

Height mAOD

Stones

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

CLIENT

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PROJECT

Area 17,
Wylfa Newydd, Anglesey

DRAWING TITLE

Figure 5:
Area 17; Phase 1 and 2 section

DRG No.	REV
CL12283-1705	A

DRG SIZE	SCALE	DATE
A3	1:20	May 2020

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0 1m

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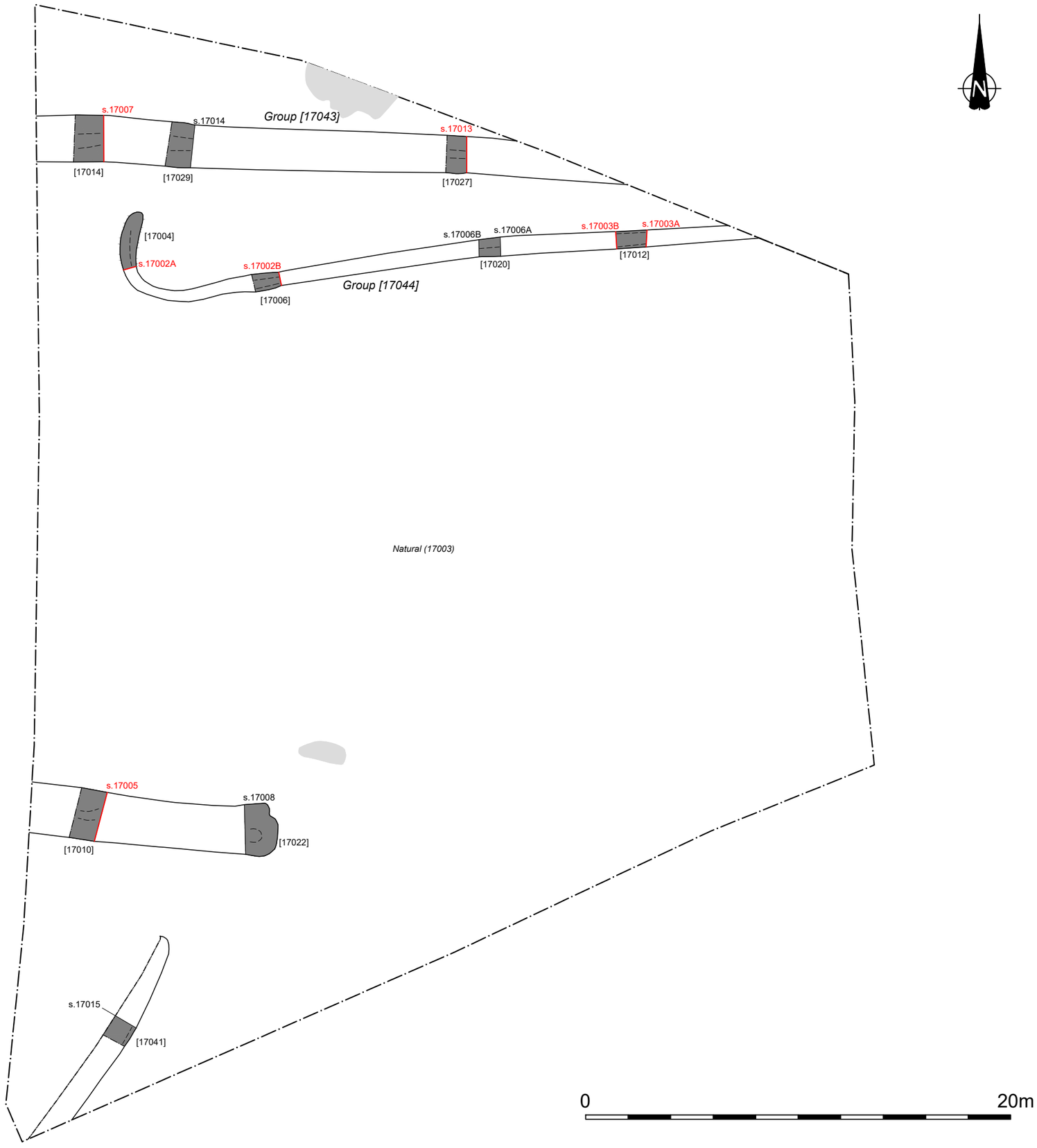

DO NOT SCALE FROM THIS DRAWING

(17000) Context numbers

Sections shown in further figures

Sections not shown in further figures

Limit of excavation

Excavated area

Previous phases

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

CLIENT

Horizon Nuclear Power

PROJECT

Area 17,
Wylfa Newydd, Anglesey

DRAWING TITLE

Figure 6:
Area 17; Phase 3 plan

DRG No.	REV
CL12283-1706	A

DRG SIZE	SCALE	DATE
A3	1:200	March 2020

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VT		

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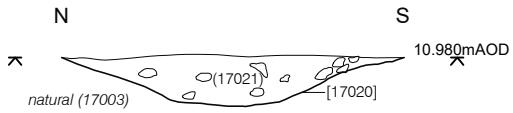
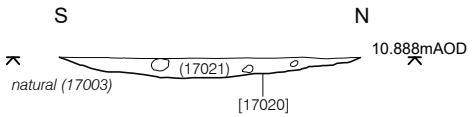
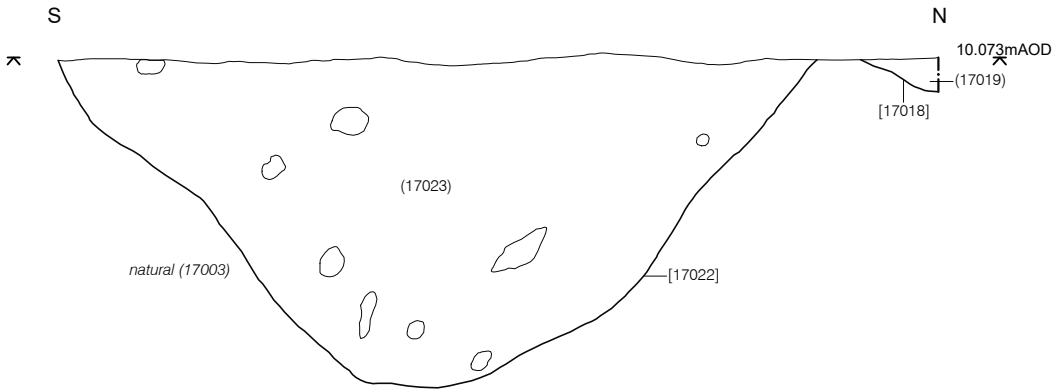


Section 17006A. West facing section across ditch [17020].



Section 17006B. East facing section across ditch [17020].



Section 17008. East facing section across ditch terminus [17022].

DO NOT SCALE FROM THIS DRAWING

(17000) Context numbers

Limit of excavation

Height mAOD

Stones

REVISION	DETAILS	DATE	DRAWN	CHK'D	APP'D

CLIENT

Horizon Nuclear Power

PROJECT

Area 17,
Wylfa Newydd, Anglesey

DRAWING TITLE

Figure 7:
Area 17; phase 3 sections (1)

DRG No	REV
CL12283-1707	A

SIZE	SCALE	DATE
A4	1:20	March 2020

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0 1m

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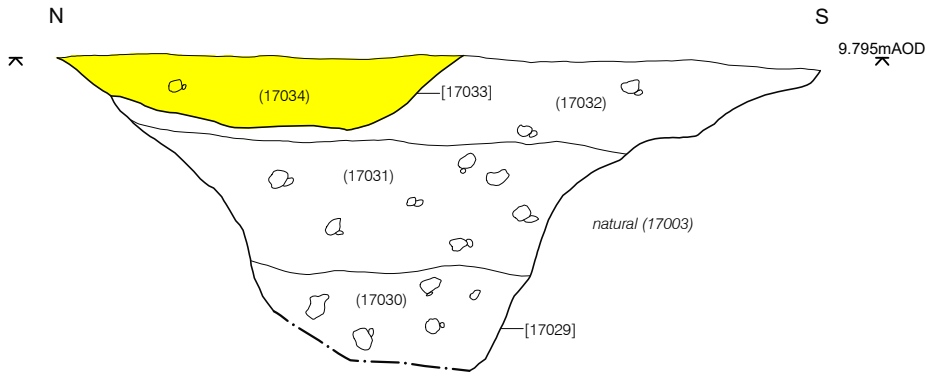
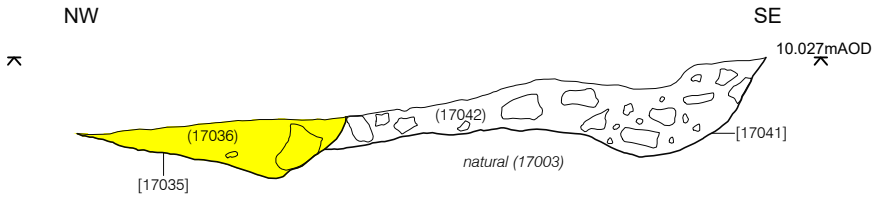


Section 17014. West facing section across ditch [17029].



Section 17015. South-west facing section across features [17035] and [17041].

0 1m

DO NOT SCALE FROM THIS DRAWING

(17000) Context numbers

Limit of excavation

Height mAOD

Stones

Phase 4 feature

REVISION	DETAILS	DATE	DRAWN	CHK'D	APP'D
B	Clarification of phases in sections	05/05/21	HP	LG	LG

CLIENT

Horizon Nuclear Power

PROJECT

Area 17,
Wylfa Newydd, Anglesey

DRAWING TITLE

Figure 8:
Area 17; phase 3 sections (2)

DRG No	REV
CL12283-908	B

SIZE	SCALE	DATE
A4	1:20	March 2020

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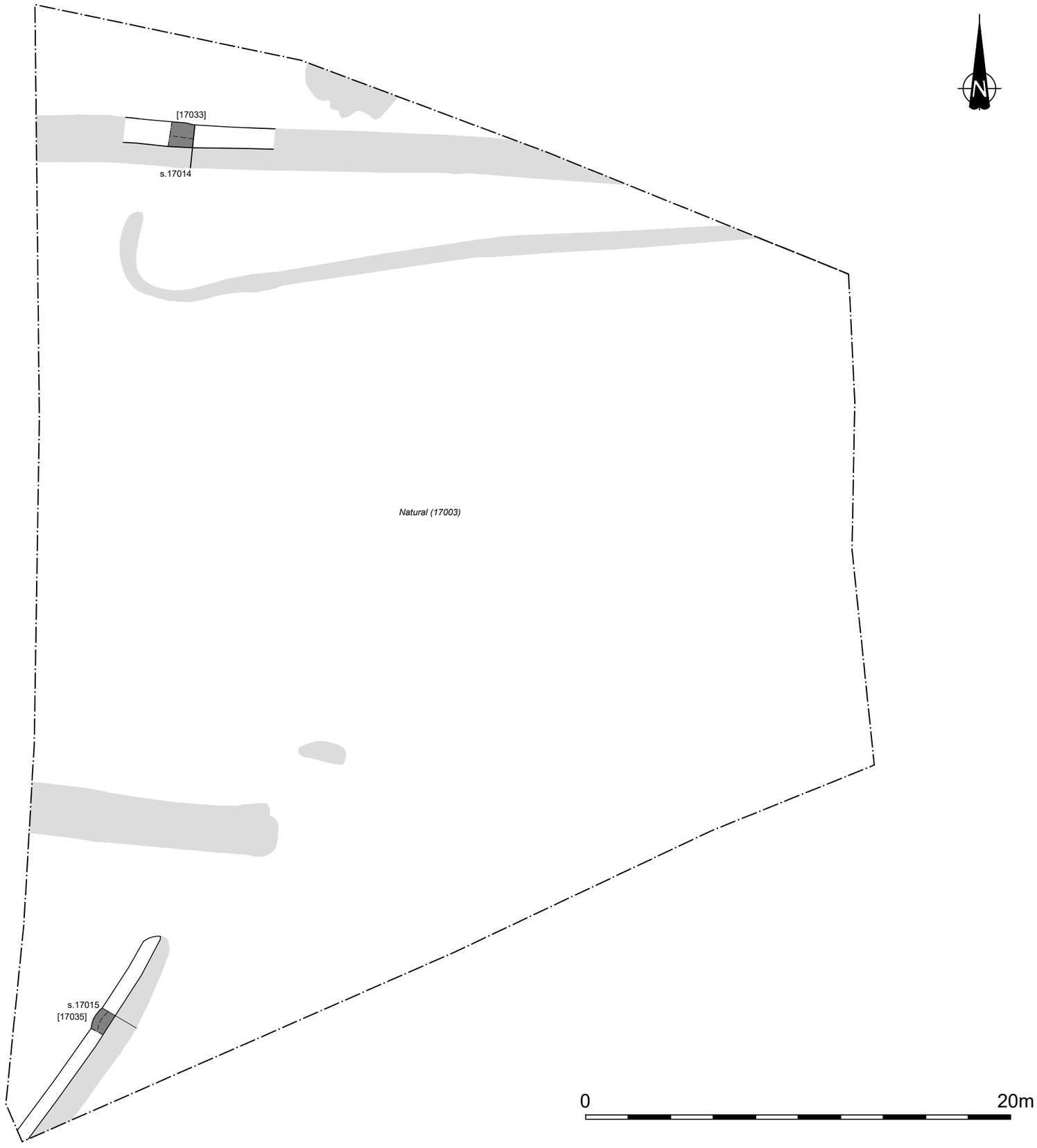

DO NOT SCALE FROM THIS DRAWING

(17000) Context numbers

Sections shown in further figures

Limit of excavation

Excavated area

Previous phases

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

CLIENT

Horizon Nuclear Power

PROJECT

Area 17,
Wylfa Newydd, Anglesey

DRAWING TITLE

Figure 9:
Area 17; Phase 4 plan

DRG No.	REV
CL12283-1709	A

DRG SIZE	SCALE	DATE
A3	1:200	March 2020

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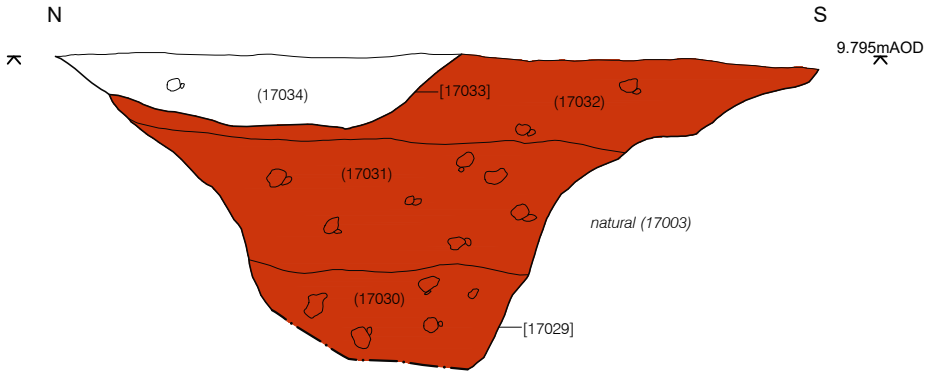
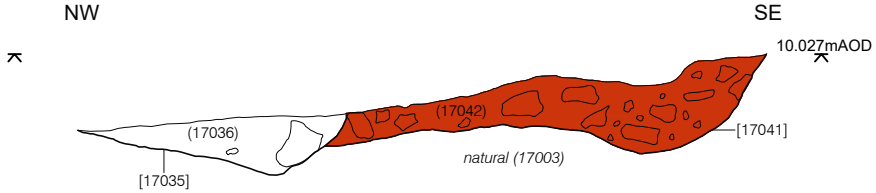


Section 17014. West facing section across ditch [17029].



Section 17015. South-west facing section across features [17035] and [17041].

0 1m

DO NOT SCALE FROM THIS DRAWING

(17000) Context numbers

Limit of excavation

Height mAOD

Stones

Phase 3 features

REVISION	DETAILS	DATE	DRAWN	CHK'D	APP'D
B	Clarification of phases in section	05/05/21	HP	LG	LG

CLIENT

Horizon Nuclear Power

PROJECT

Area 17,
Wylfa Newydd, Angelsey

DRAWING TITLE

Figure 10:
Area 17; phase 4 sections

DRG No	REV
CL12283-1710	B

SIZE	SCALE	DATE
A4	1:20	March 2020

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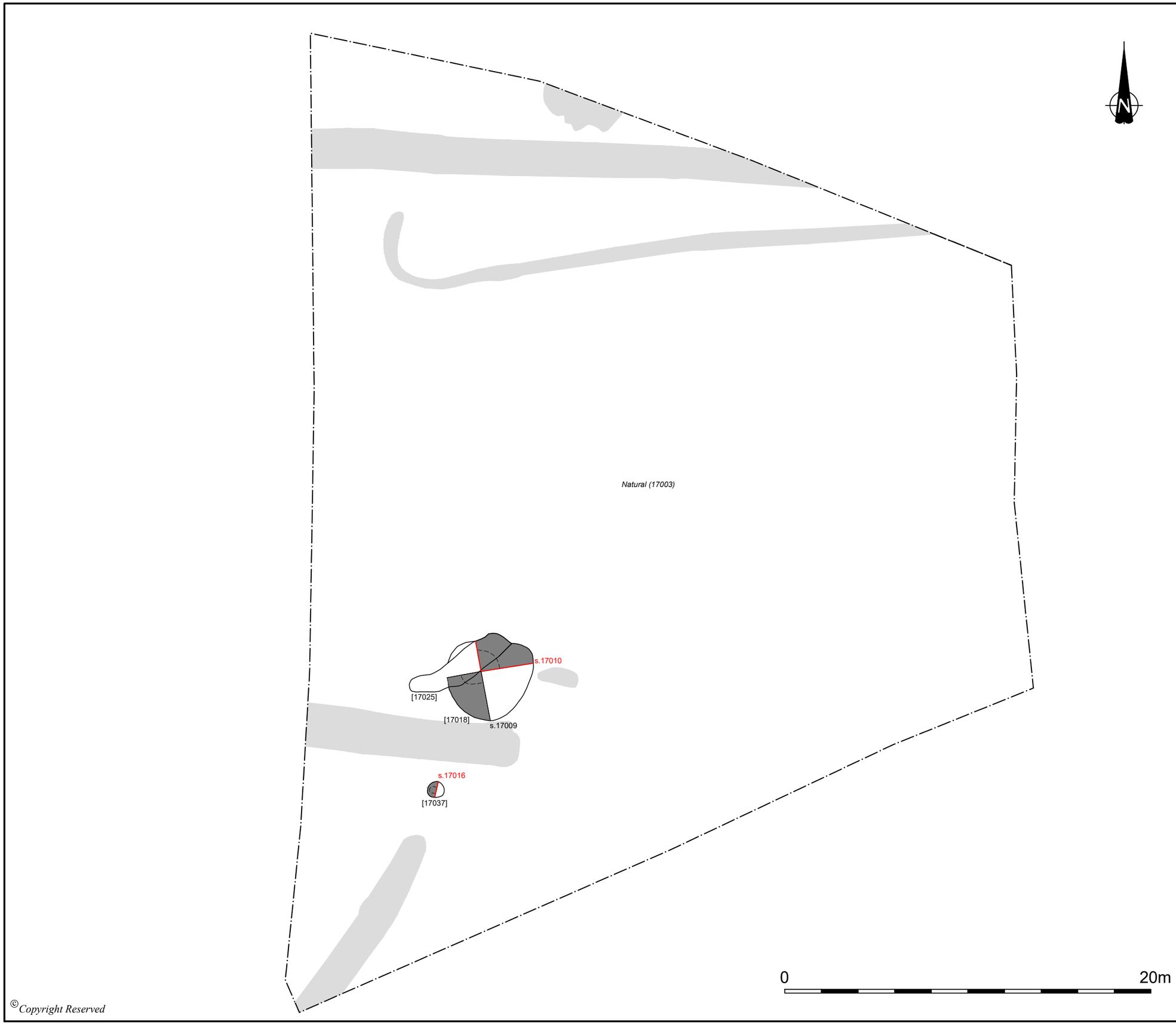

DO NOT SCALE FROM THIS DRAWING

(17000) Context numbers

Sections shown in further figures

Sections not shown in further figures

Limit of excavation

Excavated area

Previous phases

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

CLIENT

Horizon Nuclear Power

PROJECT

Area 17,
Wylfa Newydd, Anglesey

DRAWING TITLE

Figure 11:
Area 17; Undated features plan

DRG No.	REV
CL12283-1709	A

DRG SIZE	SCALE	DATE
A3	1:200	March 2020

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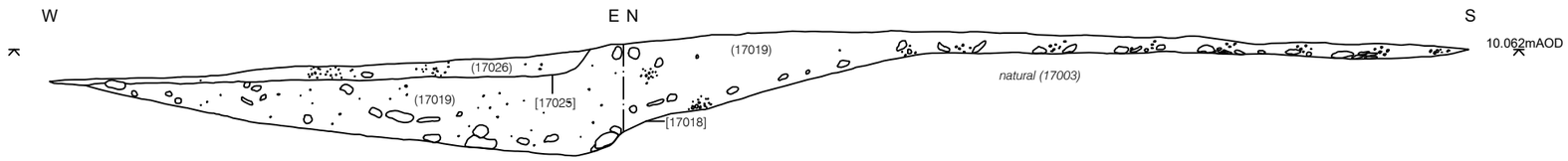

Section 17009. S-W facing section across features [17018] and [17025].

0 1m

DO NOT SCALE FROM THIS DRAWING

(17000) Context numbers

Limit of excavation

Height mAOD

Stones

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

CLIENT

Horizon Nuclear Power

PROJECT

Area 17,
Wylfa Newydd, Anglesey

DRAWING TITLE

Figure 12:
Area 17; Undated section

DRG No.	REV
CL12283-1712	A

DRG SIZE	SCALE	DATE
A3	1:20	March 2020

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APPENDIX 5: RADIOCARBON CERTIFICATE

BetaCal 3.21

Calibration of Radiocarbon Age to Calendar Years

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

(Variables: d13C = -26.9 o/oo)

Laboratory number **Beta-553526**

Conventional radiocarbon age **7830 ± 30 BP**

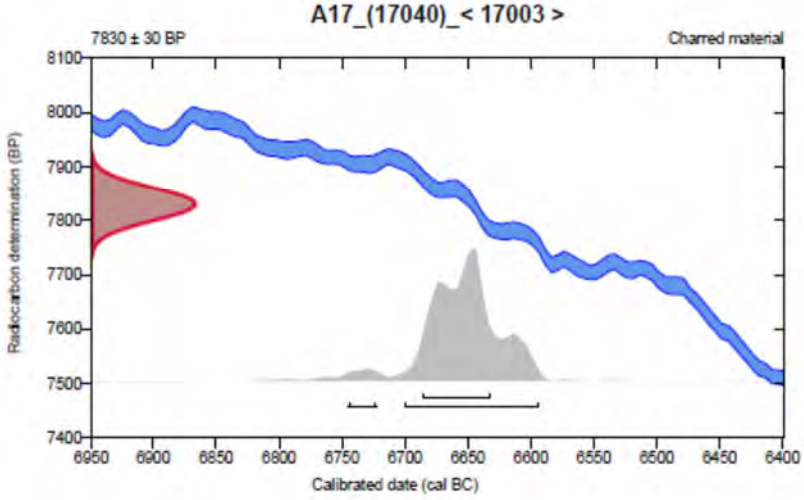
95.4% probability

(92.2%)	6702 - 6596 cal BC	(8651 - 8545 cal BP)
(3.2%)	6747 - 6725 cal BC	(8696 - 8674 cal BP)

68.2% probability

(68.2%)	6688 - 6634 cal BC	(8637 - 8583 cal BP)

A17_(17040)_< 17003 >



Database used

INTCAL13

References

References to Probability Method

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

References to Database INTCAL13

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

Beta Analytic Radiocarbon Dating Laboratory

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

APPENDIX 6: GAZETTEER OF FEATURES ENCOUNTERED IN AREA 17

Feature	*Date*	*Description*	*Easting, northing*
Pit	Late Mesolithic	Discrete pit containing burnt material	236183,393565
Pit	Late Bronze Age to Iron Age	Truncated discrete pit containing heat affected stones and five small fragments of late prehistoric pottery	236182,393534
Rectilinear field system	Medieval	East-west aligned field system comprising a complex of ditches, extending beyond the limits of excavation in all directions. A single sherd of 13th-14th century origin was retrieved from an uppermost fill	236176,393546

APPENDIX 7: POST-EXCAVATION ASSESSMENT METHOD STATEMENT

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

HORIZON

WYLFA NEWYDD

POST EXCAVATION ASSESSMENT METHOD STATEMENT

APRIL 2019

wardell armstrong

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

DATE ISSUED: April 2019

JOB NUMBER: **CL12271**

PREPARED BY:

Megan Stoakley	Finds and Archive Specialist	
Lynne Gardiner	Senior Environmental Archaeologist	

APPROVED BY:

Frank Giecco	Technical Director	

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WYLFA NEWYDD POST EXCAVATION ASSESSMENT METHODOLOGY

Introduction

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

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

Requirement for and Purpose of the Post Excavation Assessment

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

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

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

Post Excavation Assessment Stages and Outputs

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

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

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

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

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

Stage 1 Processing

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

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

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

Stage 2 Archival Preparation

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

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

Stage 3 Data Assessment

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

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

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

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

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

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

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

Report Template

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

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

2. **Introduction**

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

2.2 Scope of the project.

2.3 Dates/duration of fieldwork.

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

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

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

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

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

3. **Summary of the excavation methodology**

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

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

3.3 Site planning strategy with justifications for the applied methodology.

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

4. **Site archive**

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

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

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

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

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

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

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

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

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

5. Stratigraphic data

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

5.2 Statement of significance of the stratigraphic data.

5.3 *Final pre-excavation plan.*

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

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

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

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

6. Artefacts

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

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

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

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

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

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

7. **Palaeoenvironment**

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

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

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

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

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

7.6 *Representative photographs of key assemblages*.

8. **Human remains**

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

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

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

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

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

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

9. **Discussion**

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

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

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

10. **Statement of potential**

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

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

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

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

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

11 Bibliography of sources used in the compilation of the PXA

12. Updated Project Design

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

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

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

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

12.4 Detail of illustrations required to support the stratigraphic analysis.

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

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

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

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

12.9 Details of illustrations required to support the artefact analysis.

12.10 Requirement for conservation works on material archive.

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

12.12 Details of resultant technical/archive report.

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

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

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

Task breakdown for PXA

1. **Processing**

1.1 Environmental sample processing

1.2 Cleaning human remains

1.3 Bulk finds cleaning

1.4 Small finds cleaning

1.5 Artefact stabilisation

2. **Archival preparation**

2.1 Finds marking

2.2 X-raying metal objects

2.3 Archive box purchase

2.4 Boxing

2.5 Site record checking and cross-referencing

2.6 Compilation of list of archival sources

2.7 Records scanning

3. **Data assessment**

3.1 Zooarchaeological remains

3.2 Insects

3.3 Snails

3.4 Shells

3.5 Plant macrofossils

3.6 Pollen

APPENDIX 1 METHOD STATEMENT: STAGE 1 FINDS PROCESSING

Finds processing and assessment summary

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

Washing and cleaning

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

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

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

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

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

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

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

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

APPENDIX 2 METHOD STATEMENT: STAGE 1 ENVIRONMENTAL PROCESSING

Environmental processing and assessment summary

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

General Biological Analysis sample

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

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

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

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

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

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

Recording of the Environmental Data

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

Waterlogged Samples

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

Paraffin Flotation

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

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

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

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

METHOD STATEMENT STAGES 2 AND 3 FINDS ASSESSMENT

Summary

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

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

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

Stage 2

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

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

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

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

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

Time estimates for finds marking and bagging and boxing

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

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

Stage 3

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

Time estimates for preliminary recording

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

Materials costs to be considered to PXA

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

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

wardell-armstrong.com

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

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

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

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

CARLISLE
Marconi Road
Burgh Road Industrial Estate
Carlisle
Cumbria
CA2 7NA
Tel: +44 (0)1228 550 575

EDINBURGH
Great Michael House
14 Links Place
Edinburgh
EH6 7EZ
Tel: +44 (0)131 555 3311

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

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

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

MANCHESTER
76 King Street
Manchester
M2 4NH
Tel: +44 (0)161 817 5038

NEWCASTLE UPON TYNE
City Quadrant
11 Waterloo Square
Newcastle upon Tyne
NE1 4DP
Tel: +44 (0)191 232 0943

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

International offices:

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

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

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wardell-armstrong.com

STOKE-ON-TRENT
Sir Henry Doulton House
Forge Lane
Etruria
Stoke-on-Trent
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41-50 Futura Park
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Middlebrook
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16 Cathedral Road
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Tel: +44 (0)292 072 9191

CARLISLE
Marconi Road
Burgh Road Industrial Estate
Carlisle
Cumbria
CA2 7NA
Tel: +44 (0)1228 550 575

EDINBURGH
Great Michael House
14 Links Place
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Tel: +44 (0)131 555 3311

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

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

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

MANCHESTER
76 King Street
Manchester
M2 4NH
Tel: +44 (0)161 817 5038

NEWCASTLE UPON TYNE
City Quadrant
11 Waterloo Square
Newcastle upon Tyne
NE1 4DP
Tel: +44 (0)191 232 0943

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

International offices:

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

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

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