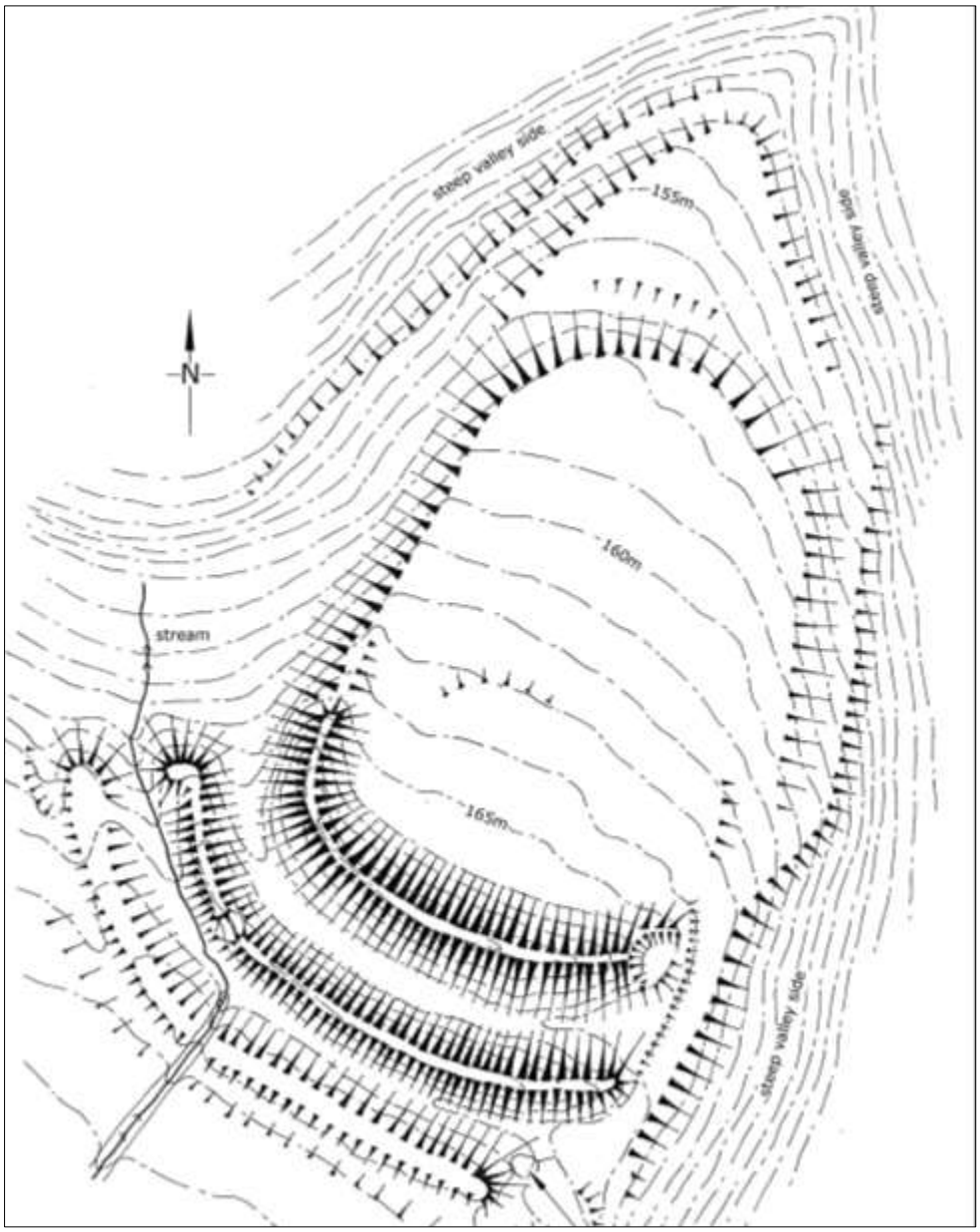
CAER BLAEN MINIOG
CARMARTHENSHIRE

GEOPHYSICAL SURVEY, TOPOGRAPHICAL SURVEY & ARCHAEOLOGICAL EVALUATION 2020



Prepared by Dyfed Archaeological Trust
For: Cadw

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CAER BLAEN MINIOG, CARMARTHENSHIRE: GEOPHYSICAL SURVEY, TOPOGRAPHICAL SURVEY & ARCHAEOLOGICAL EVALUATION 2020

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CAER BLAEN MINIOG, CARMARTHENSHIRE:

GEOPHYSICAL SURVEY, TOPOGRAPHICAL SURVEY & ARCHAEOLOGICAL EVALUATION 2020

Client	Cadw
Event Record No	121959
Report No	2021-47
Project Code	DAT 166
Report Prepared By	Luke Jenkins
Fieldwork Directed By	Luke Jenkins and Charles Enright
Illustrated By	Luke Jenkins and Charles Enright
Report Approved By	Ken Murphy 16.03.2021

CRYNODEB GWEITHREDOL

Ym 2019, cynhaliodd Ymddiriedolaeth Archeolegol Dyfed arolwg geoffisegol tu allan i gaer pentir Caer Blaen Miniog yng ngogledd-orllewin Sir Gaerfyrddin, a ddaeth o hyd i sawl anghysondeb gan gynnwys twmpathau llosg posibl, yr ystyriwyd bod rhai ohonynt dan fygythiad erydiad.

Ym hydref 2020, cynhaliwyd gwerthusiad archeolegol i asesu cymeriad a chyflwr yr anomaleddau geoffisegol. Nododd y gwaith hwn ddwy dwmpath llosg wedi'i gadw'n dda, gydag olion strwythurol cysylltiedig posibl, yn dyddio o'r Oes Efydd Gynnar. Ymchwiliwyd hefyd i drac metel o ddyddiad anhysbys sy'n rhedeg ar draws rhan ddeheuol y safle. Cadarnhaodd arolwg geoffisegol pellach a gynhaliwyd yn y gaer bentir bresenoldeb platfformau tŷ crwn. Cwblhawyd arolwg topograffig llawn o'r gaer hefyd.

Ariannodd Cadw yr arolygon a gwerthusiadau.

EXECUTIVE SUMMARY

In 2019, Dyfed Archaeological Trust carried out a geophysical survey outside Caer Blaen Miniog promontory fort in northwest Carmarthenshire, which detected several anomalies including potential burnt mounds, some of which were considered to be under threat of erosion.

In the autumn of the 2020, an archaeological evaluation was undertaken to assess the character and condition of the geophysical anomalies. This work identified two well preserved burnt mounds, with possible associated structural remains, dating to the Early Bronze Age. A metalled trackway of unknown date running across the southern part of the site was also investigated. Further geophysical survey undertaken within the promontory fort confirmed the presence of roundhouse-platforms. A full topographic survey of the fort was also completed.

Cadw funded the surveys and evaluation.

CAER BLAEN MINIOG, CARMARTHENSHIRE:

GEOPHYSICAL SURVEY, TOPOGRAPHICAL SURVEY & ARCHAEOLOGICAL EVALUATION 2020

FIGURES

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1. INTRODUCTION

1.1 Project Commission

1.1.1 Caer Blaen Miniog (Scheduled Monument CM377) is a promontory fort in northwest Carmarthenshire (SN 36206 35519). It is located at 172m aOD on the Nant Bargod, a tributary of the River Teifi.

1.1.2 In 2019 Dyfed Archaeological Trust undertook a geophysical survey outside of the fort as a part of the Cadw grant-funded project 'Searching for Chariots' (Enright 2019). This project undertook a number of geophysical surveys outside of promontory forts to identify previously unknown archaeological features.

1.1.3 This survey revealed several anomalies outside Caer Blaen Miniog promontory fort that suggested the presence of well-preserved archaeological remains including burial mounds and burnt mounds. During this survey it was noted that a large, modern drainage ditch cut across the centre of the survey area close to the identified anomalies and through the outer defences of the promontory fort.

1.1.4 Upon consultation, the landowner was open to extending the scheduled area providing the site with enhanced protection. As a result, a fact-finding mission was proposed to evaluate the site and to ascertain whether the anomalies identified were archaeological. It was proposed that the archaeological work would be the minimum sufficient to characterise the site, and to inform a future programme of management and potential scheduling.

1.1.5 Accordingly, an archaeological trial trench evaluation was undertaken to assess the anomalies detected in the 2019 geophysical survey that were most at threat from on-going erosion and encroaching vegetation and provide information for the extension of the scheduled area. Some of these anomalies are visible today as discrete mounds within the field.

1.1.6 The evaluation confirmed the presence of two burnt mounds in close proximity to each other. The first was well preserved with several troughs, a thick deposit of charcoal and heat effected stone and possible structural remains. The second was less well preserved. The evaluation also found evidence of a trackway running east/west through the field.

1.1.7 In addition to evaluation further geophysical survey within the promontory fort and a topographic survey of fort were undertaken. The geophysical survey within the fort revealed anomalies indicative of well-preserved roundhouse platforms whilst the topographical survey revealed further defences along the north eastern and north western sides of the fort.

1.1.8 The project was run as a community excavation allowing for enhanced value from the 14th of September to the 2nd of October 2020. A total 48 volunteer days were committed to the project.

1.2. Project Aim and Objectives

1.2.1 The project aims:

- To characterise the archaeological remains identified in the geophysical survey.
- To record and recover through excavation those remains most threatened by continuing erosion and encroaching vegetation.
- To record through topographic survey the earthwork remains in the area of geophysical survey.
- To provide sufficient information that the scheduled area can be extended.
- To characterise archaeological remains within the interior of Caer Blaen Miniog through geophysical survey.

1.3 Report Outline

1.3.1 This report provides a summary and discussion of the geophysical survey, topographical survey and archaeological evaluation and its results, and puts those results within their regional and national context.

1.4 Community Engagement

1.4.1 **Community Engagement**

1.4.1 This project aimed to offer enhanced value by being run as a community project in which volunteers would undertake the majority of the archaeological investigations under the supervision of staff of the Dyfed Archaeological Trust.

1.4.2 Covid-19 restrictions during the provided a challenging environment for community engagement. Accordingly, the project was designed to allow community engagement and participation whilst maintaining and exceeding social distancing rules. Only four volunteers were allowed on site at any one time. The trial trenches were also in some instances (Trenches 1 and 2) made wider (3m) than is usually in order to allow for social distancing.

1.4.3 This project provided an opportunity for volunteers to learn new skills, share experiences and build-up their capacity to undertake archaeological investigations.

1.4.4 In total, 48 days (336 hours) of volunteer time was committed to the project with 21 participants during the duration of the evaluation.

1.5 Abbreviations

1.5.1 Sites recorded on the regional Historic Environment Record (HER) are identified by their Primary Record Number (PRN) and located by their National Grid Reference (NGR). Sites recorded on the National Monument Record (NMR) held by the Royal Commission on the Ancient and Historical Monuments of Wales (RCAHMW) are identified by their National Primary Record Number (NPRN). Scheduled Monument (SM). Altitude is expressed to Ordnance Datum (OD). References to cartographic and documentary evidence and published sources will be given in brackets throughout the text, with full details listed in the sources section at the rear of the report.

1.6 Illustrations

1.6.1 Printed map extracts are not necessarily produced to their original scale.

1.6 Timeline

1.6.1 The following timeline (Table 1) is used within this report to give date ranges for the various archaeological periods that may be mentioned within the text.

Period	Approximate date	
Palaeolithic –	*c.*450,000 – 10,000 BC	Prehistoric
Mesolithic –	*c.* 10,000 – 4400 BC	
Neolithic –	*c.*4400 – 2300 BC	
Bronze Age –	*c.*2300 – 700 BC	
Iron Age –	*c.*700 BC – AD 43	
Roman (Romano-British) Period –	AD 43 – *c.* AD 410	Historic
Post-Roman / Early Medieval Period –	*c.* AD 410 – AD 1086	
Medieval Period –	1086 – 1536	
Post-Medieval Period[1] –	1536 – 1750	
Industrial Period –	1750 – 1899	
Modern –	20th century onwards	

Table 1: Archaeological and Historical Timeline for Wales.

[1] The post-medieval and industrial periods are combined as the post-medieval period on the Regional Historic Environment Record as held by Dyfed Archaeological Trust

Figure 1: Location.

2. THE SITE

2.1 Site Location and Topography

2.1.1 The archaeological investigations described in this report took place at Fferm Blaen Maenog, northwest Carmarthenshire (Figure 1). Investigations centred on a large field (SN 36206 35519), divided in two by a drainage ditch running broadly east/west (Photograph 1). To the northeast of the site lies the promontory fort Caer Blaen Miniog (Scheduled Monument CM377) in which the geophysical and topographic surveys were undertaken.

2.1.2 The field is accessible from the south and is located approximately 172m aOD. The field gradually slopes towards the northeast with the eastern part of the site defined by steep valley sides of the river Nant Bargod, a tributary of the River Teifi. These sides get steeper towards the northeast of the site, forming part of the defences of the promontory fort.

2.1.3 Surrounding the site and the defences of the promontory fort is dense, mostly oak woodland (Photograph 1). This woodland is shown on nineteenth century Ordinance Survey maps and once covered the internal area of the fort as well. The large field had been under unimproved pasture for at least the last 10 years, before which it was under intensive cultivation for dairy farming. Currently, the field is being left to re-wild (Photograph 2); this is leading to the woodland gradually encroaching on the field, particularly near the drainage ditch where there are a number of large mounds up to 1m high, thought to represent the anomalies detected in the geophysical survey.

2.1.4 The underling bedrock geology is recorded by the British Geological Society as consisting of the Yr Allt Formation - Mudstone, Silty. Sedimentary Bedrock formed approximately 444 to 449 million years ago in the Ordovician Period. On site clay deposits were observed and large quartz fragments, the latter perhaps indicating at least some degree of igneous/metamorphic activity in the vicinity.

Photograph 1: Oblique aerial photograph of the site. Looking north-east towards Caer Blaen Miniog promontory fort and the valley of the Nant Bargod.

Photograph 2: The excavation field of unimproved pasture and low mounds. Looking south-east.

3. ARCHAEOLOGICAL BACKGROUND

3.1 Site Background

3.1.1 Very little is known about Caer Blaen Miniog, with no archaeological work being undertaken in the area. What is known is generally in relation to the promontory fort.

3.1.2 The HER description of the Caer Blaen Miniog promontory fort is as follows:

> *A fine example of an Iron Age promontory fort. The fort is situated on a triangular spur of land that on two sides (east and west) is defended by steep slopes falling to streams below that unite at the point of the promontory. The more vulnerable third (south) side of the enclosure is defended by three massive banks with intervening ditches. The innermost bank is the largest being c.6-7m high and its ditch c.7-8m wide. The entrance is on the east side where all three banks stop short of the edge of the steep natural slope. This entrance is currently used as a trackway into the enclosure area, and it is possible that this has damaged the banks at their eastern ends.*
>
> *Unusually, towards the northern point of the promontory a bank and ditch mark the limit of the internal area, and is a defensive work in addition to the natural slopes of the promontory. Between this bank and ditch in the north and the massive ramparts to the south is an oval shaped enclosed area of 0.5 hectares, with axes of approximately 90m and 60m.*
>
> *The defensive banks and ditches of Caer Blaen Miniog are covered with large trees and scrub. The internal area of the enclosure is under pasture. The site is situated at 160m above sea level.*
>
> *Caer Blaen Miniog is perhaps one of the finest promontory forts in the county. It is a scheduled monument.*

3.1.3 Promontory forts are a form of enclosed settlement dating from the late prehistoric period or Iron Age. They are defined in the Oxford English Dictionary of Archaeology as being "A fortified enclosure constructed on a raised block of land that forms a promontory of some kind projecting out from a hillside or cliff line. The main defences cut off the neck of the promontory, the remainder of the perimeter having natural defensive capabilities"(Darvill 2006).

3.1.4 The function of these monuments is widely discussed and as Murphy (2016) states in the volume III of the Pembrokeshire County Histories "a traditionalist functionalist military use is being increasingly challenged particularly by those who emphasise belief systems and status as being of greater importance. Nonetheless a purely non-defensive explanation is less compelling still".

3.1.5 The size, shape and form of promontory forts varies considerably however they tend to be smaller than summit hillforts, another form of enclosed settlement (Murphy *et al* 2012). They can basically be broken down into two types being either coastal or inland and date broadly to a foundation date of 700- 300 BC. Where sites have been excavated extensively there is

evidence of occupation spanning the Iron Age and into the Romano-British period (Murphy et al. 2012).

3.1.6 In 2019, Dyfed Archaeological Trust undertook a geophysical survey of an area outside the scheduled area as part of their 'Searching for Chariots' project (Enright 2019). It was this survey that informed the placement of the evaluation trenches for this body of work.

3.1.7 The survey is accompanied by the following description:

> *Outside of the scheduled area the survey has revealed the remains of a probable ring ditch, on a gently sloping piece of land, possibly representing the remains of a roundhouse or round barrow. The ring ditch sits towards the centre of the survey area where it has unfortunately been truncated by a modern drain that has removed its northwest quadrant. However, it does currently appear to have a surviving central pit feature which suggests this is more likely a round barrow with a surviving burial pit. With a diameter of approximately 13m, this is comparable to known examples of round barrows in the area. This feature is under imminent threat of erosion.*
>
> *On the western edge of the survey area is what appears to be part of a circular enclosure (approximately 19m in diameter). The response of the possible enclosure itself is faint, but interestingly it appears to enclose an area of enhanced magnetic variation in contrast to the rest of the survey, suggesting perhaps intense or prolonged archaeological activity.*
>
> *Immediately adjacent to the ring ditch are three raised circular earthworks, the largest being 15m in diameter and the smallest at 5m. In the survey data, these appear as very well defined areas of ferrous material or areas of burning. A further similar anomaly was found on the west side of the drain, isolated from the others. These could be large concentrations of buried ferrous/burnt material of either archaeological or modern origin. If not modern, one possible explanation could be that they are burnt mounds. The function of burnt mounds is widely debated, but the most accepted theory is that they are cooking sites, the burnt mounds being formed from stones that had been heated in a bonfire before being placed in a trough to boil water. The stones would shatter when submerged in the water due to the rapid changes in temperature. Once shattered, the stones were too small for reuse so would be removed from the trough after they had cooled and thrown in an area adjacent to the trough. Over time the accumulation of stone forms the mound of heat-affected stones (Enright 2015), which would account for the high magnetic response observed here. Typically burnt mounds do occur in clusters, as seen here, and nearly always near watercourses. The remains of a small gully, possibly a former watercourse were observed nearby but are not evident in the geophysical data. The period for the use of burnt mounds is quite wide, the vast majority of burnt mounds for which reliable dating evidence is available date to the Late to Middle-Bronze Age. However, some dating evidence*

suggests activities resulting in the formation of burnt mounds continue into the early medieval period. Late Neolithic burnt mounds have also been recorded, such as that at Watermead Park in Leicestershire (Ripper & Beamish 2011).

The survey has demonstrated that there is strong potential for archaeological activity to have taken place outside of the promontory fort at Caer Blaen Miniog. Unfortunately, some of this archaeology has been truncated by a modern drain and a ring ditch is in imminent threat of losing its central feature to erosion from the drain.

3.2 Burnt Mounds

3.2.1 Burnt mounds are curious archaeological monuments, typically dated to the Bronze Age (2300-700 BC), for which no dominant theory as to their function has yet emerged. They can be simply characterized as comprising of oval or crescent-shaped accumulations of heavily heat-affected stones mixed with charcoal and soil (Darvill and Wainwright 2016). Upon excavation they are often found to have a hearth and a trough/s thought to have been for containing water (Barfield and Hodder 1991).

3.2.2 Examples are typically found in the western part of the British Isles, with a particular density in Ireland where they are known as fulacht fiadh (Hawkes 2014). Here, examples are known to date back into the 4th millennium BC and it is possible that this where they originated (Hawkes 2014). It is therefore not surprising that there are also a significant number in the west of Wales (Hawkes 2014).

3.2.3 There have been many excavated examples in Wales, particularly along the route of the South Wales gas pipeline where more the 40 examples were investigated (Hart *et al* 2014; Williams 1990). The earliest recorded examples on the pipeline dated to the 3rd millennium BC although most seem date broadly between 1800-1500 BCE (Hart *et al*. 2014). Examples have been known to be much later, spanning into the Iron Age with some medieval examples known (Darvill and Wainwright 2016). In almost all examples burnt mounds are found near watercourses. Where excavations have run parallel to watercourses burnt mounds were found regularly along their length.

3.2.4 The role of burnt mounds has been widely discussed. They are however understood by most to be at a basic level for the heating/boiling of water or the production of steam (Darvill and Wainwright 2016). Certainly it would seem that their placement next to watercourses, their hearths and water retentive troughs would imply that the heat shattered stones were 'pot boilers' which were heated in a fire and then immersed in water, a method that has been proved effective by several experiments (James 1986). It would seem that in many instances burnt mounds are used infrequently over long periods of time possibly involving a process of on-going re-discovery and reuse (Hart *et al*. 2014).

3.2.5 It is the reason that people have been boiling water that has been so widely debated with all major ideas falling short of a total explanation. The initial interpretation of burnt mounds was that they were associated with cooking, a theory that is still popular today (O'Kelly 1954; Barfield and Hodder 1987). However, this theory is compromised by the fact that they are rarely if ever found near settlements nor is there often much evidence of animal bone. Proponents of this theory have claimed that the animal bone may have been thrown into the adjacent stream and that the sites may have been associated with hunting parties rather than day to day consumption, both of which are possible if tenuous frames of reasoning.

3.2.6 Another popular theory states that burnt mounds may in fact be steam houses or washing places. The main evidence for this being the lack of any domestic material culture, lack of adjacent settlement and their episodic use

(Leonard et al. 2016). Also, occasionally there is evidence of ephemeral structures in the form of postholes implying in some in some instances they may well have been a surrounding structure (Leonard et al. 2016). Other possible interpretations for burnt mounds are their use as brewing sites, the production of deer skins, fulling or dyeing, although these theories are less widely accepted.

3.2.7 It is important to consider that these monuments may well have had more than one use and may well have had had a domestic and ritual role as is found frequently throughout prehistory. When compared with Irish literary accounts of medieval examples this would seem likely with mounds there being used for activities such as cooking, bathing, rites of passage, music and sex, although one should be cautious when drawing directly from these historical sources. Nonetheless, it would certainly point to a deeply complicated and varied use with a profound significance.

4. GEOPHYSICAL SURVEY METHODOLOGY

4.1 Geophysical survey was undertaken outside of the fort in 2019 as a part of the 'Searching for Chariots' project (Enright 2019). Further geophysical survey on the interior of the fort was undertaken in 2020 as a part of this project. The results of both surveys have been included here.

4.2 A fluxgate gradiometer with a DL601 data logger was used to conduct the detailed geophysical survey, which detects variations in the earth's magnetic field. A sample interval of 0.25m (four readings per metre) was used with 0.5 wide traverses across 20m x 20m grids using the parallel traverse method of collecting data. The gradiometers sensitivity was set to detect a magnetic variation in the order of 0.1 nanoTesla.

Photograph 3: Setting out the geophysical survey grids within the promontory fort.

4.3 The survey grid was tied into the local Ordnance Survey grid using a Trimble R8s integrated GNSS with TSC3 controller.

4.4 The data was processed using Terrasurveyor 3.0.36.1 and is presented with a minimum of processing and is presented as a grey-scale plot and XY trace plot.

4.5 The presence of high values caused by ferrous objects, which tend to hide fine details and obscure archaeological features, have been 'clipped' to remove the extreme values allowing the finer details to show through. The data has also been de-striped to compensate for an imbalance between the gradiometer sensors.

4.6 The improved data has been presented as a grey-scale plot, overlaid on local topographical features. The main magnetic anomalies have been identified, and an interpretation of those results is given.

4.7 The survey results and interpretation diagrams should not be seen as a definitive model of what lies beneath the ground surface, not all buried features will provide a magnetic response that can be identified by the gradiometer. In interpreting those features that are recorded the shape is the principal diagnostic tool, along with a comparison with known features from other surveys. The intensity of the magnetic response could provide further information, a strong response, for example, indicates burning, high ferric content or thermoremnancy in geology. The context may provide further clues, but the interpretation of many of these features is still largely subjective.

4.8 All measurements given are approximate as accurate measurements are difficult to determine from fluxgate gradiometer surveys. The width and length of the identified features can be affected by its relative depth and magnetic strength.

4.9 The results of the geophysical survey do not necessitate the need for XY trace plots to enhance the interpretation and have not been included.

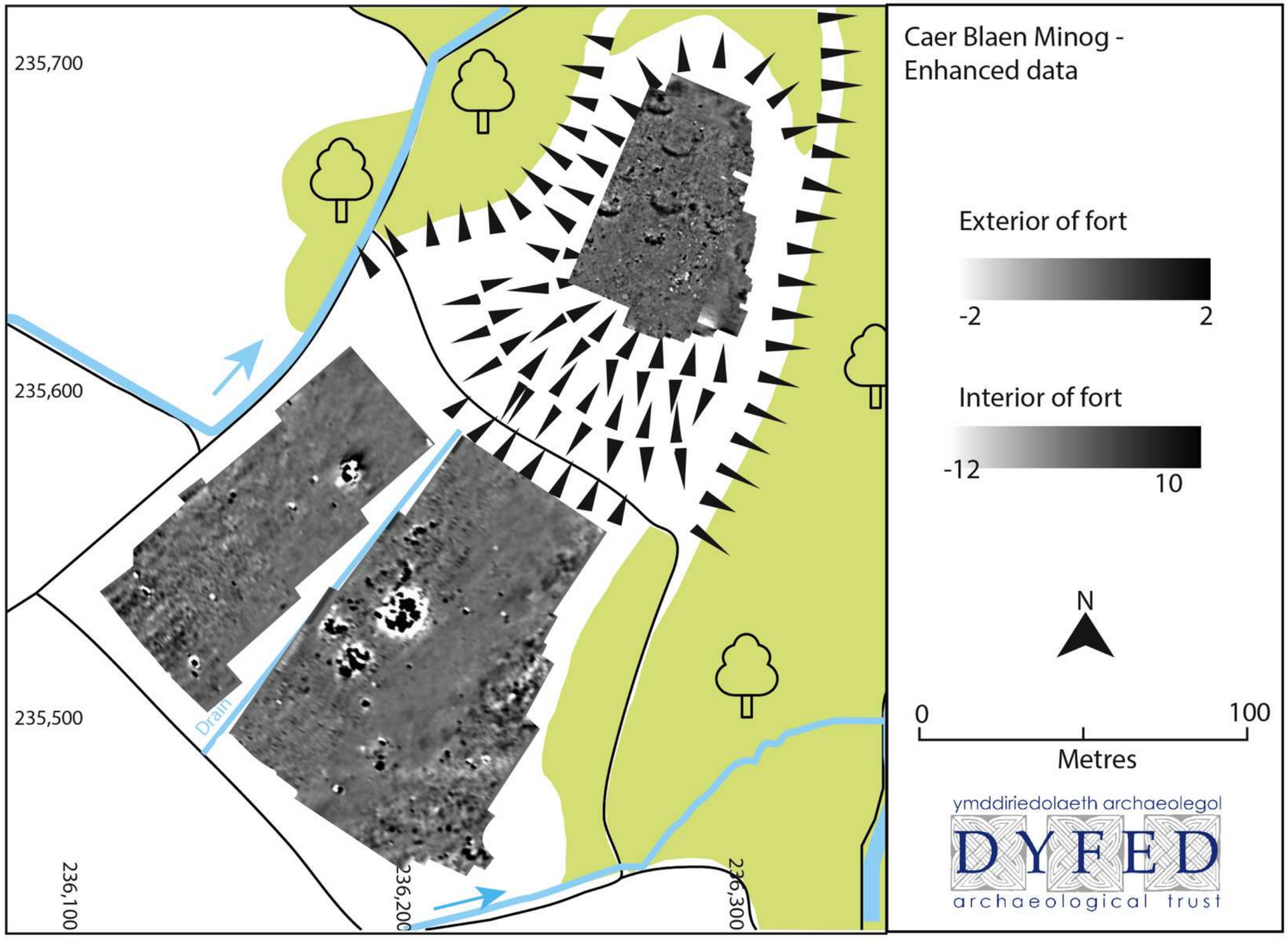


Figure 2: Processed geophysical survey results.

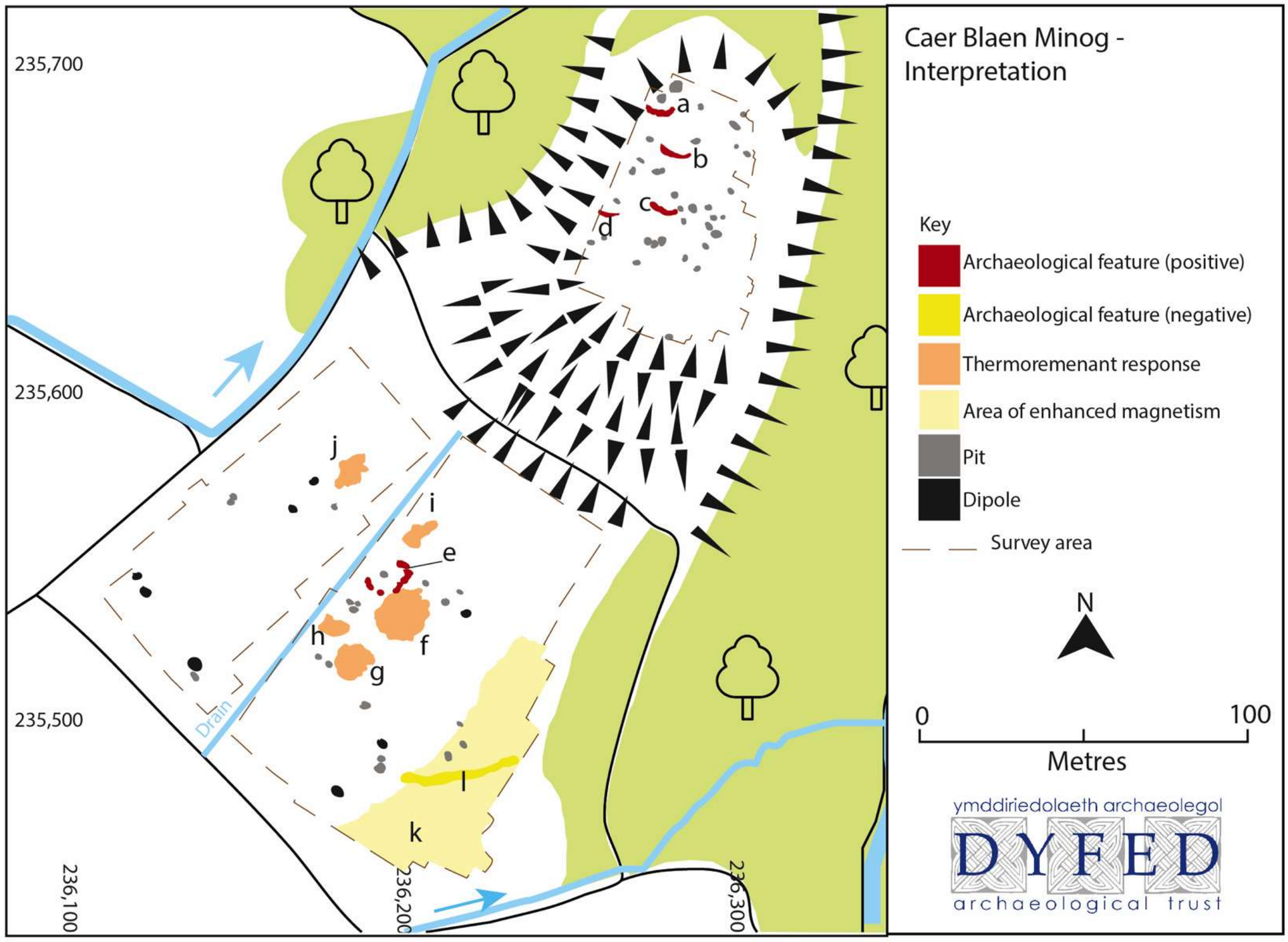


Figure 3: Geophysical interpretation.

5. GEOPHYSICAL SURVEY RESULTS

Photograph 4: Alex and Charlie undertaking magnetometry within the promontory fort.

5.1 The collated geophysical survey results are presented as a greyscale plot in Figure 2 with an interpretation of the results provided in Figure 3. Figure 3 illustrates the interpreted features of archaeological interest identified by lettering. The unprocessed grayscale plot and a trace plot of the survey is included in Appendix I.

Ferrous Objects

5.2 Ferrous objects are represented by Dipole anomalies and commonly seen across a range of sites. Some of these anomalies may be from an artefact of archaeological interest, but generally unless they form a pattern or part of a larger feature they are regarded as not significant and not discussed further. They are usually the result of miscellaneous modern ferrous-rich debris, such as brick and tile fragments as well as objects such as horseshoes or broken ploughshares in the topsoil. Only dipoles that are considered to have archaeological potential are discussed further in this report.

Pits

5.3 Possible pit features are often seen distributed throughout survey areas. They vary in shape, size and magnitude and some of these might have an archaeological origin, but it is also just as likely that they represent natural features such as tree throws (former root bole of a tree shrub). Unless any discernible arrangement or grouping is apparent it is difficult to determine whether they are of archaeological interest or not. Pits will only be discussed

further if there is strong evidence to suggest they are of archaeological interest.

Area of enhanced magnetism

5.4 On the western edge of the survey area outside of the hillfort lies an area of enhanced magnetism possibly representing prolonged or intense archaeological activity.

Archaeological Features

5.5 The following potential archaeological features have been identified:

a) Roundhouse platform – A north-facing roundhouse platform measuring c. 8.4m.

b) Roundhouse platform - A north-facing roundhouse platform measuring c. 11m.

c) Roundhouse platform - A north-facing roundhouse platform measuring c. 12.5m with a possible associated pit/hearth in its interior.

d) Roundhouse platform - A north-facing roundhouse platform measuring c. 5m with a possible associated pit/hearth in its interior.

e) Ring ditch – Located east of the modern drainage ditch a ring ditch feature can be seen with an external diameter of approximately 13m. There appears to be a break in the northwest quadrant of the ditch. A central feature does survive in the form of a probable pit.

f) Burnt mound – A well-defined, large thermoremanent response signifying an area of burning c. 15m in diameter. It is visible on the ground as a raised earthwork.

g) Burnt mound - thermoremanent response signifying an area of burning c. 10m in diameter. It is visible on the ground as a raised earthwork.

h) Burnt mound - thermoremanent response signifying an area of burning c. 5m in diameter. It is visible on the ground as a raised earthwork.

i) Possible burnt mound – Smaller and less well-defined than the other thermoremanent responses in the area but still present as a visible raised earthwork c.

j) Burnt mound – The only thermoremanent response on the west side of the modern drain measuring c. 7m in diameter.

k) K – Area of enhanced magnetism on the western edge of the area outside of the hill fort. It could represent intense or prolonged archaeological activity.

l) Trackway – A negative linear feature c.36m long representing a section of a former trackway.

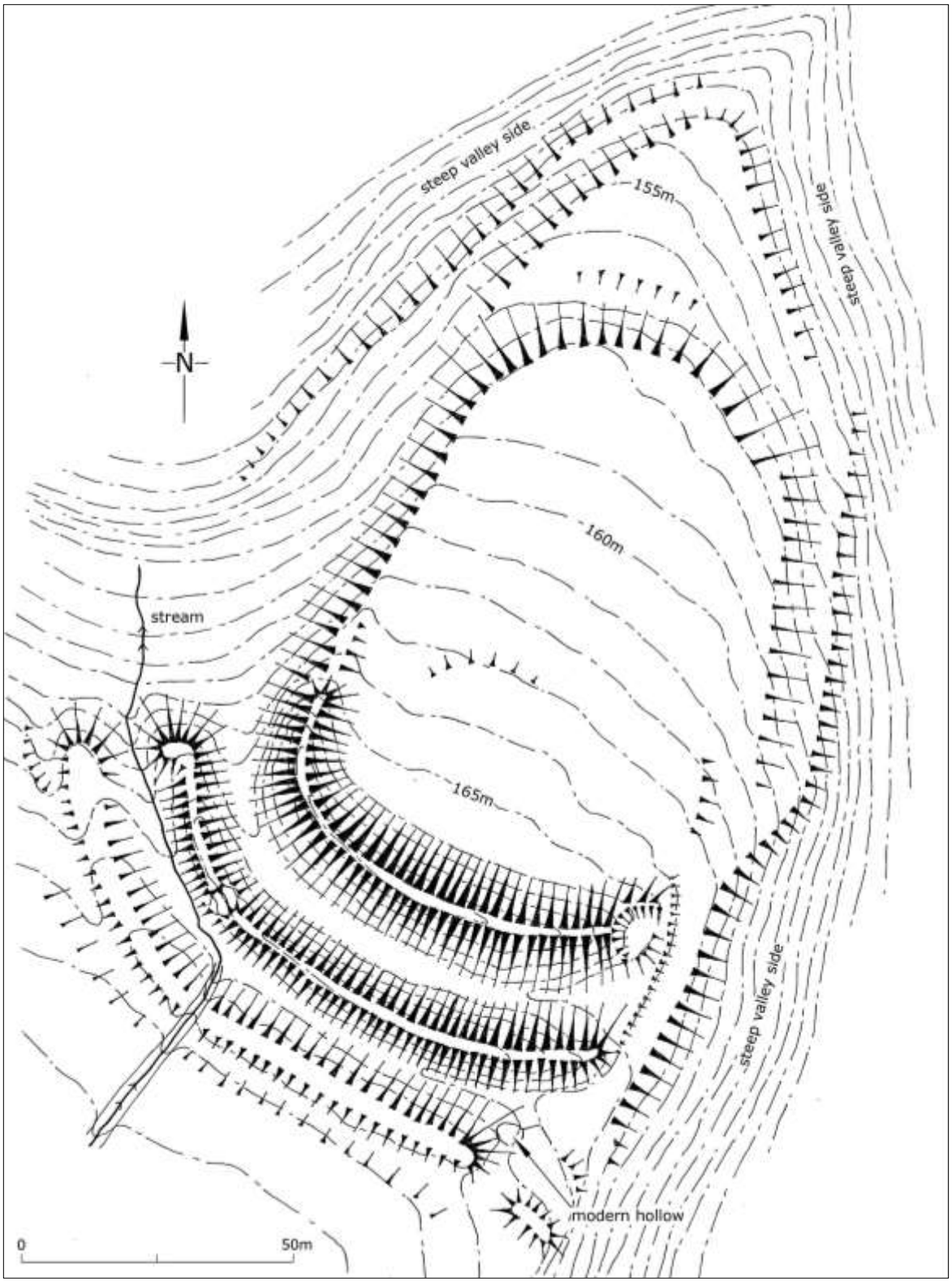


Figure 4: Hachure plan of Caer Blaen Miniog fort.

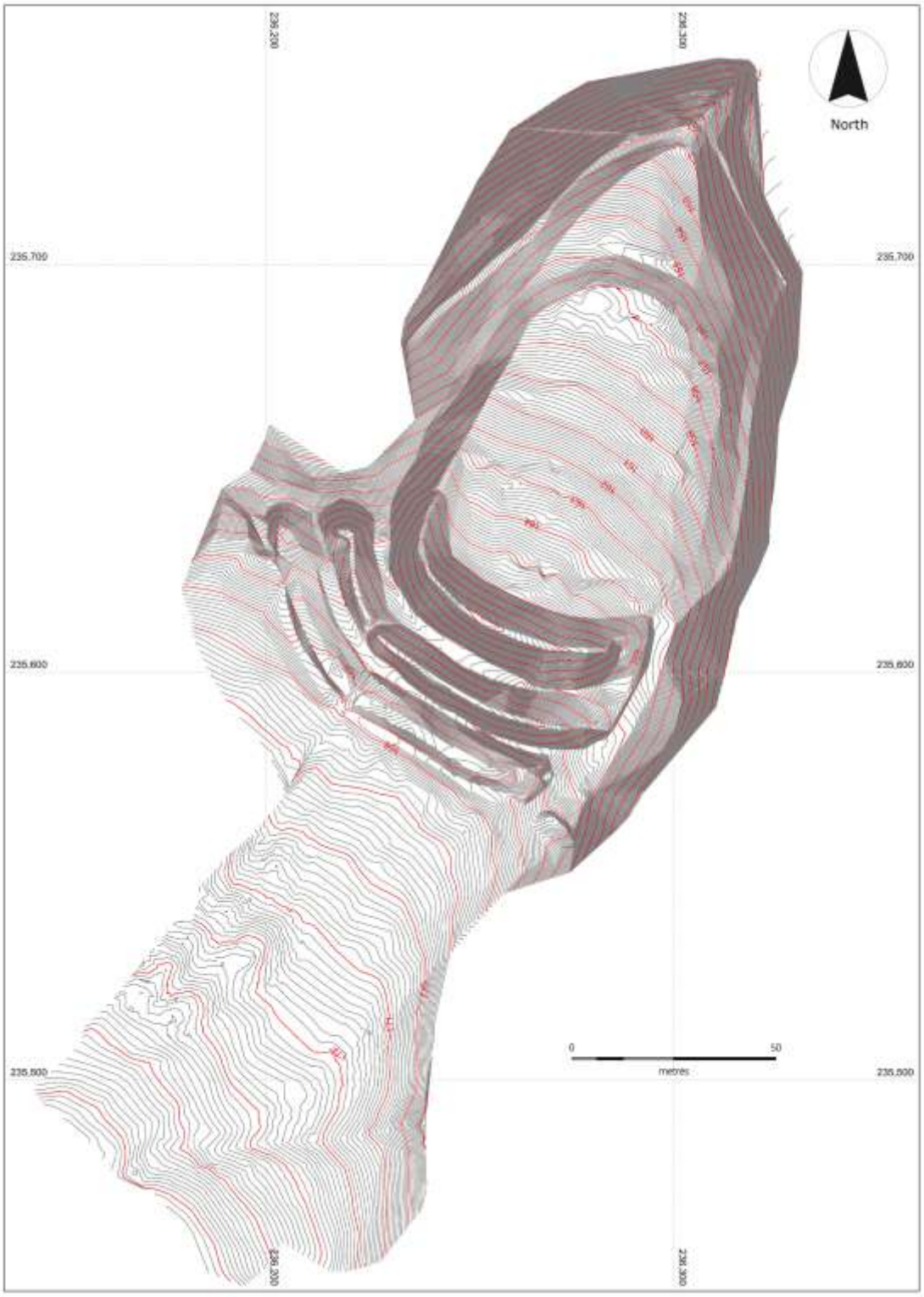


Figure 5: Contour plan of Caer Blaen Miniog fort and excavation field. Note the low earthworks of the burnt mounds in the excavation field. Contour intervals 1m and 0.1m.

6. TOPOGRAPHICAL SURVEY METHODOLOGY

6.1 A topographic survey of the promontory fort was undertaken in February 2021 using a Trimble Total station. The survey was located in relation to the Ordnance Survey national grid using a Trimble R8s GNSS with TSC3 controller. Data was processed using Trimble Business Centre.

6.2 Only the earthworks defining the fort and natural topography were recorded. No attempt was made to record trees and recent landscape features such as hedge banks and fences.

7. TOPOGRAPHICAL SURVEY RESULTS

7.1 The results of the topographic survey are shown on Figures 4 and 5. In addition to the three main banks and ditches on the south side of the fort other features of interest are:

The continuation of the main inner bank along the west side of the fort. This is scarp rather than a bank, but is clearly a constructed element of the fort, not a natural break of slope.

The bank at the triangular north end of the fort. As with the above, this is scarp rather than a bank, but is clearly a constructed element of the fort, not a natural break of slope.

The much-reduced line of bank on the east side of the fort.

A terrace running down the slope on the west side of the fort. This is almost certainly the line of a bank and ditch, providing additional defence on this side of the fort.

A terrace running along the slope on the east side of the fort. This is almost certainly the line of a bank and ditch, providing additional defence on this side of the fort.

A circular terrace on the east end of the inner bank. This does not seem to be a modern feature and so could the site of a guard chamber or structure overlooking the entrance.

Modern hollow cut into the east end of the outer bank. This was probably excavated to provide stone as hardcore. A revetement wall and other structure details are visible in this hollow.

Stonework is visible on all three banks, indicating that they all were stone-faced.

7.2 Photographs of many features noted above and more general features of the site are included in the section below with their approximate location shown in Figure 6.

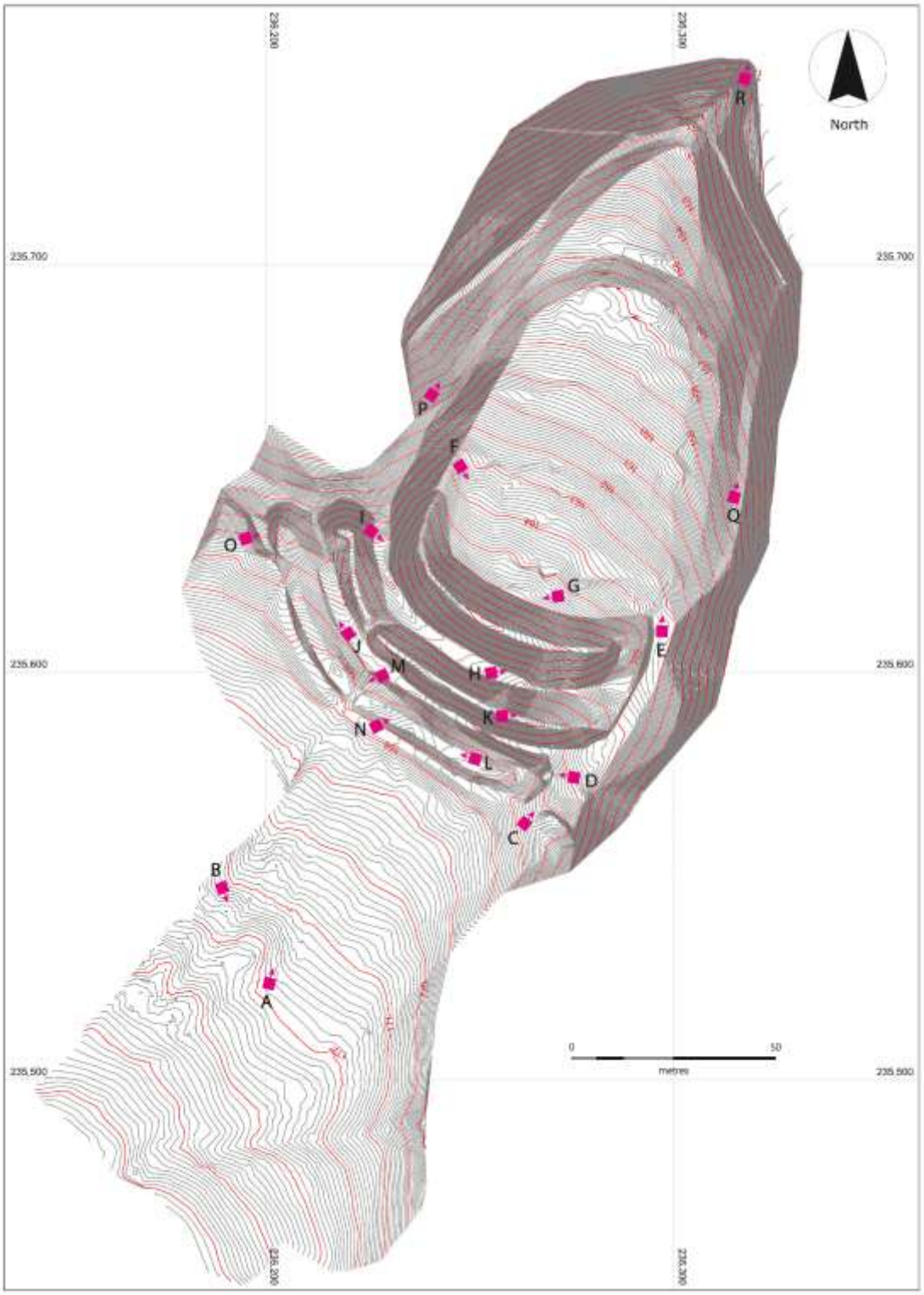


Figure 6: Locations and directions for Photographs A-R (below).

Photograph 5: (A) Looking towards fort from area of evaluation. Entrance far right. Looking north.

Photograph 6: (B) Area of two visible mounds outside of fort. Location for Trenches 1 and 2. Looking southeast.

Photograph 7: (C) Entrance to the fort. Main defensive circuit to the left, steep valley side to the right. Looking north.

Photograph 8: (D) Modern hollow near entrance to fort. Note partially exposed stone bank/revetting. 2m scale, Looking south.

Photograph 9: (E) View of interior fort from entrance. Looking north.

Photograph 10: (F) Looking towards entrance to fort. Main defences in right hand side of photograph. Looking southeast.

Photograph 11: (G) Inner defensive circuit from interior of fort. Looking west, 2m scale.

Photograph 12: (H) Eastern end of inner defensive circuit. Looking northeast, 2m scale.

Photograph 13: (I) Western end of inner defensive circuit. Looking north.

Photograph 14: (J) Volunteers in middle defensive circuit. Looking west.

Photograph 15: (K) Looking over middle defensive circuit towards inner defensive circuit. Looking northeast.

Photograph 16: (L) Looking along eastern end of outer defences. Looking west; 2m scale.

Photograph 17: (M) Modern drainage ditch cutting outer defences. Looking southwest, 1m scale.

Photograph 18: (N) Looking from outer defences towards middle and inner defensive circuits. Looking north, 1m scale.

Photograph 19: (O) Looking along western end of main defences. Volunteers stood on banks of middle and inner defensive circuits. Looking north, 2m scale.

Photograph 20: (P) Showing steep valley side to the west of the fort. Looking north, 1m scale.

Photograph 21: (Q) Showing steep valley sides to the east of the fort. Looking north, 1m scale.

Photograph 22: (R) Impressive large natural quartz boulder halfway down scarp to the north of the fort. 1m scale.

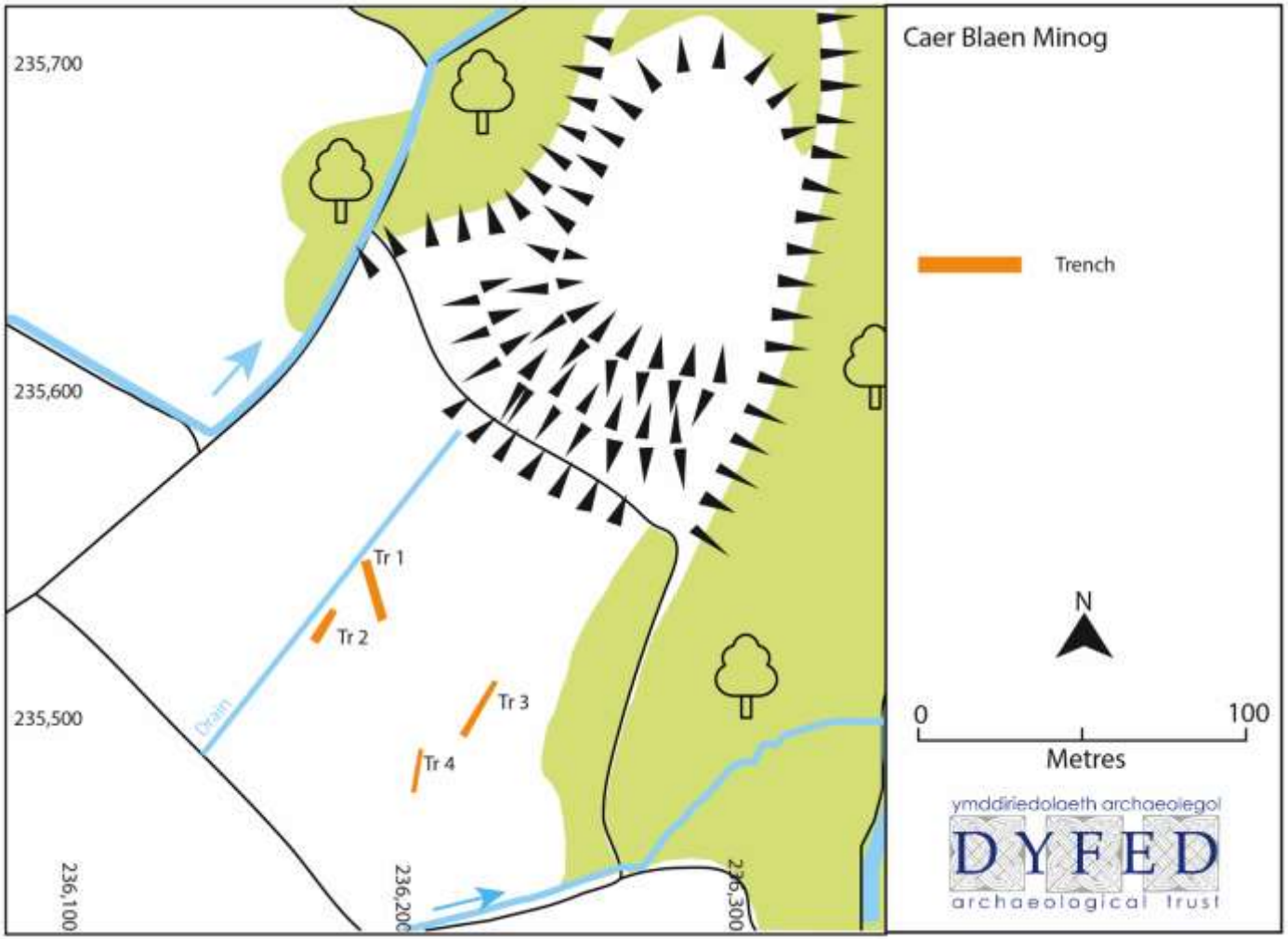


Figure 7: Trench location.

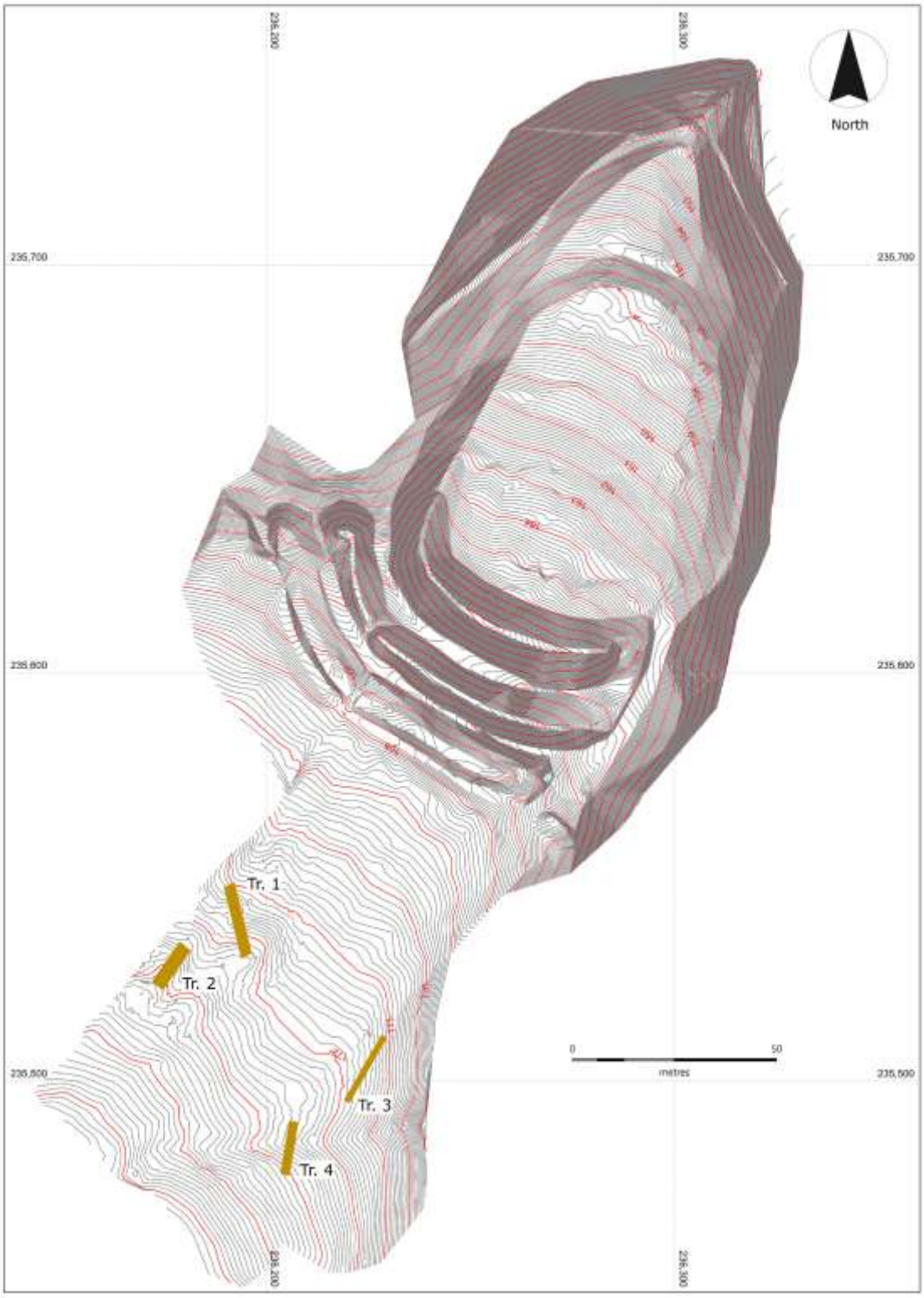


Figure 8: Trench plan overlain on contour survey.

8. TRIAL TRENCH EVALUATION METHODOLOGY (Figures 7 and 8)

8.1 The evaluation was carried out following the geophysical survey conducted by Dyfed Archaeological Trust as a part of the Cadw funded 'Searching for Chariots' project in 2019 (Enright 2019). The survey identified a number of possible archaeological anomalies that were at significant risk from erosion and encroaching vegetation.

8.2 It aimed to characterize a number of these anomalies using four evaluation trenches and assess the damage caused to these features by a drainage ditch cutting through the field and by cultivation in previous years.

Photograph 23: First socially distanced tea break.

8.3 The aim of the four trenches were as follows:

Trench 1

Investigated two anomalies: a possible burnt mound and ring ditch under threat of erosion from the modern drainage ditch.

Trench 2

Investigated another possible burnt mound also under threat of erosion from the modern drainage ditch.

Trench 3

Investigated a possible ring ditch.

Trench 4

Investigated a broad, linear hollow seen upon arrival on site.

8.4 These investigations were designed to allow an informed decision to be made over the possible revision to the scheduled area of the promontory

fort (Scheduled Monument CM377) to include the extent of any archaeological remains present.

8.5 The evaluation was also designed to deliver community benefit through volunteer participation, whilst ensuring Covid-19 precautions were observed. Accordingly, only four volunteers were allowed on site at any one time. The trial trenches were also in some instances (Trenches 1 and 2) made wider (3m) than is usually in order to allow for social distancing.

8.6 The archaeological work involved the minimal amount of excavation that would ensure the site was adequately characterised whilst causing minimal disturbance to the surviving remains. None of the trenches breached the bank of the drainage ditch to avoid causing further erosion, but placed as close to the edge as possible without jeopardising the integrity of the bank.

Photograph 24: Opening Trench 2.

8.7 Topsoil was mechanically removed using a 360-degree 9 tonne Hiteuchi excavator using a grading bucket 1.6m wide. Turf, topsoil/subsoil were deposited separately to allow for proper reinstatement and backfilling at the end of the excavation.

8.8 All other excavation was conducted by hand. All volunteers on site excavated under the supervision of experienced Dyfed Archaeological Trust staff.

8.9 Archaeological deposits and features were recorded by archaeological context record sheet, scale drawing/detailed survey, photography and site notebooks. A digital photographic record was maintained. All individual archaeological deposits or features were numbered using the open-ended numbering system. Each numbered deposit was described and is shown

within rounded brackets () in the text. A Trimble R8s GNSS with TSC3 controller was used to record the trench location.

8.10 Recording of all archaeological structures, features or deposits conformed to best current professional practice and was carried out in accordance with the Recording Manual used by Dyfed Archaeological Trust. This evaluation was undertaken in accordance with the Chartered Institute of Archaeologists' (CIfA) Standard and Guidance for an Archaeological Field Evaluation (2014).

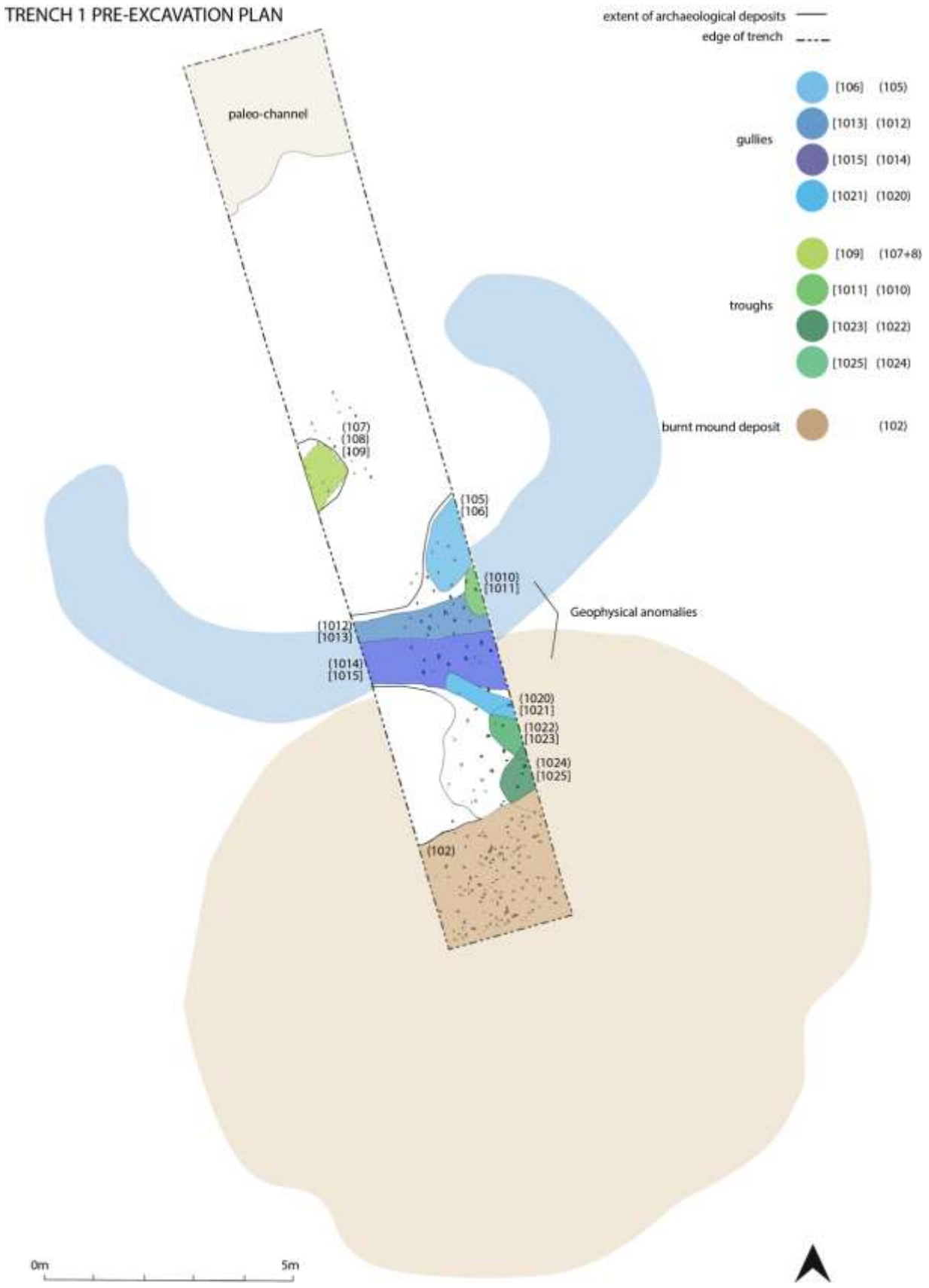


Figure 9: pre-excavation plan of Trench 1.

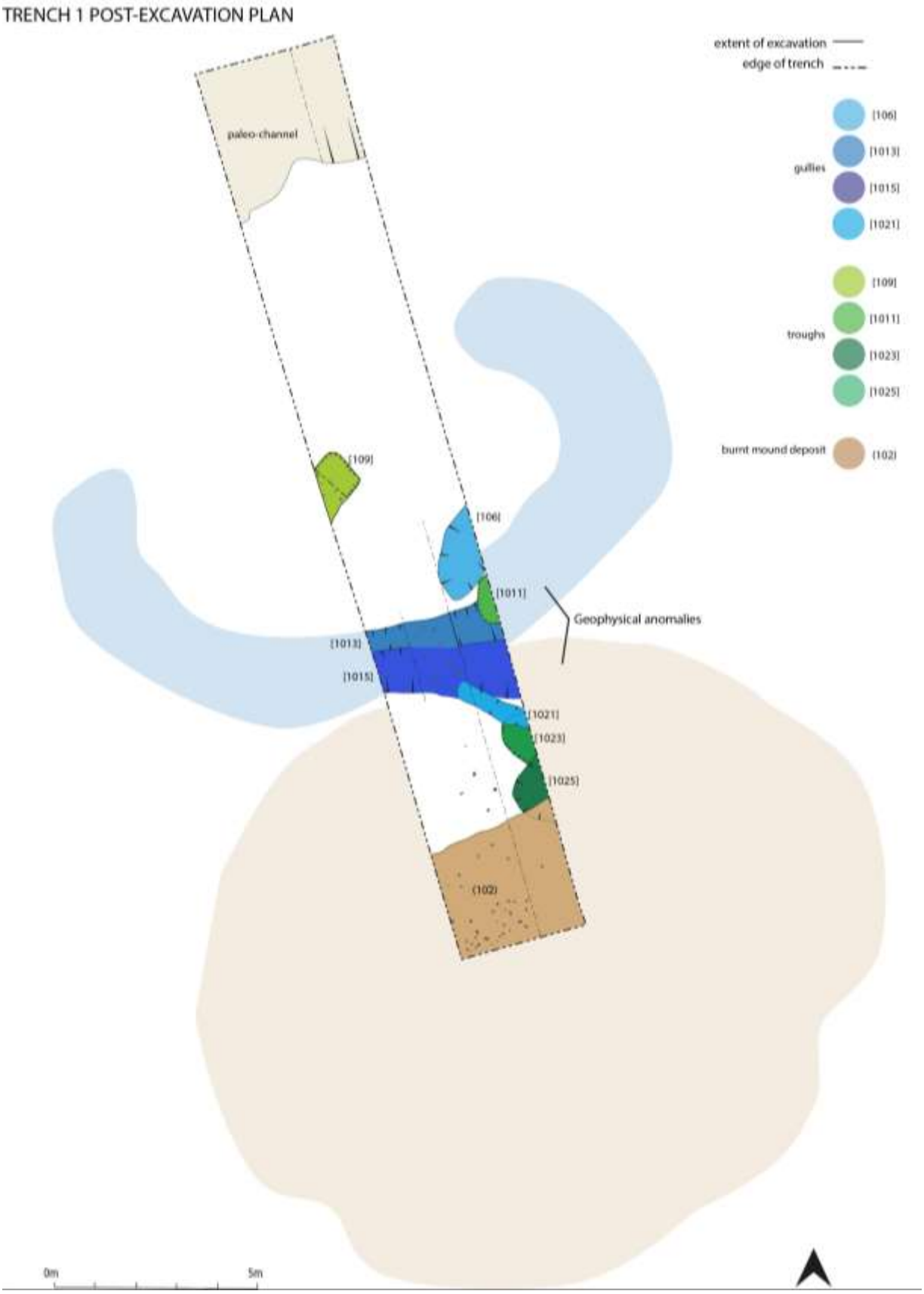
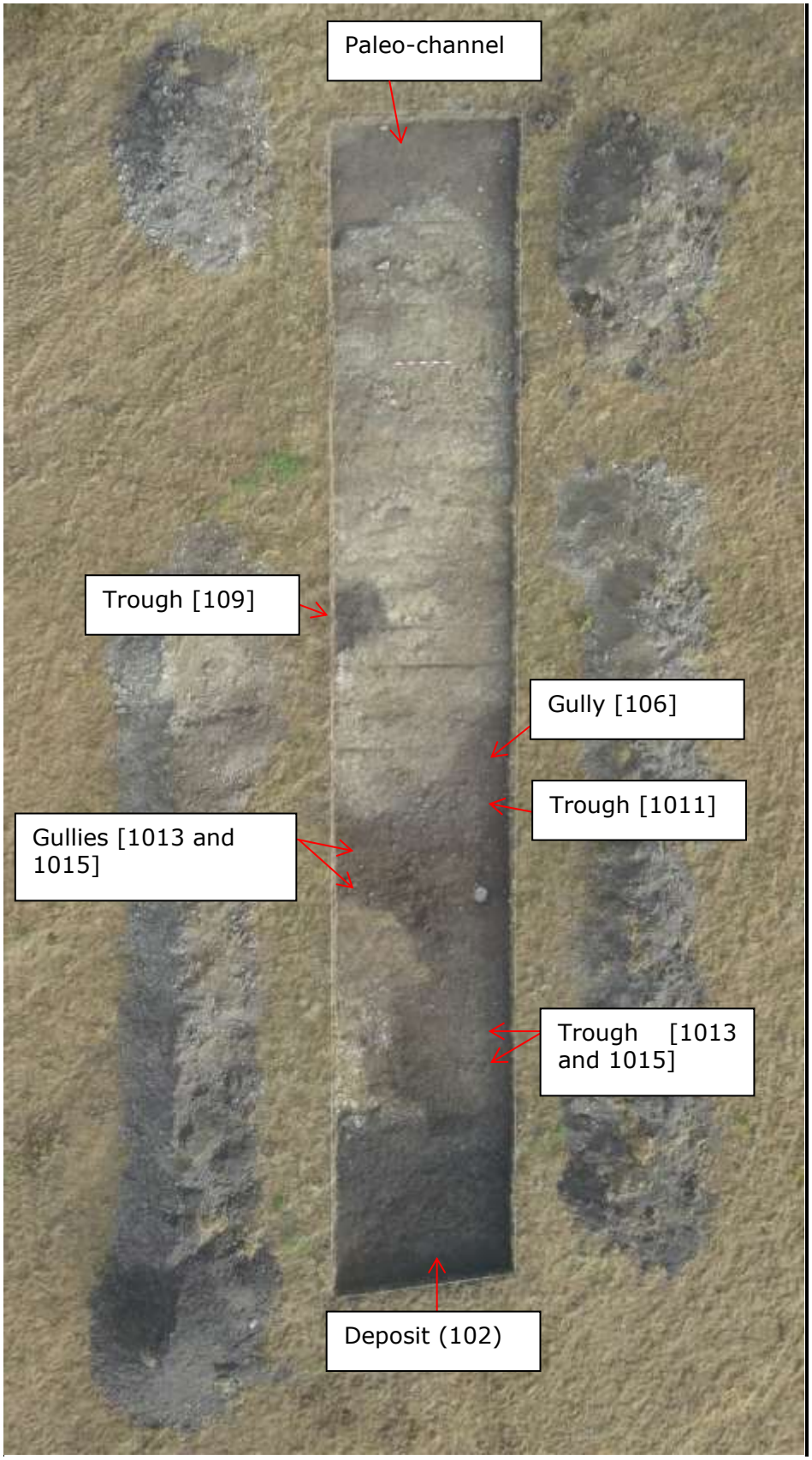


Figure 10: post-excavation plan of trench 1.



Photograph 25: Aerial photograph of Trench 1. North-north-west up the page, 1m scale.

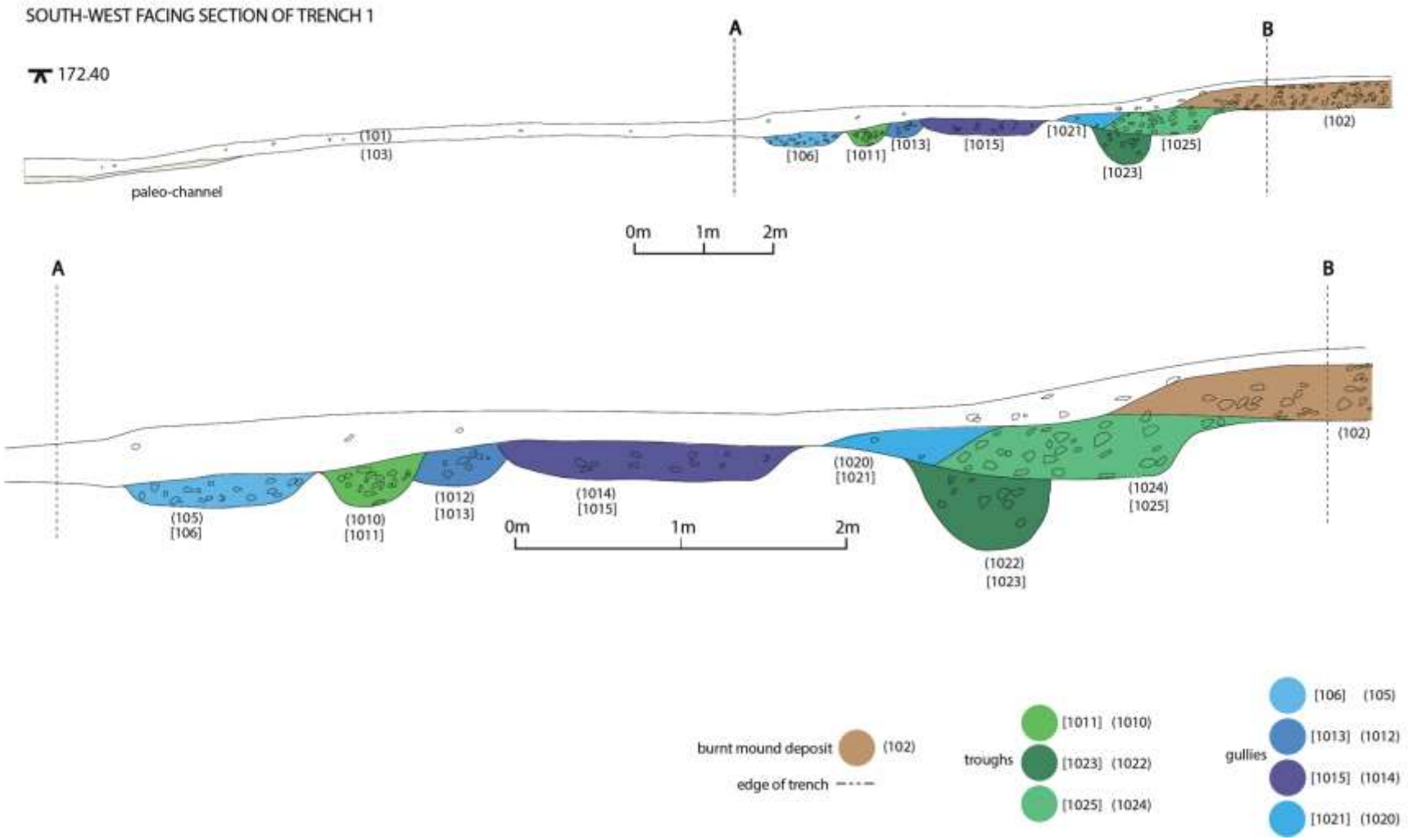


Figure 11: South-west facing section of Trench 1**.**

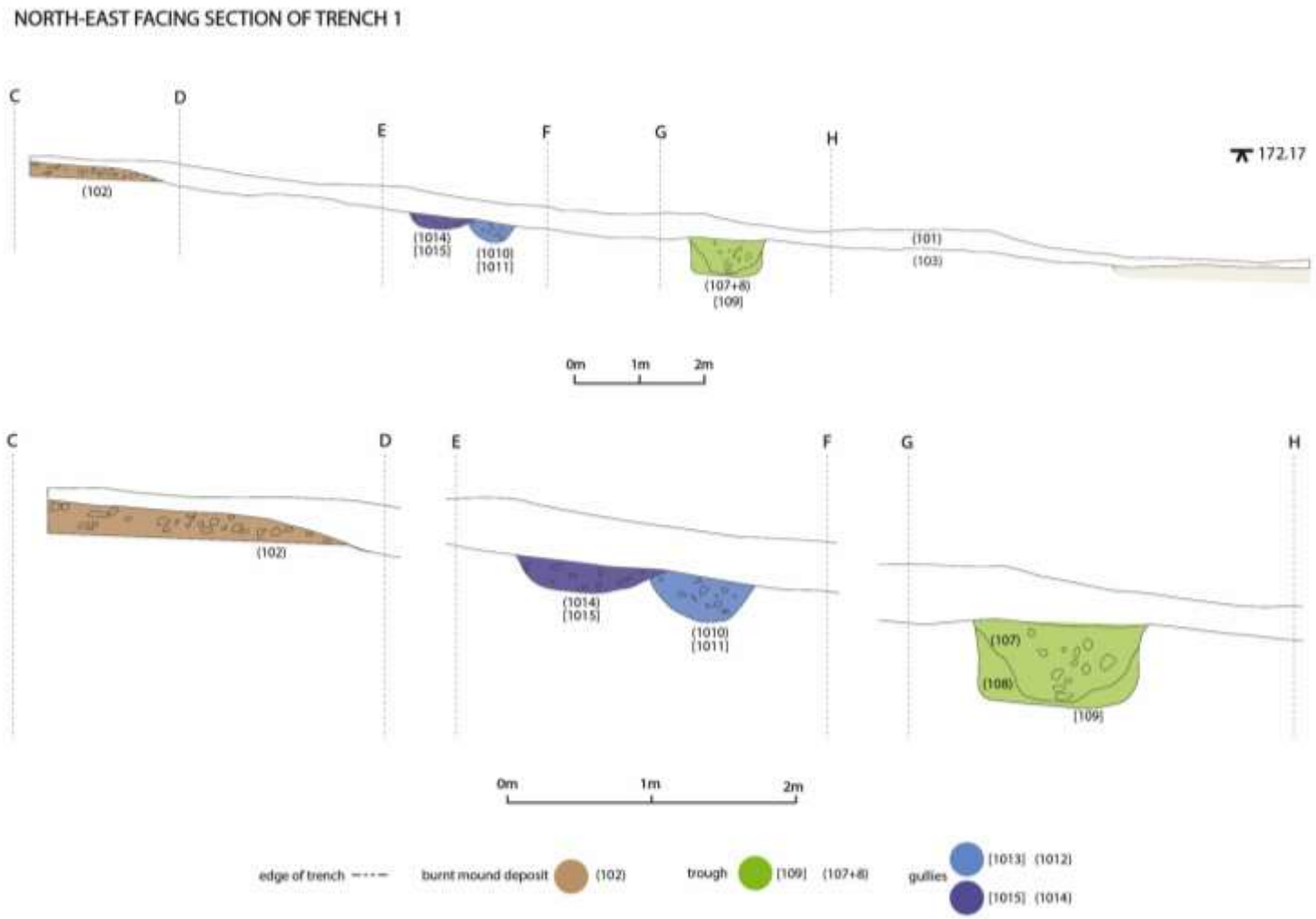


Figure 12: North-east facing section of Trench 1**.**

9. TRIAL TRENCH EVALUATION RESULTS

9.1 Trench 1(Figures 9, 10, and 11; Photograph 25)

9.1.1 Trench 1 was located adjacent to the drainage ditch and was aligned approximately north-northwest/south-southeast and measured 19.1m in length (Figures 7 and 8; Photographs 29, 30 and 31). It targeted two anomalies identified in the 2019 geophysical survey; the first, a large highly magnetic anomaly at the southern end of the trench thought to be a burnt mound; and second, a ring ditch with central feature in the mid part of the trench (See Section 5 and Figures 9 and 10). Due to their proximity to the drainage ditch these features were thought to be at risk of erosion.

9.1.2 At the northern end of the trench, closest to the drainage ditch was a wide thin band of natural mid brown slow deposition silts caused by the gradual movement of water (Photograph 32). It is thought that this represented a paleo-channel or old streambed along which the modern ditch had been dug. Beneath this paleo-channel the bedrock geology was visible consisting of a mid-grey shale with occasional silts.

Photograph 26: Cleaning Trench 1 after removal of topsoil. Looking north east.

9.1.9. In the 2019 geophysical survey a circular anomaly with central feature was detected (Section 5). Initially this was interpreted as likely being a funerary monument with central burial. Upon excavation, it was clear that this was not the case. The central feature was a pit [109], thought to be a trough for the boiling of water (see Section 4). This trough was rectangular in shape and was only half seen in the trench (Photograph 33 and 34). It had vertical sides that curved into a flat base. It was 1.12m wide and 0.33m deep with approximately 1m of its long edge visible in the trench.

9.1.10 There were two fills associated with trough [109]; firstly (108), a greyish mottled clay which frequent charcoal fragments. This fill may be associated

with the trough's 'use lifetime' forming with the gradual erosion of the edges and emptying of the trough. The secondary deposit (107), consisted of blackish charcoal, heat-affected stone and silt similar to the burnt mound material (102). In the eastern corner of the trough was a small circular depression which may have been a stake-hole associated with the construction of a wooden lining (Photograph 33). However, there was no such depression in the northern corner rendering this questionable.

9.1.11 Trough [109] was in the centre of a series of curving gullies that ran broadly east/west through the trench (Photographs 30, 34 and 35). The closest gully to the trough [106] terminated in the mid part of the trench (Photograph 36). It has steeply slopping sides and a V-shaped base. It measured 0.75m wide by 0.18m deep with 1.15m visible in the trench. It was filled with a loose brown silt with frequent angular heat-affected stones (105). Unusually it also has significant quantities of bright white quartz contained in its fill.

9.1.12 Immediately to the south of gully [106] was another similarly sized gully this time with a curved base [1013] (Photograph 37). This gully was gradually sloping with curved sides and rounded base. It had a single fill (1012) consisting of firm light brown silts with occasional angular stones and charcoal flecks. It appeared to have been re-cut [1015] after period of sedimentation to have gently sloping sides and flat base (Photograph 38). Again, it gradually filled with a mix of silt, charcoal and heat-affected stone (1014). Central Trough [109] and curving gullies [106, 1013, 1015] are thought to represent a first broad phase of activity in the trench.

9.1.13 There was no detectable return to any of these ring gullies seen in the northern part of the trench in either the evaluation or the geophysical survey. This is possibly due to this part of the structure being downhill reducing the need for drainage. There were no structural remains such as postholes associated with the ring gullies, either. However, it is not unprecedented for structures such as roundhouses to be devoid of structural features especially given the abrupt break of slopes of most of the archaeological features and deep plough marks suggesting that remains have been heavily truncated making the eradication of ephemeral remains likely.

9.1.3 At the southern end of trench the ground rose to form a large mound rising from the mid part of the trench to more than a metre above the ground level (Photographs 29, 30 and 31). Upon excavation the mound was seen to be at least partly natural, consisting of a build-up fine whiteish clay.

9.1.4 This natural mound has been enhanced by the piling of burnt material up against it. This 'burnt mound material' (102) was seen as a thick spread of heat-affected stone, charcoal and occasional silts which was black in colour at the southern end of the trench (Photograph 39). The spread measured 0.36m thick at its deepest point at the southern end of the trench although it is thought that its maximum depth was not seen in the excavation trench. Above the burnt mound material was a thin layer of topsoil (101) measuring only 0.04m thick where the mound was greatest. The topsoil was mid-brown and included large amounts of heat-affected stone no doubt that once belonged to (102).

9.1.5 It is thought likely that the burnt mound material (102) does not represent a single event but rather a series of dumps. As is often the case it was not possible to distinguish between these dumps, being only visible as a single thick layer. However, it should be noted that that there was no evidence of a stabilization within the burnt mound layer (102) perhaps indicating that there was no long periods of inactivity.

Photograph 27: Pre excavation survey before excavation of burnt mound deposit.

9.1.6 Along its northern extent the burnt mound deposit (102) sealed two pits, which are thought to be troughs that had gradually been engulfed by the expanding burnt mound. The earliest of these troughs [1023] was ovoid in shape with steeply sloping sides a curved base (Photograph 40 and 41). It measured 0.68m deep by 1.20m wide although later features had significantly truncated it. There was one detectable fill (1022) a grey silt with frequent charcoal and small angular heat-affected stones.

9.1.7 Cutting Trough [1023] was another possible trough [1025], which was more rectangular in shape with steeply sloping sides and a flat base aligned northeast/southwest (Photograph 42). This trough measured 0.85m by 0.60m and was 0.42m in depth. It was filled with a deposit (1024) consisting entirely of charcoal and heat-affected stones that was very similar to the burnt mound deposit (102). This fill is likely the result of the burnt mound engulfing the area. The two troughs [1023 and 1025] and the burnt mound deposit (102) are considered to be a second broad phase of activity.

9.1.8 There was no evidence of any lining for any of the troughs described above. It is thought this likely because of the natural water retentive properties of the clay superficial geology rendering it unnecessary.

Photograph 28: Taking levels in trench1.

9.1.15 There are two features thought to be of a slightly later date. Firstly, gully [1021] running away southeast from gully [1014] (Photograph 43). This had a single fill (1020) and cut across the earlier gully fill (1014) and trough fill (1024). Secondly, a small pit [1011], only half visible in the eastern section cutting gullies [1013] and [1015], again filled with heat shattered stones and charcoal (1010) (Photograph 44). This is presumed to be another later trough although it was difficult to determine as it had only been partially caught in section.

Dating Evidence

9.1.16 Radiocarbon dates were obtained for two of the contexts described above, both were taken from wood charcoal (Common Hazel- Corylus Avellana) (Appendix II). The first taken from context (108), the lower fill of trough [109] ranged between 2468-2235 cal. BC at 2 sigma (95.4 percent probability). The second taken from context (1022) the fill of trough (1023) ranged between 2030-1830 cal.BC at 2 sigma (95.4 percent probability). This suggests that this burnt mound dates to the very early part of the Bronze Age (See Table 1) and that it was used for an extended period of time of at least a few hundred years.

9.1.16 It is these determinations, combined with the stratigraphic data that allow for a crude phasing of the activity within the trench area. As described above it is thought that the first 'phase' of use was associated with central trough feature [109] and the ring gullies that cross in the excavation area in the mid-part of the trench [106, 1013, 1015]. The second 'phase' was trough [1023] that was subsequently replaced with trough [1025] before being engulfed by the expanding burnt mound material (102). The stratigraphic data then suggests a third slightly later phase after the sedimentation of the features associated with the second phase of activity.

Photograph 29: Pre excavation photograph of the northern end of Trench 1. Note the paleo-channel in the foreground. Looking south, 1m scale.

Photograph 30: Showing mid part of Trench 1. Showing trough feature in foreground. Ring gullies in mid ground and burnt mound feature in background. Looking south west, 1m scale.

Photograph 31: Showing southern end of Trench 1. Burnt mound deposit (102) in foreground. Looking north, 1m scale.

Photograph 32: Paleo-channel after excavation. Looking north west, 1m scale.

Photograph 33: Central trough feature [109] with lower silty fill (108) and darker charcoal fill (107). Looking southwest, 0.5m scale.

Photograph 34: Showing ring gullies surrounding trough (109). Looking south-east, 1m scale.

Photograph 35: Showing ring gullies [106, 1013, 1015] crossing the trench. Looking south, 1m scale.

Photograph 36: Gully terminus [106] filled with (105). Looking north-east, 0.5m scale.

Photograph 37: Gullies [1013 and 1015] running across the trench. Looking east, 1m scale.

Photograph 38: Central baulk clearly showing gully [1015] cutting [1013]. Looking west,1m scale.

Photograph 39: Showing burnt mound deposit after excavation. Looking east, 1m scale.

Photograph 40: Intercutting troughs at north eastern edge of burnt mound deposit. Looking north east, 1m scale.

Photograph 41: Lower earlier deep trough (1023) in section. Looking east, 1m scale.

Photograph 42: Later trough [1025] filled by (1024) similar to burnt mound material (102). This trough cuts greyish fill (1022) of earlier trough [1023]. Looking east, 0.5m scale.

Photograph 43: Later gully [1021]. Scale in base of gully. Looking northeast, 0.5m scale.

Photograph 44: Small later possible trough [1011] seen in section. Looking east,1m scale.

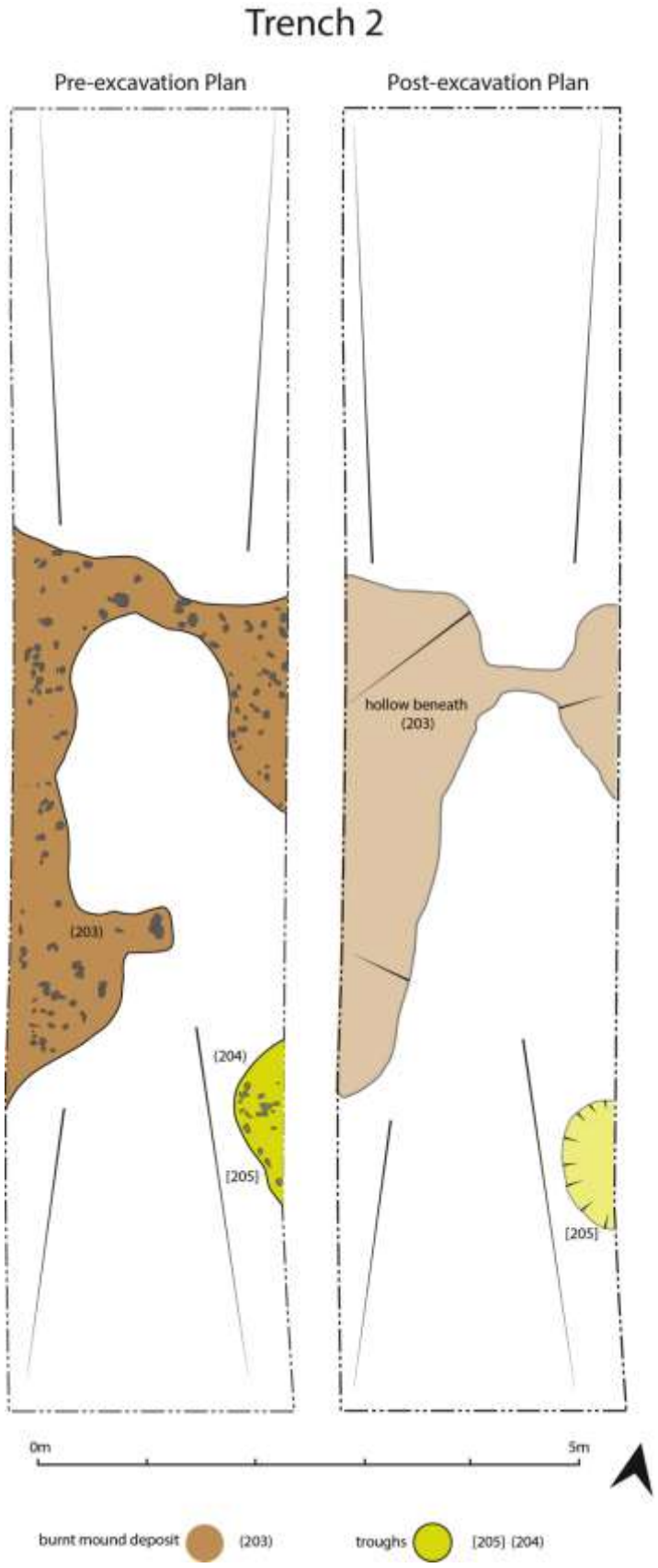
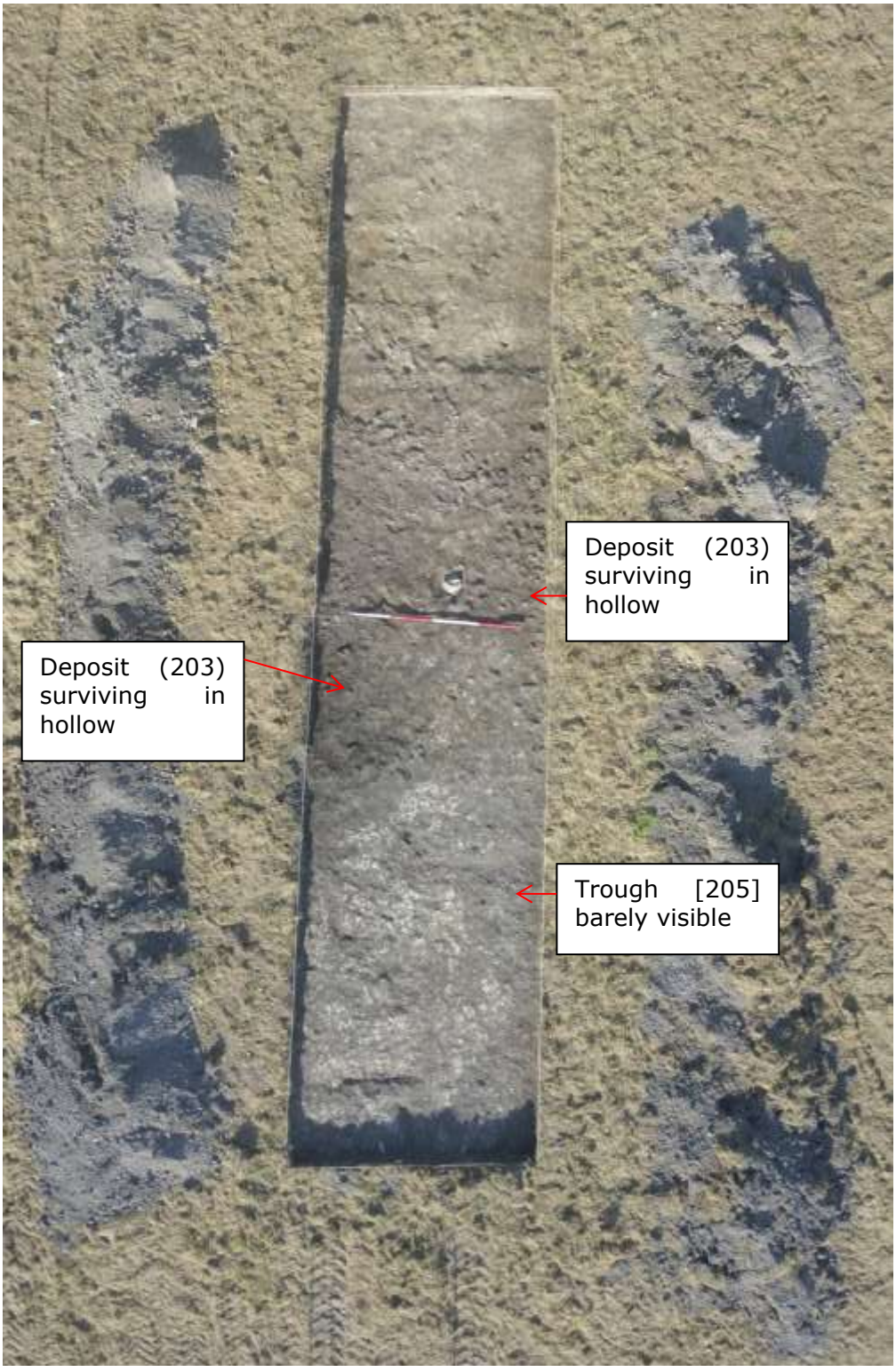


Figure 13: Trench 2 plans.



Photograph 45: Aerial photograph of trench 2. Northwest up the page, 2m scale.

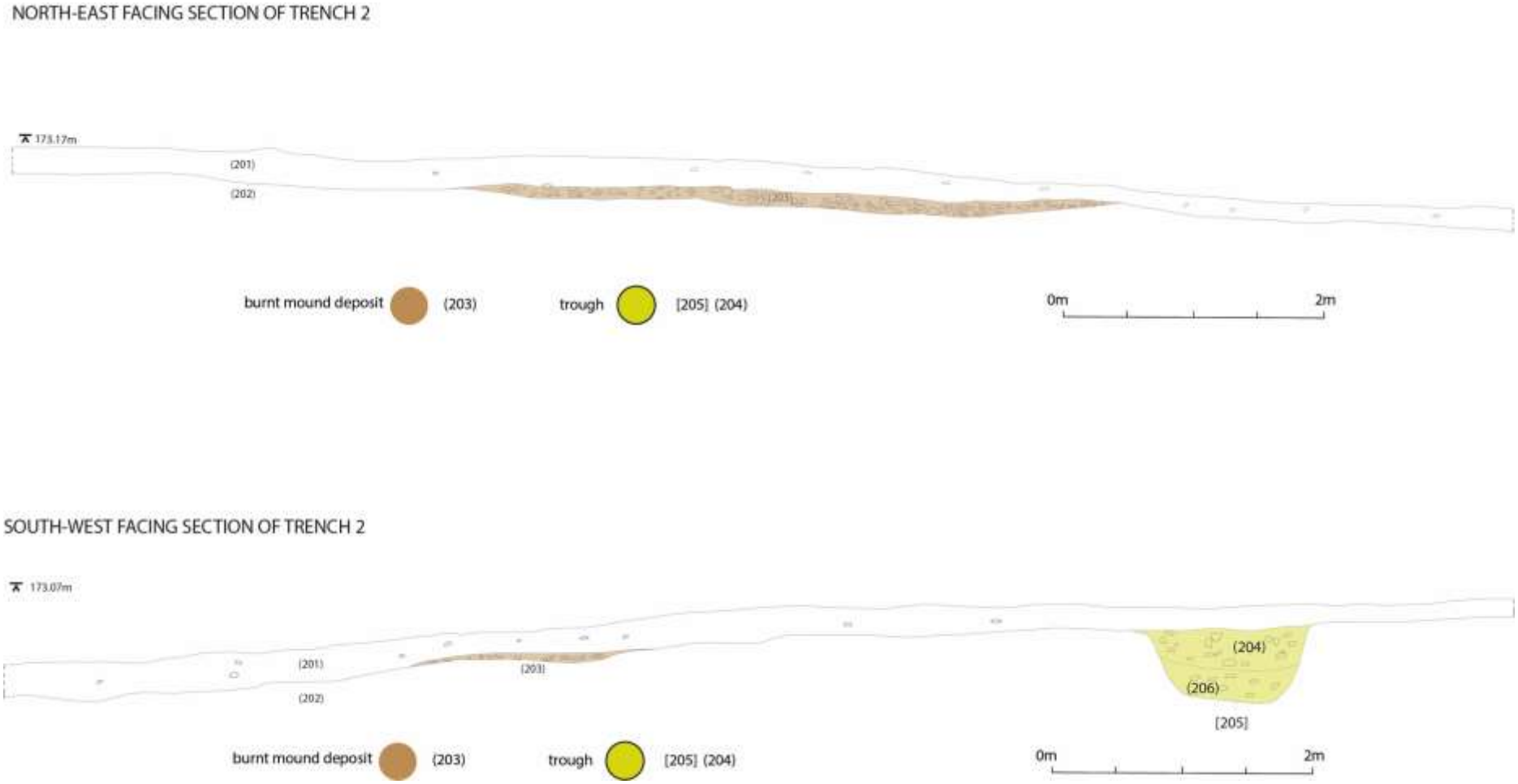


Figure 14: Sections of Trench 2.

9.2 Trench 2 (Figures 13 and 14, Photograph 45)

9.2.1 Trench 2 targeted another suspected burnt mound anomaly seen in the 2019 geophysical survey (Section 5).

9.2.2 The trench measured 10.6 m by 2.5m in width and was orientated approximated northeast/southwest (Figures 7, 8 13 and 14; Photographs 48 and 49). This trench was also near the modern drainage ditch and approximately 10m to the southwest of Trench 1.

9.2.3 The topsoil (201) was a greyish silt measuring on average 0.12m in depth with a similar clay superficial geology although it was whiter and more mottled at the southwest end with occasional pieces of quartz.

Photograph 46: Third trowel of trench 2.

9.2.4 Upon removal of topsoil it was apparent as with Trench 1 that this feature was built on a natural clay mound with burnt mound material being heaped over it. The burnt mound material (203) in this instance was less well preserved only surviving in slight natural hollows in the clay on either side of the trench (Photographs 50 and 51).

9.2.5 In section more of the original profile of the mound was visible although mixed with topsoil. (Photograph 51). The burnt mound deposit was very similar to that seen in Trench 1, consisting of heat effected stone and charcoal with occasional silts.

9.2.6 In the southeast corner of the trench was a pit (205) partially seen in section again thought to be a trough (Photograph 52). It had steep almost vertical sides and was roughly ovoid in shape. This trough measured was 1.41m in width and 0.60m in depth with 0.65m of its width visible in the trench with was thought to be approximately half of its diameter.

9.2.7 The trough had two fills, the primary deposit (206) being a greyish silt deposit with flecks of charcoal and occasional heat-affected stones (Photograph 52). This measured 0.39m deep and was thought to be the result of slow deposition during the 'use lifetime' of the trough. A secondary deposit of charcoal, silt and heat-affected stone (206) was also seen, this was similar to the burnt mound material (202) and was possibly associated with the expansion of the mound over the trough. However, it should be noted that there was no direct stratigraphic relationship between the two features.

Photograph 47: Geraint Setting up the auto-level with Trench 2 in the background.

Photograph 48: North eastern end of Trench 2. Showing thin burnt mound deposit (202) in mid part of trench. Looking south, 1m scale.

Photograph 49: South western end of Trench 2. Showing burnt mound deposit in mid part of trench; Trough feature (205) immediately to the right of scale. Looking north east, 1m scale.

Photograph 50: Showing Trench 2 after excavation of hollows containing burnt mound deposit (202) and trough feature (205). Looking north west, 1m scale.

Photograph 51: Trench 2 after removal of burnt mound material (202) in slight hollow after excavation. Looking West, 1m scale.

Photograph 52: Showing trough after excavation. Looking north east, 1m scale.

Photograph 53: Trench 3 aerial photograph. North to top**.**

9.3 Trench 3 (Photograph 53)

9.3.1 Trench 3 targeted a faint circular anomaly seen in the gradiometry survey in 2019 that was thought to be a ring ditch (Figure 7 and 8; Section 5). Trench 3 measured 14.6m long by 1.6m wide and was aligned north/south.

9.3.2 Upon excavation topsoil consisted of a mid-brown silt with occasional small stones measuring between 0.26 and 0.31m thick. Upon removal of topsoil the geophysical anomaly appeared to be a variation in the natural geology and as a result only the southern half of the trench was cleaned (Photograph 55). The superficial geology consisted of an orange clay with occasional small sub-angular stone. At the southern end of the trench was a band of clay that had larger more angular stones and occasional silts running east/west; this was deemed to be the origin of the geophysical anomaly (Photograph 56).

9.3.3 No archaeological deposits were detected. No finds were recorded nor were any samples taken.

Photograph 54: Straightening the edges of Trench 3.

Photograph 55: Southern end of Trench 3 after cleaning. Looking south east, 1m scale.

Photograph 56: Band of stony natural running east/west through the southern half of the trench. Looking west, 1m scale.

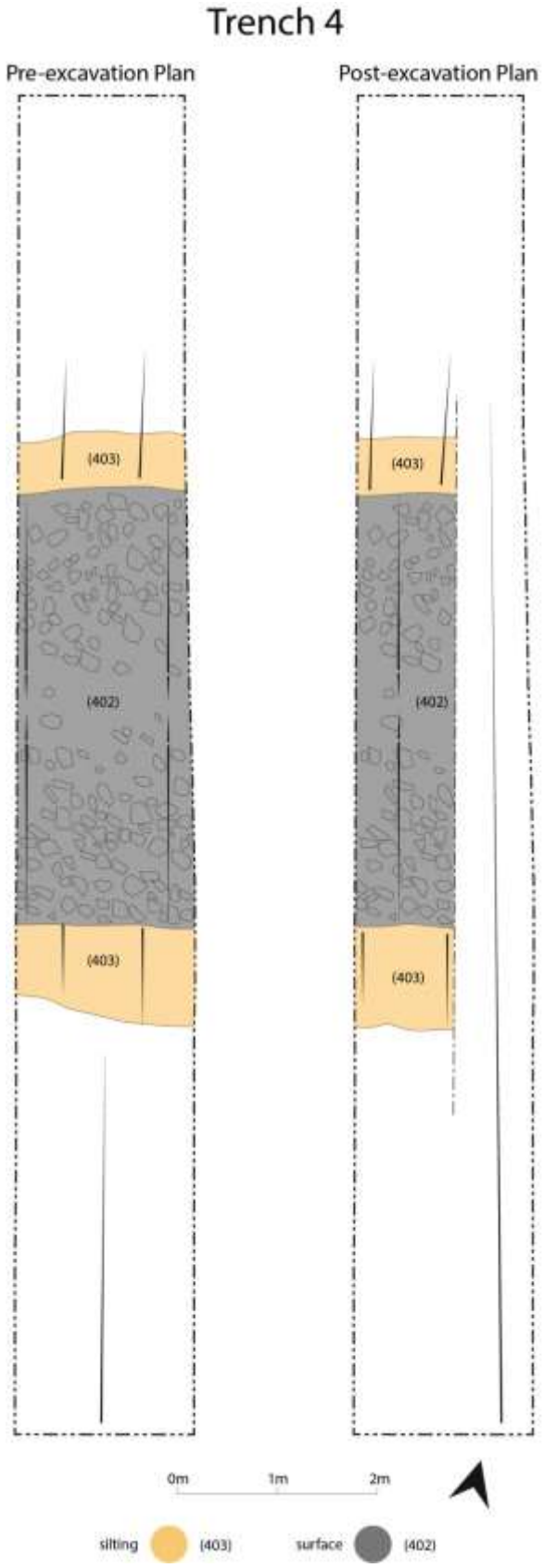
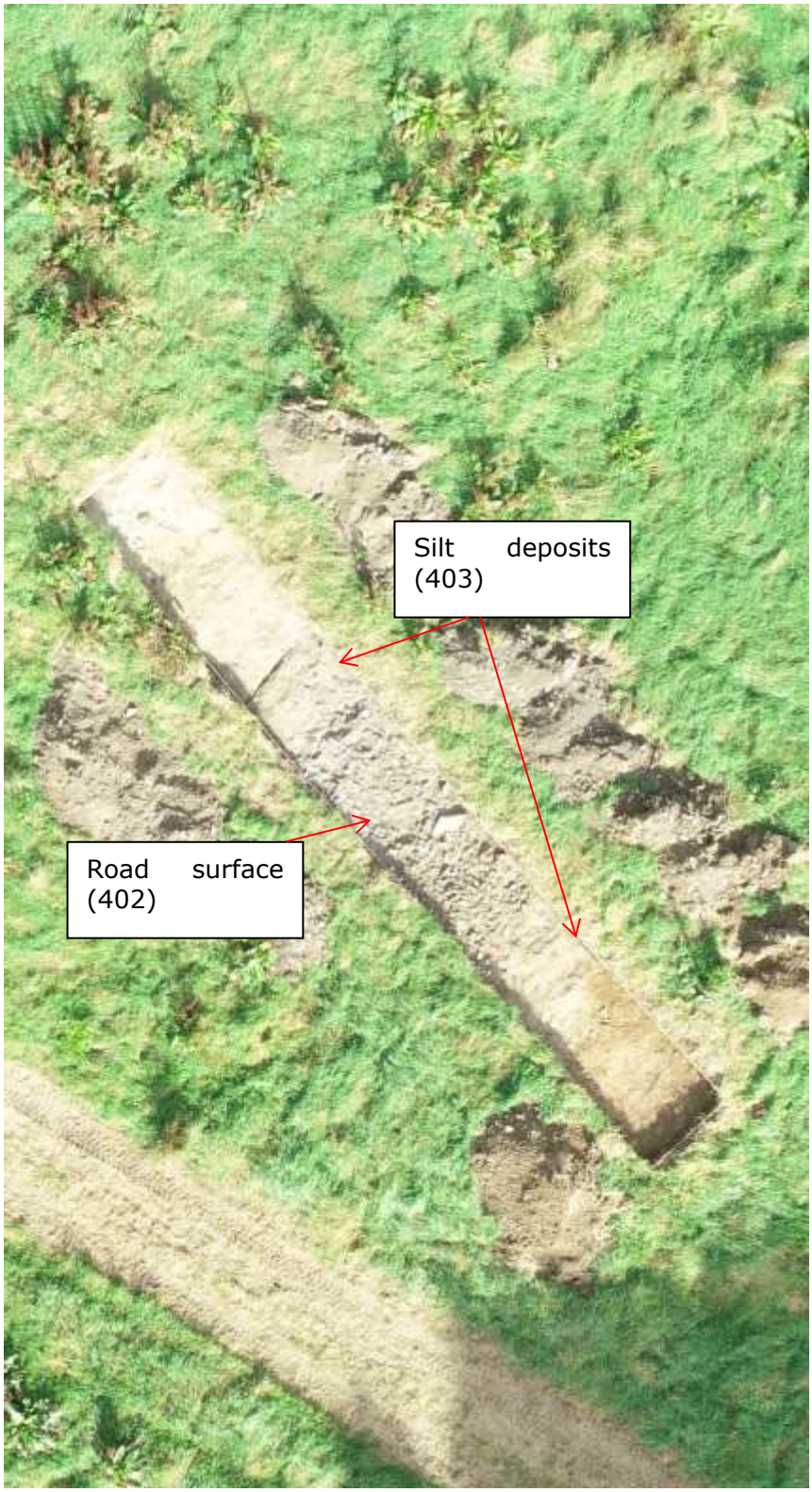


Figure 15: Plan of Trench 4.



Photograph 57: Aerial photograph of Trench 4. Northeast to top.

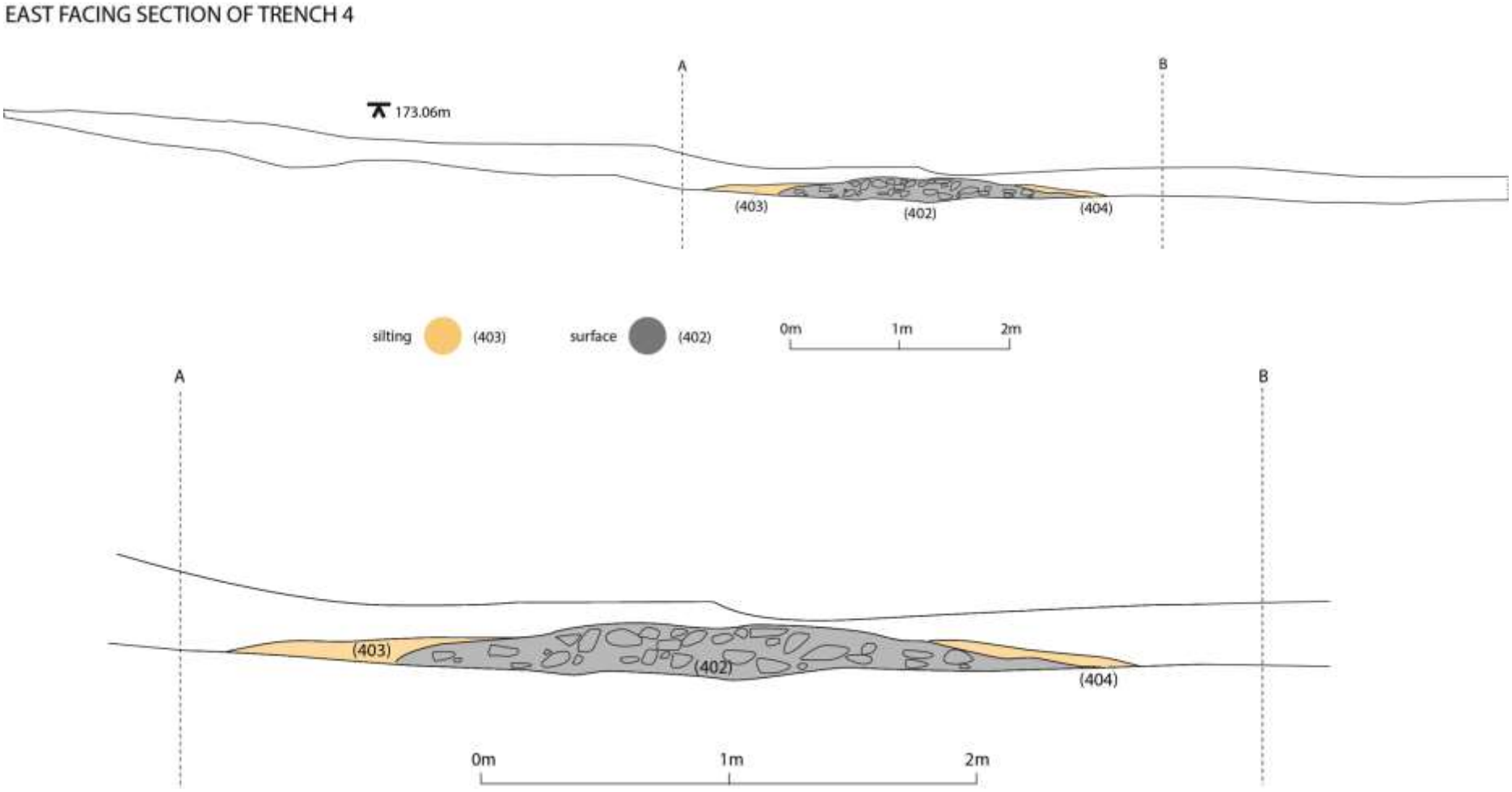


Figure 16: Trench 4 section.

9.4 Trench 4 (Figure 15 and 16; Photograph 57)

9.4.1 Trench 4 was not a part of the original scheme of works. However, upon arrival on site there was a large broad linear depression running east/west across the southern part of the field that warranted investigation. As a result, a trial trench measuring 13.6m by 1.6m was excavated by machine across the depression (Figures 6 and 7; Section 5).

9.4.2 After removal of topsoil the depression was seen as a gradually sloping shallow ditch running east/west across the field being a maximum 0.70m deeper than the surrounding ground level (Photograph 60).

9.4.3 Running along the southern flank of the depression was a metalled trackway (402) directly overlying natural clays (Photograph 61). It was constructed of well-sorted fairly regular angular stones between 0.05-0.10m in in size with occasional much larger stone included (Photograph 61 and 62). The deposit measured 0.16m thick at its deepest point It had a slight camber measuring being between 0.08- 0.09m thick at either edge and was 3.9m wide (Photograph 62).

9.4.4 Along either edge of the trackway was an accumulation of fine grey silts (403) that was thought to have been deposited slowly during the use lifetime of the trackway (Photograph 61 and 62). It would be expected that if this were a medieval hollow-way then the track would have followed the centre of hollow instead of the southern flank, implying that the hollow another uses such as drainage. Certainly, it was not clear where the hollow or the trackway led encountering the valley edge at its eastern extent where it was not apparent whether it turned north or south, preceded downhill or just ended.

9.4.5 Topsoil in this trench was highly quite variable in this trench being much thicker at either end of the trench than over the metalled trackway. Perhaps this suggests that the trackway may have been in use relatively recently.

Photograph 58: First clean of Trench 4.

Photograph 59: Bailing at northern end of Trench 4 after the weather turned.

Photograph 60: General shot of Trench 4. Looking north, 1m scale.

Photograph 61: Trackway (402) along southern bank of hollow. Silt deposit 403 in foreground. Looking north, 1m scale.

Photograph 62: Showing southern half of trackway deposit (402) and silting (403) after excavation. Looking southeast, 1m scale.

10. DISCUSSION OF BURNT MOUNDS

10.1 The evaluation demonstrated that there are significant archaeological remains beyond the current scheduled area of Caer Blaen Miniog promontory fort. It confirmed that at least two of the geophysical anomalies were burnt mounds.

10.2 Trenches 1 and 2 contained archaeological remains consistent with burnt mound deposits. In both instances the 'burnt mound' appears to have been piled onto natural clays, this may imply that the site was stripped of topsoil/vegetation before use. Both mounds were built very close to a paleo-channel or former steam bed as is found in most instances, however, unusually they both appear to have been built on mounds of natural clay.

10.3 The burnt mound material in both trenches also followed current understandings, consisting of angular heat-affected stone and charcoal with occasional silts. As is typical, no evidence of cooking in the form of animal bones were found in either deposit. The preservation of the mounds varied significantly between the two trenches with Trench 1's burnt mound deposit being well preserved, standing at up to 0.50m, whilst in Trench 2 burnt mound material had only survived in small natural hollows.

10.4 In both Trenches 1 and 2 the pits were consistent with the remains of 'troughs' for the boiling of water. These ranged from ovoid to rectangular in shape. No evidence for trough linings were found. This however is hardly surprising given that the clay superficial geology would render lining for the most part unnecessary. As is often the case some of these troughs had been recut [1023 and 1025] and had been engulfed by the expanding burnt mound material.

10.5 Good examples of similar ongoing reuse of burnt mound sites were sites 511 and 514 near Upper Neeston, excavated on the South Wales gas pipeline, where a well-preserved wooden trough and adjacent hearth was seen to be overlain by a thick layer of burnt stone and charcoal (Barber and Hart 2014). However, there was no evidence of stabilization horizons in the Trench 1 example suggesting that whilst the mound may have been used over a long period there was no significant periods of abandonment. Admittedly, it is possible that such horizons were not detectable, that the large amount of stone and burning hindered plant growth, or that such stabilization horizons have been truncated by later agriculture.

10.6 By far the most unusual feature of Trench 1 was the ring gullies [106], [1013], and [1015] around a trough [109]. In the initial geophysical survey this 'ring ditch' was initially interpreted to be possible evidence for a burial mound, however the central feature was found to be trough and it is much more likely that the gullies represent the remains of a drainage gullies for a structure/enclosure/shelter that had had been re-cut and re-dug several times. There was no evidence for any structural remains such as post holes associated with these gullies and it is possible that if the structural remains were ephemeral that they may have been entirely truncated by later agriculture.

10.7 Evidence of enclosure or structure in association with burnt mounds is exceedingly rare in in Wales. Where sufficient evidence remains, they are usually irregular structures often consisting of odd collections of postholes with no clear plan such as at Aber Marlais Park (South Wales gas pipeline site 28.23) where a single posthole was found. Perhaps the most conclusive evidence of structure/enclosure remains was found near Carne in Pembrokeshire (mound A, James 1986) where a ring of small postholes was found surrounding a hearth in a feature interpreted at the time as likely being a windbreak.

10.8 In the wider distribution of burnt mounds across the British Isles, two sites offer a good comparison were found by the author. Firstly, in Scotland at Shelly Burnt Mound, in Toft Ness on Fair Isle. Here, a large burnt mound immediately adjacent too two curvilinear features, interpreted as structural remains, were identified through geophysical survey (Hunter and Dockrill 1990). Unfortunately, this site has not been excavated but the similarities between the two geophysical surveys are striking. Secondly, in Ireland at Carrigtohill, in County Cork. Here a ring ditch with central feature was found next to a burnt mound (Cleary et al 2014). The authors interpretated this as a partially constructed and then abandoned burial mound that was then covered over by a burnt mound deposit. Despite this, its plan is again quite similar to that found at Caer Blaen Miniog.

10.9 The radiocarbon determinations in Trench 1 suggest that the burnt mound may have been in use for no less than 200 years. When understood with the stratigraphic data at least two phases of activity can be suggested; the first, associated with trough [109] surrounded by ring gullies [106], [1013], and [1015] in the northern part of the trench starting between 2468-2235 cal. BC (2 sigma). The second, associated with troughs [1023] recut as [1025] before being covered by burnt mound material (102) in the southern part of the trench between 2030-1830 cal. BC (2 sigma).

10.10 These dates also place the burnt mound in Trench 1 amongst the earliest known in Wales with the main distribution of burnt mounds dating to between 1800-1500BC securely into the Bronze Age (Darvill and Wainwright 2016). This also suggests that the burnt mounds are in the region of 1500 years older than the promontory fort which they lay adjacent too. During the lifetime of the fort these mounds would have been very prominent and much larger than they are today, likely with differing vegetation to the surrounding area. It is possible that they were mistaken for burial mounds or respected in their own right and left to stand in what was undoubtedly a very busy landscape.

11. CONCLUSIONS

11.1 The geophysical survey within Caer Blaen Miniog promontory fort found remains consistent with roundhouse platforms terraced into the slope. Often these platforms had a central feature likely the remains of a pit or hearth.

11.2 The topographic survey identified several features which had not been previously understood. Most notably the significant made defences on the northwest and northeast sides of the fort which conventional wisdom would suggest would be mostly defended by the natural slopes. The survey also produced the first accurate plan of the promontory fort.

11.3 The results of the evaluation confirmed that there are significant archaeological remains outside of the scheduled are of Caer Blaen Miniog Promontory fort.

11.4 The remains in Trenches 1 and 2 are consistent with those of burnt mounds. Typically, these monuments thought to be associated with the boiling of water. They were seen as mounds of burnt stone and charcoal with associated trough like features.

11.5 In addition, in Trench 1, where the remains were well preserved there was evidence of a ring gully(s) surrounding one of the troughs, possibly indicative of a surrounding structure/enclosure. As well as evidence of use over an extended period in the early part of the Bronze Age (circa. 2500-1800BC).

11.6 Trench 3 The possible anomaly seen in the geophysical survey undertaken in 2019 was thought to be the result of natural banding.

11.7 Trench 4 found evidence for a metaled track way built into the side of a hollow running east/west through the southern part of the site. It is unclear as to what the function of this trackway may be or where it goes.

11.8 The archaeological remains in the excavation field are currently stable and in fairly good condition, but some erosion is occurring from the drainage ditch and the remains have already been significantly truncated by agriculture. The site would benefit from some remedial work to stabilize the drainage ditch to prevent further erosion.

11.9 Given the current condition of the archaeological remains in the field and what is now know about them, it is recommended that they are considered for scheduling.

11.10 In addition to its archaeological conclusions, the project provided community benefit through volunteer participation.

Photograph 63: The site from above. Looking northeast.

12. SOURCES

12.1 Publications

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12.2 Database

Dyfed Archaeological Trust Historic Environment Record

12.2 Online resources

British Geological Survey: www.bgs.ac.uk

CIFA, 2014 *Chartered Institute of Field Archaeologists Standards and Guidance for Archaeological Field Evaluation.*

National Standard and Guidance for Collecting and Depositing Archaeological Archives in Wales 2017. http://www.welshmuseumsfederation.org/en/news-archive/resources-landing/Collections/national-standard-and-guidance-for-collecting-and-depositing-archaeological-archives-in-wales-2017.html

APPENDIX I:

Geophysical survey data

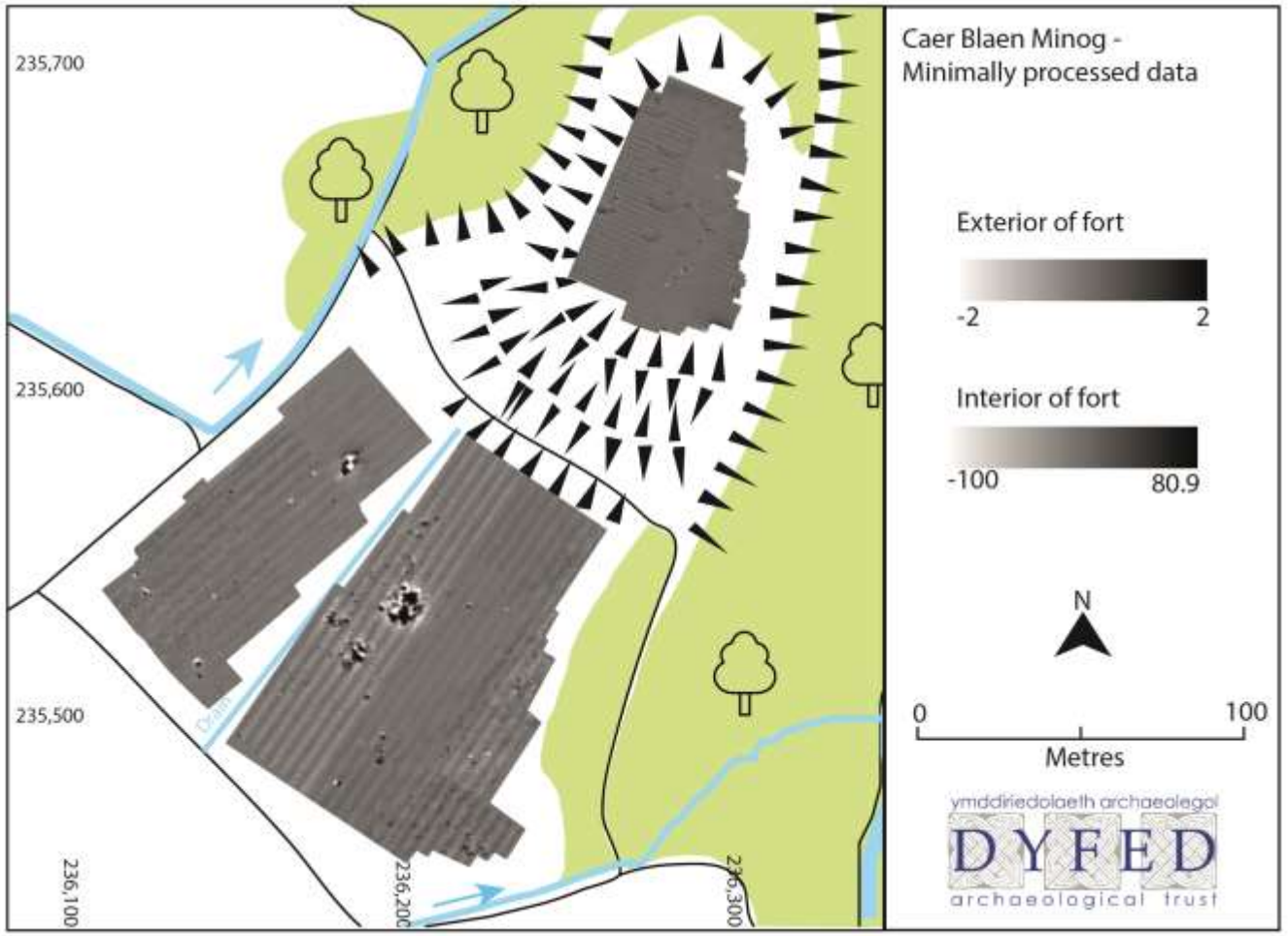

Figure 17: Minimally processed data from geophysical survey.

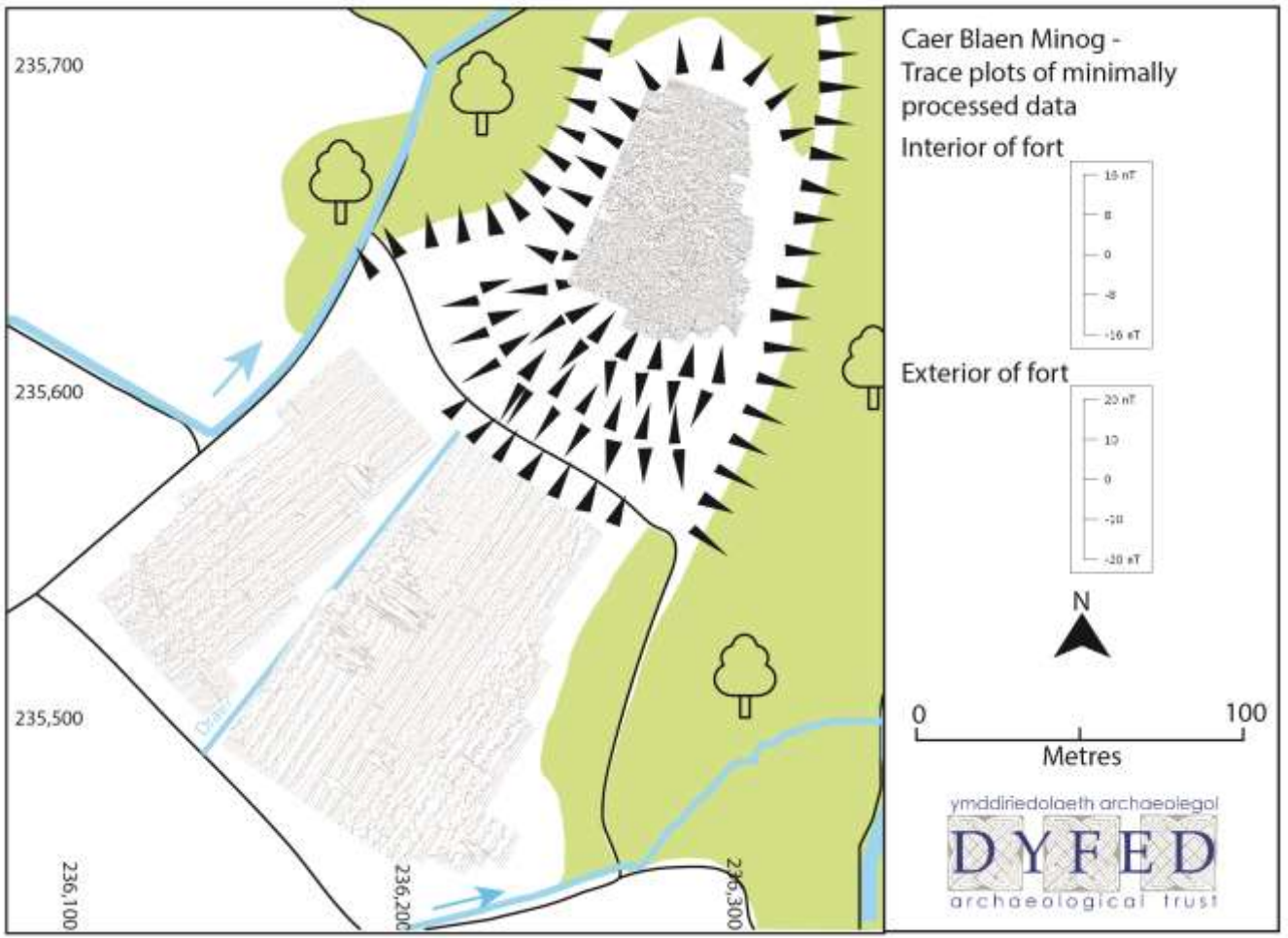

Figure 18: Trace plot of geophysical survey.

APPENDIX II

Radiocarbon determinations

Beta Analytic, Inc.
4985 SW 74th Court
Miami, FL 33155 USA
Tel: 305-667-5167
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info@betalabservices.com

ISO/IEC 17025:2017-Accredited Testing Laboratory

March 23, 2021

Ms. Elizabeth Pearson
Worcestershire Archaeology
The Hive, Sawmill Walk, The Butts
Worcester, WR1 3PD
United Kingdom

RE: Radiocarbon Dating Results

Dear Ms. Pearson,

Enclosed are the radiocarbon dating results for two samples recently sent to us. As usual, the method of analysis is listed on the report with the results and calibration data is provided where applicable. The Conventional Radiocarbon Ages have all been corrected for total fractionation effects and where applicable, calibration was performed using 2020 calibration databases (cited on the graph pages).

The web directory containing the table of results and PDF download also contains pictures, a cvs spreadsheet download option and a quality assurance report containing expected vs. measured values for 3-5 working standards analyzed simultaneously with your samples.

Reported results are accredited to ISO/IEC 17025:2017 Testing Accreditation PJLA #59423 standards and all chemistry was performed here in our laboratory and counted in our own accelerators here. Since Beta is not a teaching laboratory, only graduates trained to strict protocols of the ISO/IEC 17025:2017 Testing Accreditation PJLA #59423 program participated in the analyses.

As always Conventional Radiocarbon Ages and sigmas are rounded to the nearest 10 years per the conventions of the 1977 International Radiocarbon Conference. When counting statistics produce sigmas lower than +/- 30 years, a conservative +/- 30 BP is cited for the result unless otherwise requested. The reported d13C values were measured separately in an IRMS (isotope ratio mass spectrometer). They are NOT the AMS d13C which would include fractionation effects from natural, chemistry and AMS induced sources.

When interpreting the results, please consider any communications you may have had with us regarding the samples.

The cost of analysis was previously invoiced. As always, if you have any questions or would like to discuss the results, don't hesitate to contact us.

Sincerely,

Ronald E. Hatfield President

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ISO/IEC 17025:2017-Accredited Testing Laboratory

REPORT OF RADIOCARBON DATING ANALYSES

Elizabeth Pearson — Report Date: March 23, 2021

Worcestershire Archaeology — Material Received: March 10, 2021

Laboratory Number	Sample Code Number	Conventional Radiocarbon Age (BP) or Percent Modern Carbon (pMC) & Stable Isotopes	
Beta - 586674	**P6002/108/510**	**3890 +/- 30 BP**	IRMS δ13C: -24.7 o/oo

(94.4%)	**2468 - 2287 cal BC**	**(4417 - 4236 cal BP)**
(1.0%)	**2246 - 2239 cal BC**	**(4195 - 4188 cal BP)**

Submitter Material:	Charcoal
Pretreatment:	(charred material) acid/alkali/acid
Analyzed Material:	Charred material
Analysis Service:	AMS-Standard delivery
Percent Modern Carbon:	61.62 +/- 0.23 pMC
Fraction Modern Carbon:	0.6162 +/- 0.0023
D14C:	-383.85 +/- 2.30 o/oo
Δ14C:	-389.11 +/- 2.30 o/oo (1950:2021)
Measured Radiocarbon Age:	(without d13C correction): 3890 +/- 30 BP
Calibration:	BetaCal4.20: HPD method: INTCAL20

Results are ISO/IEC-17025:2017 accredited. No sub-contracting or student labor was used in the analyses. All work was done at Beta in 4 in-house NEC accelerator mass spectrometers and 4 Thermo IRMSs. The "Conventional Radiocarbon Age" was calculated using the Libby half-life (5568 years), is corrected for total isotopic fraction and was used for calendar calibration where applicable. The Age is rounded to the nearest 10 years and is reported as radiocarbon years before present (BP), "present" = AD 1950. Results greater than the modern reference are reported as percent modern carbon (pMC). The modern reference standard was 95% the 14C signature of NIST SRM-4990C (oxalic acid). Quoted errors are 1 sigma counting statistics. Calculated sigmas less than 30 BP on the Conventional Radiocarbon Age are conservatively rounded up to 30. d13C values are on the material itself (not the AMS d13C). d13C and d15N values are relative to VPDB-1. References for calendar calibrations are cited at the bottom of calibration graph pages.

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REPORT OF RADIOCARBON DATING ANALYSES

Elizabeth Pearson — Report Date: March 23, 2021

Worcestershire Archaeology — Material Received: March 10, 2021

Laboratory Number	Sample Code Number	Conventional Radiocarbon Age (BP) or Percent Modern Carbon (pMC) & Stable Isotopes	
Beta - 586675	**P6002/1022/504**	**3590 +/- 30 BP**	IRMS δ13C: -27.6 o/oo

(93.9%)	**2031 - 1880 cal BC**	**(3980 - 3829 cal BP)**
(1.5%)	**1839 - 1828 cal BC**	**(3788 - 3777 cal BP)**

Submitter Material: Charcoal
Pretreatment: (charred material) acid/alkali/acid
Analyzed Material: Charred material
Analysis Service: AMS-Standard delivery
Percent Modern Carbon: 63.96 +/- 0.24 pMC
Fraction Modern Carbon: 0.6396 +/- 0.0024
D14C: -360.40 +/- 2.39 o/oo
Δ14C: -365.87 +/- 2.39 o/oo (1950:2021)
Measured Radiocarbon Age: (without d13C correction): 3630 +/- 30 BP
Calibration: BetaCal4.20: HPD method: INTCAL20

Results are ISO/IEC-17025:2017 accredited. No sub-contracting or student labor was used in the analyses. All work was done at Beta in 4 in-house NEC accelerator mass spectrometers and 4 Thermo IRMSs. The "Conventional Radiocarbon Age" was calculated using the Libby half-life (5568 years), is corrected for total isotopic fraction and was used for calendar calibration where applicable. The Age is rounded to the nearest 10 years and is reported as radiocarbon years before present (BP). "present" = AD 1950. Results greater than the modern reference are reported as percent modern carbon (pMC). The modern reference standard was 95% the 14C signature of NIST SRM-4990C (oxalic acid). Quoted errors are 1 sigma counting statistics. Calculated sigmas less than 30 BP on the Conventional Radiocarbon Age are conservatively rounded up to 30. d13C values are on the material itself (not the AMS d13C). d13C and d15N values are relative to VPDB-1. References for calendar calibrations are cited at the bottom of calibration graph pages.

BetaCal 4.20

Calibration of Radiocarbon Age to Calendar Years

(High Probability Density Range Method (HPD): INTCAL20)

(Variables: d13C = -24.7 o/oo)

Laboratory number **Beta-586674**

Conventional radiocarbon age **3890 ± 30 BP**

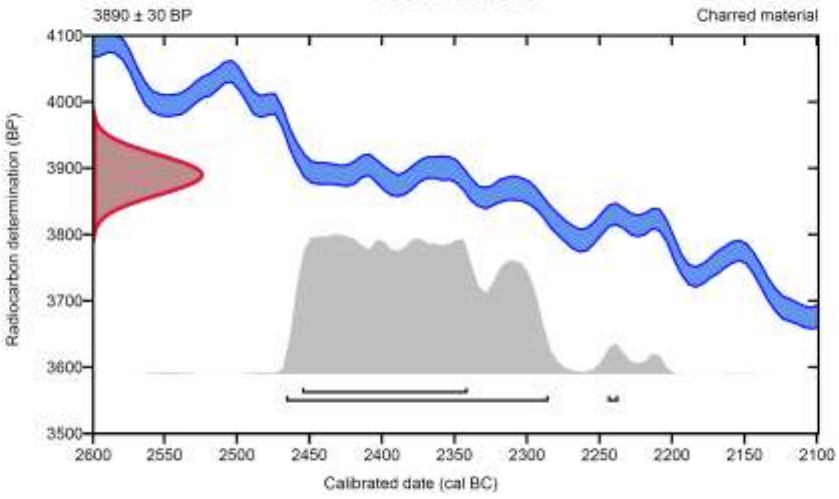
95.4% probability

(94.4%)	2468 - 2287 cal BC	(4417 - 4236 cal BP)
(1%)	2246 - 2239 cal BC	(4195 - 4188 cal BP)

68.2% probability

(68.2%)	2457 - 2343 cal BC	(4406 - 4292 cal BP)

P6002/108/510



Database used

INTCAL20

References

References to Probability Method

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References to Database INTCAL20

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BetaCal 4.20

Calibration of Radiocarbon Age to Calendar Years

(High Probability Density Range Method (HPD): INTCAL20)

(Variables: d13C = -27.6 o/oo)

Laboratory number **Beta-586675**

Conventional radiocarbon age **3590 ± 30 BP**

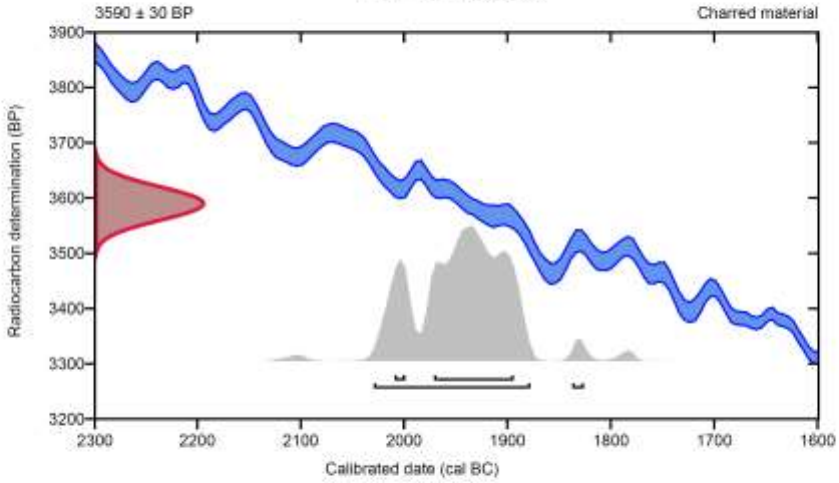
95.4% probability

(93.9%)	2031 - 1880 cal BC	(3980 - 3829 cal BP)
(1.5%)	1839 - 1828 cal BC	(3788 - 3777 cal BP)

68.2% probability

(61.4%)	1973 - 1896 cal BC	(3922 - 3845 cal BP)
(6.8%)	2011 - 2001 cal BC	(3960 - 3950 cal BP)

P6002/1022/504



Database used

INTCAL20

References

References to Probability Method

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

References to Database INTCAL20

Reimer, et al., 2020. Radiocarbon 62(4):725-757.

Beta Analytic Radiocarbon Dating Laboratory

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Radiocarbon dating of charcoal from Caer Blaen Minog, Carmarthenshire

By Elizabeth Pearson

1 Radiocarbon dating

A total of two radiocarbon determinations have been achieved from contexts 108 and 1022.

Samples were dated at Beta Analytic, Florida by AMS.

The results are conventional radiocarbon ages (Stuiver and Polach 1977) and are listed in Table 1.

The calibrated date ranges for the samples have been calculated using the maximum intercept method (Stuiver and Reimer 1986), and are quoted with end points rounded outwards to ten years. The probability distributions of the calibrated dates, calculated using the probability method (Stuiver and Reimer 1993) are shown in Graphs 6 and 7 in Appendix 2. They have been calculated using OxCal v4.2 (Bronk Ramsey 2009) and the current internationally-agreed atmospheric calibration dataset for the northern hemisphere, IntCal13 (Reimer *et al* 2013).

Laboratory code	Context number	Material	δ13C (‰)	Conventional Age	OxCal calibrated age (95.4% probability or 2 sigma)
Beta - 586674	108	Charcoal: *Corylus avellana*	-24.7	3890 ±30 BP	2468 – 2235 cal BC
Beta - 586675	1022	Charcoal: *Corylus avellana*	-27.6	3590 ±30 BP	2030 – 1830 cal BC

Table 1: Radiocarbon dating results

2 Bibliography

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