

Survey and Excavation at Moel-y-Gaer Hillfort, Bodfari, Denbighshire:

Phase 1: 2011-2016.



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This brief report, which is not intended to be a full interim, describes Phase 1 of the work at Bodfari from 2011 to 2016. Phase 2 started in 2016 and is continuing. The final report will be published in *Archaeologia Cambrensis*.

Introduction

The Clwydian Range in North Wales provides a spectacular upland landscape that contains a series of well-preserved Iron Age hillforts (Gale 1991; Brown 2004). These have been little studied and are poorly understood other than mainly through the pioneering work of the Heather and Hillforts Project run by Denbighshire County Council¹. This had the broad ranging objectives of landscape and heritage management to encourage public understanding and participation in outdoor activities including archaeology. It concentrated on six hillforts within the Clwydian Area of Outstanding Natural Beauty (AONB), Penycloddiau, Moel Arthur, Moel-y-Gaer (Llanbedr) and Moel Fenli and in the adjoining Llantysilio Mountains the sites of Moel-y-Gaer (Llantysilio) and Caer Drewyn. Topographic survey was carried out at each site together with differing levels of geophysical survey (Mrowiec, 2011).

The importance of hillforts is central to the understanding of the north Welsh Iron Age settlement record and has been emphasised for some time within a series of research agendas (Haselgrove *et al* 2001; Gwilt 2003; IFA Wales/Cymru 2008). To stimulate continuing research in this area the Heather and Hillforts Project actively encouraged collaborative work which has resulted in a series of excavations and further survey. Geophysical survey has been carried out within the interior of Caer Drewyn by the Universities of Oxford and Bangor (Brown and Wintle 2008) and its environs including the small enclosed site of Moel Fodig (Karl and Brown 2010). This was followed by further survey and excavation at Moel Fodig (Morton Williams *et al* 2012) and survey at a second small enclosure, Fron Newydd (Brown and Karl 2011). Small-scale excavations were also carried out by the Universities of Bangor and Vienna to investigate the rampart at Moel-y-Gaer Llanbedr (Karl and Butler 2009). A single trench was excavated within the interior of Moel-y-Gaer Llantysilio by the Clwyd Powys Archaeological Trust in 2010 (Grant and Jones 2013). From 2012 until 2016 a longer term project was carried out at Penycloddiau by the University of Liverpool with geophysical survey and excavations across the rampart and of a house platform in the interior (Mason and Pope 2012; 2013; 2015; 2016). Continuing excavation on the slopes of Moel Arthur is being carried out by CRAG (Clwydian Range Archaeological Group)².

Moel-y-Gaer Bodfari is just north of the Heather and Hillforts project area and was not included in that work. With the encouragement of the landowners and after discussion with CADW and Fiona Gale of Denbighshire County Council, it was decided to carry out a campaign of survey and excavation that would help to incorporate the site into the wider research schemes described above and add to the growing corpus of information about them. From the outset it was decided that Moel-y-Gaer Bodfari provided an opportunity for a relatively large-scale excavation compared to what has been carried out so far on Clwydian hillforts, and also as a testbed for the integration of a range of non-intrusive remote sensing techniques. Consequently, in the summer of 2011 topographic and

¹ <http://www.clwydianrangeanddeevalleyaonb.org.uk/hillforts/>

² <https://cragnorthwales.wordpress.com/links/>

extensive geophysical survey combined with morphometric analysis of LiDAR data was undertaken followed by the Phase 1 excavations described below. Phase 2 excavations started in 2016, and ongoing, focussed on the possible western and in-turned northern entrances.

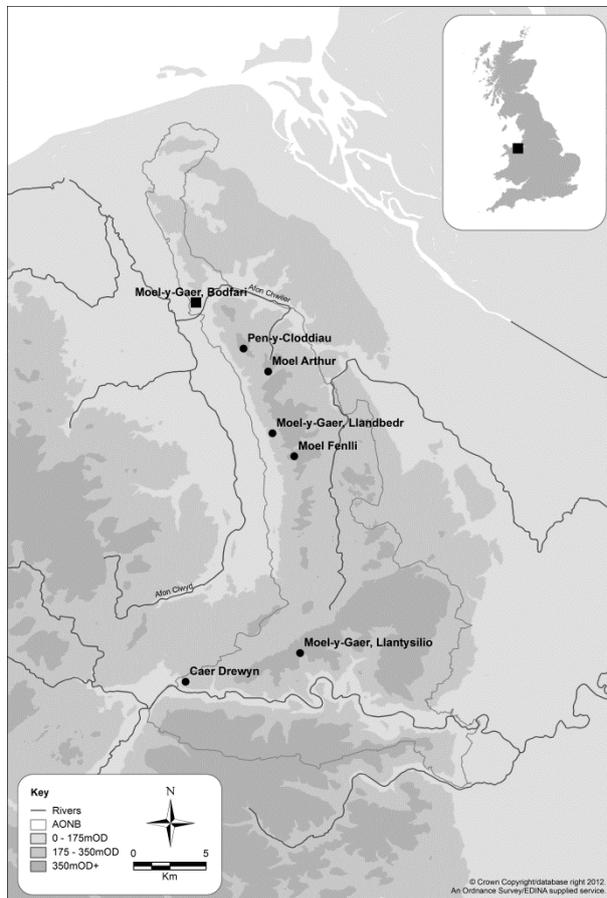


Figure 1: The location of Moel-y-Gaer, Bodfari, Denbighshire, and the six hillforts within the Heather and Hillforts Project.

Moel-y-Gaer Bodfari

Bodfari is the lowest of the Clwydian hillforts at c 200m, positioned outside the village of Bodfari, 5 miles north-east of Denbigh in the northern Clwydian Range (NGR SJ 0950 7080), Figure 1. It is situated on the top of a discrete hill strategically located overlooking the confluence of the Rivers Chwiler and Clwyd with an enclosed area of c 2ha (cover photograph). The site is a Scheduled Ancient Monument (CPAT HER PRN 102154, FL073) and the work reported on here was done under Scheduled Monument Consent.

Before our survey work in 2011 there existed only a minimal earthwork plan by the Ordnance Survey, Figure 2a, and another of the northern entrance by Forde-Johnston (1976, 229, Fig. 129). Small-scale excavations were carried out in 1908 by Philip Stapleton, a local school teacher, (Stapleton 1909), and re-iterated by Davies in his corpus of Flintshire (1949). Stapleton excavated ten trenches in total although the exact positions of these are impossible to relocate from his published plan. His most significant and relevant conclusions are from three trenches all focussed on the western ramparts: a possible entrance through the central area of the inner rampart (his Cutting 4, Fig. III); the V-shaped profile, '6 feet deep', of a ditch in the north-western area (Cutting 1, Fig. II); the rear of a rampart '5 feet high' (Cutting 5), possibly the middle rampart in the central western area. Stapleton

concluded 'if anything can be learned from an exploration which yielded nothing in the shape of a find, it is perhaps that Moel-y-Gaer was at least never occupied by the Romans. Further than this, the evidence will not carry us' (Stapleton 1909, 237). His reference to possible Roman occupation is significant because of the suggestion that Bodfari could be the location of *Varae (Varis)*, the 'lost' Roman fort shown on the Antonine Itinerary (Davies 1949, 41). This argument is based on the number of Roman finds from in and around Bodfari and the place name derivation although the fort was probably located at St. Asaph (Silvester and Owen 2003).

Survey

A 1m Digital Terrain Model (DTM) for a 1km tile corresponding to the hillfort was obtained from the Environment Agency through the Geomatics Group website. The DTM was downloaded as an ArcGIS ascii grid file and was imported into Landserf 2.3 for processing. Surface parameters (slope, aspect and mean curvature) were calculated at multiple scales of analysis using Landserf 2.3 and exported to ArcGIS 10. Morphometric analysis of the LiDAR data provided a basis for the topographic survey, Figure 2b, mean curvature being the most useful and informative, Figure 4.

Fieldwork took place for two weeks in August 2011. At this time of year vegetation, particularly bracken, was a problem and despite extensive clearance by the landowner some areas remained inaccessible. The topographic survey was undertaken at a scale of 1:500 using a Nikon DTM330 total station. A control network was established using a closed traverse and tied into the Ordnance Datum using a Trimble Global Positioning System. Earthworks and topographic features within the survey area were recorded by means of a series of readings taken at regular intervals along their length. Checking of the topography and producing the hachuring were completed in March 2012 when the bracken cover was low, Figure 3.

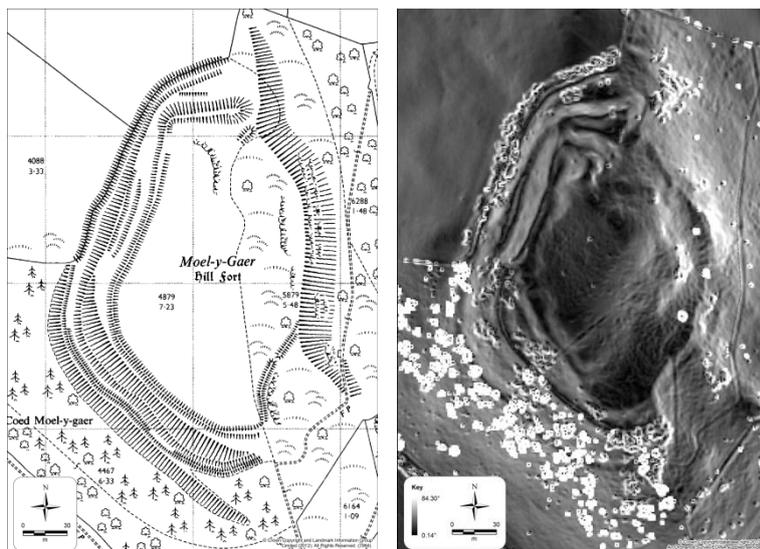


Figure 2. a) left: Ordnance Survey earthwork plan of Moel-y-Gaer Bodfari (1964, Crown Copyright) and b) right: LiDAR image.



Figure 3. Topographic survey of Moel-y-Gaer, Bodfari, overlain on LiDAR, showing contours.

Our topographic survey has shown significant differences to the existing plan and there are several areas of uncertainty regarding the actual circuits of ramparts and possible phasing which can only be resolved by excavation. In the north-western quadrant there is a good run of three ramparts, the inner and middle with outer ditches although this is not clear for the outer rampart which may, alternatively, be a form of counterscarp bank. Stapleton's 1908 trench located in this area, probably the inner ditch, identified substantial amounts of charcoal from within a ditch fill. The north-western corner of the inner and middle ramparts is very disturbed probably due to quarrying activity inside the inner rampart. All the way down the inside of the western inner rampart is a series of possible quarries and perhaps quarry hollows of possible Iron Age date. In the south-western quadrant topography shows a light indication of the inner rampart at the top of the break of slope, supported by both the LiDAR and magnetometry.

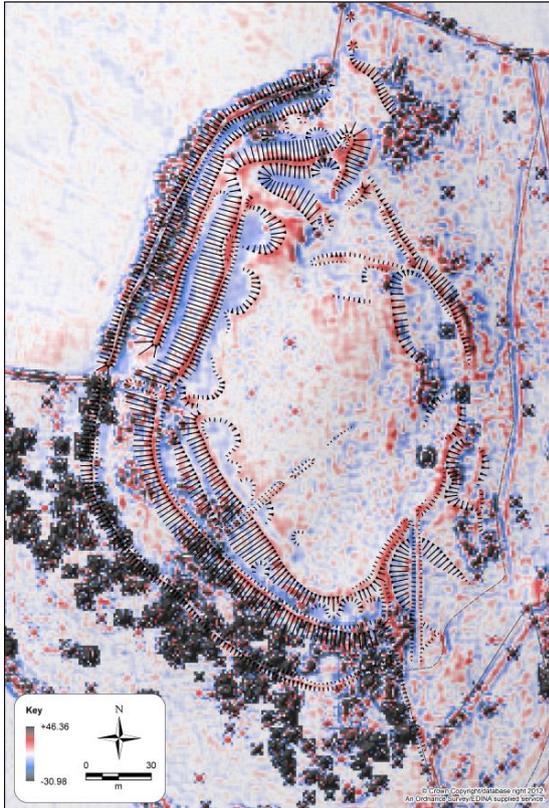


Figure 4. Mean curvature derived from LiDAR data with topographic survey overlain (red = convex, blue = concave).

The ramparts on the southern and eastern sides of the site are more difficult to identify and interpret due to a series of hollows which could be either natural due to ice-plucking or quarries. Again, the LiDAR does suggest a rampart on the eastern side and a short length has been identified running southwards from the eastern side of the northern entrance. At the southern end of the site a single bank cuts off the three western ramparts and continues down slope away from the hilltop. Its date is uncertain as is its interpretation as either an original Iron Age rampart or something associated with a possible quarry on the southern slopes. The northern entrance appears to be in-turned and the main original entrance, and possibly T-shaped as suggested by Forde-Johnston (1976, Figure 129).

Geophysical surveys, both magnetic and electrical resistance, were carried out on a 20m grid aligned from North to South. Complete coverage of the interior and parts of the north-western inner rampart were achieved with magnetometry and partial coverage with resistivity. Magnetic survey, Figure 5, was carried out using a Bartington Grad601-2 dual sensor gradiometer, capable of measuring the magnetic field to the nearest 0.1nT. The survey area was surveyed by means of a series of zig-zag traverses, with a 1m separation between traverses (1 line/m) and readings taken at 0.125m intervals (8 samples/m).

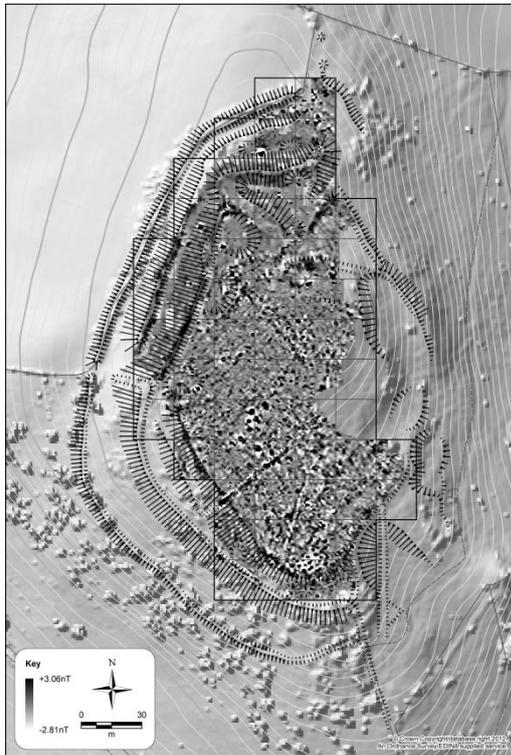


Figure 5. Magnetometry data overlain by the hachure survey.

Resistance survey was undertaken using a Geoscan RM15D Advanced resistance meter system with a PA20 multi-probe array and a MPX15 multiplexer. Multiple probe configurations were used for each of the survey areas (interior, ramparts and Northern entrance):

- Twin Arrays, Figure 6, – six mobile probes, configured to obtain readings from individual pairs of probes with 0.25m (0.125m offset), 0.50m, 0.75m, 1.00m, 1.25m and 1.50m probe separations, and one pair of remote probes;
- Wenner Array – two pairs of mobile probes with a probe separation of 0.50m;
- Double Dipole Array, Figure 6, – two pairs of mobile probes with a probe separation of 0.50m.

Each survey area was surveyed by means of a series of zig-zag traverses, with a 1m separation between traverses (1 line/m) and readings taken at 1m intervals (1 sample/m). Survey data was processed using ArcheoSurveyor 2 and processed composites were exported to ArcGIS 10.



Figure 6 (left): resistivity data (Twin 0.5), (right): resistivity data (Double-Dipole) both overlain on hachure survey.

Excavation

The general aims of the excavations were:

1. To evaluate and interpret the earthwork survey and geophysical anomalies
2. To evaluate and re-interpret excavations carried out in 1908 (Stapleton 1909)
3. To evaluate the threat of rabbit, sheep and root damage to the archaeological deposits
4. To involve local people in the understanding of this and surrounding hillforts

The interpretive focus of this work is:

1. To establish the possible function(s) of the hillfort, permanent or periodic occupation, domestic and ritual activities, the character of internal structures and features, the character of the ramparts;
2. To establish a chronology and sequence for the hillfort, interior and ramparts, through relative phasing and if possible finding material for C14 dating;
3. To provide a comparative site for those within the Heather and Hillforts Project and other current and on-going work within the area and characterise similarities and differences.

The topographical and geophysical surveys carried out in 2011 identified a series of areas of interest that form the basis of the on-going programme of excavation. For Phase 1 Scheduled Monument Consent was granted for four trenches, Figure 7:

Trench 1. The position of a round house, inside the northern entrance. Excavation started in 2012 and was finished in 2016.

Trench 2. A group of circular geophysical anomalies in the centre of the hillfort. Excavation was started and completed in 2012.

Trench 3. A set of geophysical anomalies, possibly a structure, at the southern end of the hillfort with an extension across the inner and middle ramparts (3X). Excavation started in 2013 and finished in 2016.

Trench 4. Across the possible southern inner rampart. Excavation started in 2014 and finished in 2015.

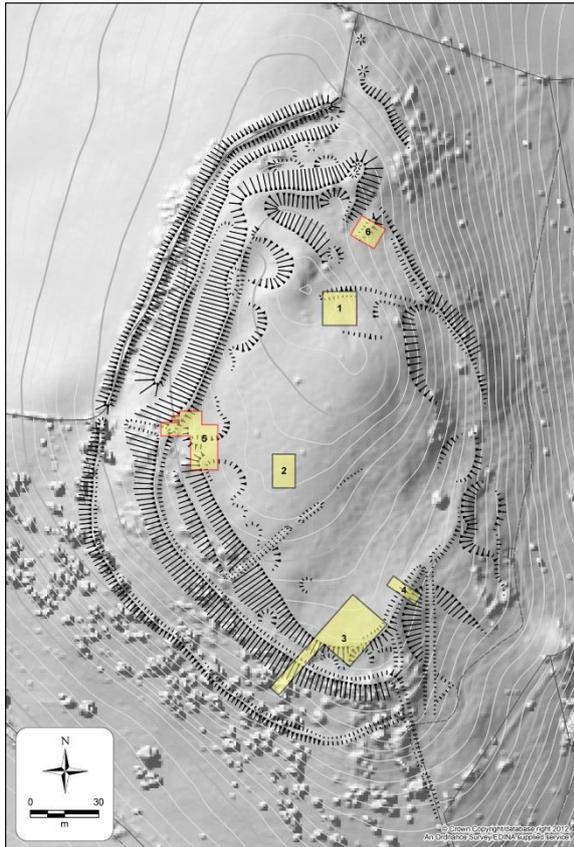


Figure 7: The location of Trenches 1 to 4, Phase 1, and 5 and 6, Phase 2 of the excavation.

Trench 1

Trench 1 is located on an artificially levelled platform that coincides with a circular geophysical anomaly suggestive of a roundhouse, c. 8m in diameter. Three quadrants of the round house were excavated, North West (NWQ), North East (NEQ) and South East (SEQ), all 5m by 5m, intersecting at the centre of the circular anomaly. Within the NW quadrant two extra slots were excavated, slots 1 and 2, within the SE quadrant slot 3 and within the NEQ an extension to the north to include the bank (NEQX), Figure 8. It was not possible to excavate the SW quadrant due to the excessive overburden to be removed.



Figure 8: Trench 1 showing the location of the roundhouse, the excavated areas and the main contexts.

The interest within Trench 1 can be divided between the roundhouse and the enclosing bank as follows³.

The roundhouse

At the southern end of SEQ the face of the bedrock was exposed (1015) as a steep cut with a considerable depth of stony colluvium accumulated up against it, (1010), and sloping down rapidly to the level area of the house platform. Approximately 1.6m maximum of colluvium was removed by hand from the western half of SEQ. An L-shaped slot was cut (slot 3), 1m wide, along the western and northern baulks of the eastern half of SEQ to establish the depth and character of the stratigraphy and deposits. This showed bedrock at the southern and western ends, (1015), overlain by shattered bedrock (1011), and in between the two areas of bedrock a level laid surface of rounded/sub-rounded and angular stones between 3cm and 20cm in size packed together within a clay/silt matrix (1016), Figures 9 and 10.

³ This account is based on an interim report written by Paula Levick who worked on the excavation of Trench 1 from beginning to end and did most of the recording for it.

Laying on this surface was an organic dark layer containing charcoal flecks and larger pieces (1017), visible as a maximum of c. 10cm thick in the western section, Figure 11, but thinning rapidly to the west and ending c. 1m away from the section. Together these two contexts appear to be a laid surface around the exterior of the roundhouse with occupation debris on its surface close to the house.

BOD 12
Trench 1
Slot 3

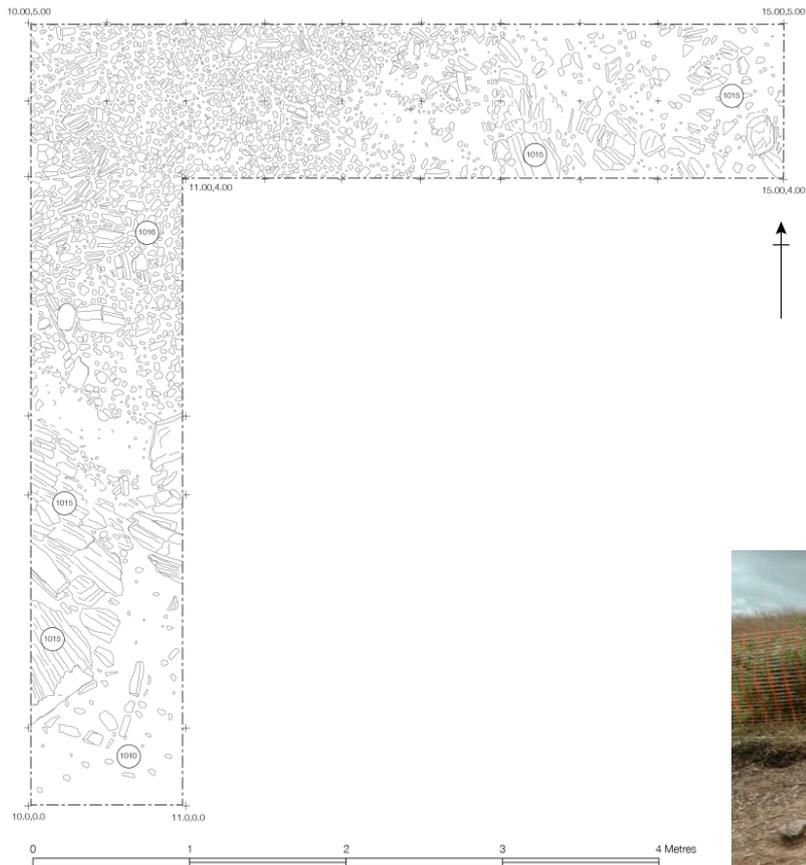


Figure 9 (left): The cobbled surface within Slot 3, SEQ. Figure 10 (below): View of the cobbled surface (1016) from the north.



BOD 12
Trench 1
Slot 3

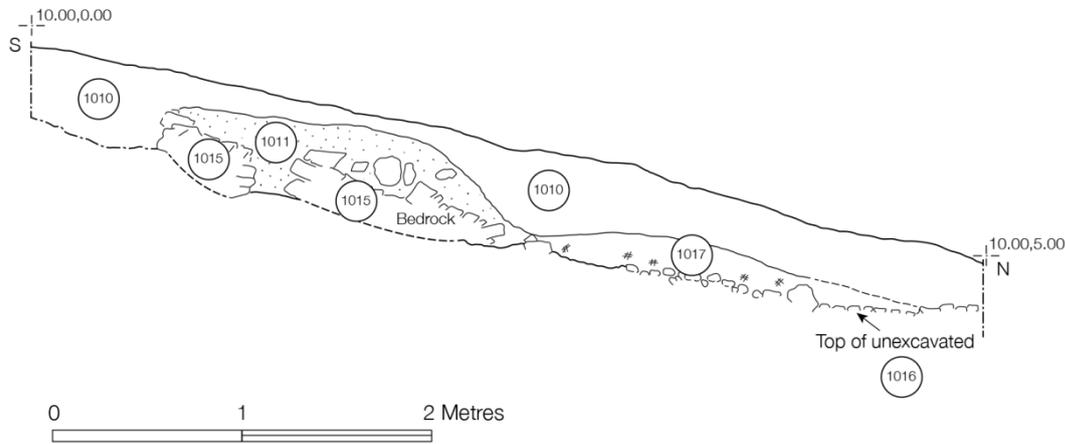


Figure 11: The eastern-facing section of slot 3, SEQ, showing context (1017).

The baulk between Slot 3 and the SEQ was removed to check the relationship between (1016), (1017) and their relationship to the roundhouse. A similar sequence of colluviation was present although the northern area was greatly disturbed by a post-colluviation cut feature, probably a large tree throw, (1048) Figure 12. Just to the south of this feature was a layer of loose shale gravel with what appeared to be tabular 'cobbles' laid within it which could be a continuation of the laid surface (1049).

BOD 13
Section 1.9
Slot 5

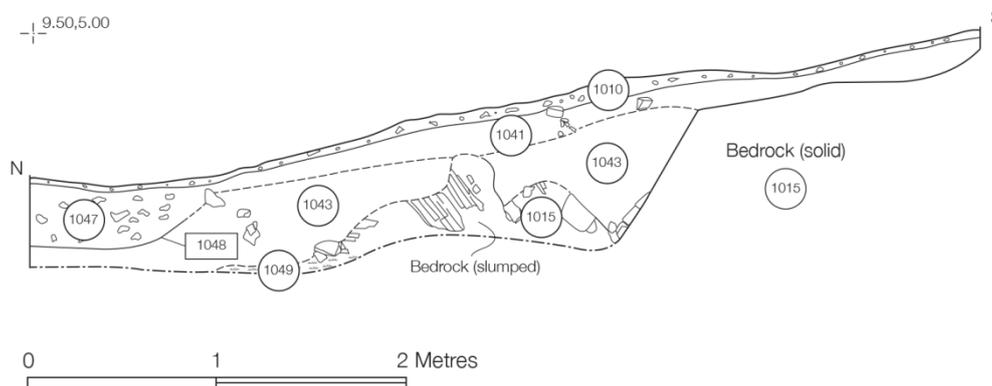


Figure 12: The western facing section of SEQ.

The evidence for the roundhouse itself was poorly defined with little detail of the structural components. A series of similar dark red deposits with a high clay content were found in the NW and SE quadrants which approximately followed the line of the geophysical anomaly

and were possibly partially responsible for it. In the SEQ the bedrock had been cut back against which was a consolidated layer of the material, Figure 13. Together these could represent the spread remains of roundhouse walling.



Figure 13: Possible wall material against the cut back bedrock face in SEQ.

In the NWQ a hard compacted surface of light yellowish white silt with small stone inclusions (1052) was interpreted as a possible floor surface as it was largely contained within the line of the geophysical anomaly and the dark red deposits, Figures 8 and 14. The surface covered an area of approximately 1.4m by 1.7m and varied between 10 and 15cm in thickness. There was no evidence for this surface in the NEQ or SEQ and as it spread across the line of the geophysical anomaly to the north-west this may represent flooring just associated with an entrance into the roundhouse. Another possibility for the geophysical anomaly in places is that it represents mineralisation around the edge of this floor surface. Lying at the centre of the geophysical anomaly and at the junction of NWQ and SEQ was a layer of hard clay which had possibly been exposed to heat. It comprised dark red and orange red material with narrow lenses of black and grey clay with a maximum thickness of 20cm. This is possibly a central hearth within the roundhouse.



Figure 14: A fragment of the possible compacted roundhouse floor surface, NWQ, (1052).

The bank

The bank is clearly visible on the ground as being 20-30cm high and running approximately east-west along the lip of the terraced house platform. The north-western quadrant, NWQ, was located to investigate the bank at the northern edge of the platform and its relationship with the round house. Two exploratory slots were opened to gauge the depth of deposits and their character, slot 2 running north-south measured 1m x 5m, and slot 1 in the north-western corner of the quadrant, 2m x 3.75m. In both slots the bank was identified as being comprised of loose stones in a soil matrix. In slot 2 larger pieces of tabular stone, between 5cms and 25cms, (1004) seemed to form a poorly consolidated and slumped outer face of the bank, beneath this (1025) comprised smaller stones, Figure 15.

BOD 12

Trench 1

Slot 2

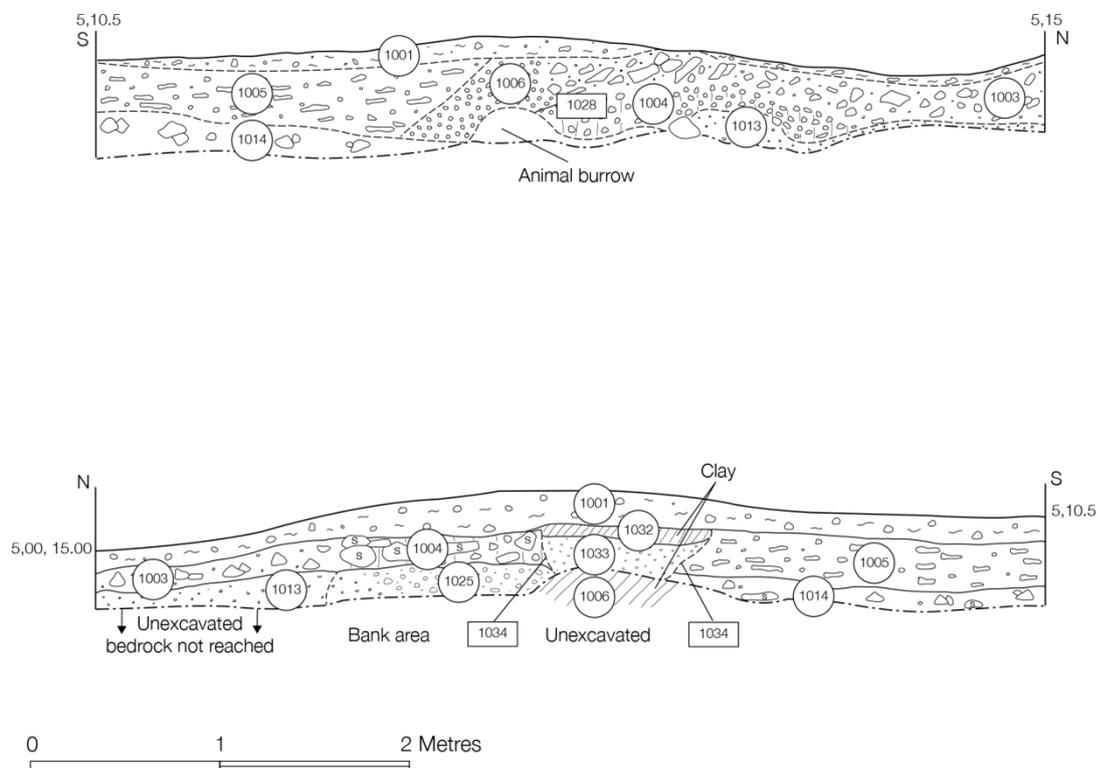


Figure 15: The eastern facing (top) and western facing sections of Slot 2 showing the main contexts.

In slot 1 the bank was topped by four large boulders (1036) which ended at an apparent entrance into the house enclosure at the western end, the final boulder had slumped into the entrance gap, Figure 16. This possible entrance through the bank aligns with the area of roundhouse flooring suggested to be the house entrance, see above. To the north of the bank deposits had accumulated against its front, (1003) overlying (1013), which was not fully excavated. The rear of the bank was complicated by a cut feature (1034) filled with clay (1033/32) showing in the eastern section while in the western section a layer of clay (1006) appears to face the rear of the bank although this has been disturbed by rabbit activity in

places. Similar to the front, deposits have accumulated up against the rear of the bank, (1005) overlying (1014). A stone spindle whorl was found within (1005), Figure 17.



Figure 16: Excavation of NWQ Slots 1 and 2 in progress showing the stone bank topped by a façade of large boulders.



Figure 17: The stone spindle whorl from context (1005).

Further to the east, within trench NEQX, the bank continued but upon excavation was shown to be quite different structurally. On the top were four courses on tabular stones, possibly originally larger stones that had shattered, (1057), Figure 18. Beneath these the bank consisted of similar loose shale stones within a soil matrix as in the NWQ, Figure 18. On the southern, inner edge of the bank were several medium sized stones, two large upright ones were of particular interest and indicate revetting for the bank material. These measured 95x70x15cm and 50x40x10cm, (1099), Figure 19. Deposit (1098) which was up against one of the revetting stones and a deposit within the primary level of the bank produced several small pieces of cattle mandible which have been radiocarbon dated to 367-183 cal BC (95.4%, SUERC-64202), Figure 20. Based on the context this date could represent the beginning of the bank construction.



Figure 18: One of the stone courses of bank material in NEQX, (1057), the top of revetting stone (1099) is to the left.



Figure 19: One of the revetting stones (1099) at the rear of the bank.

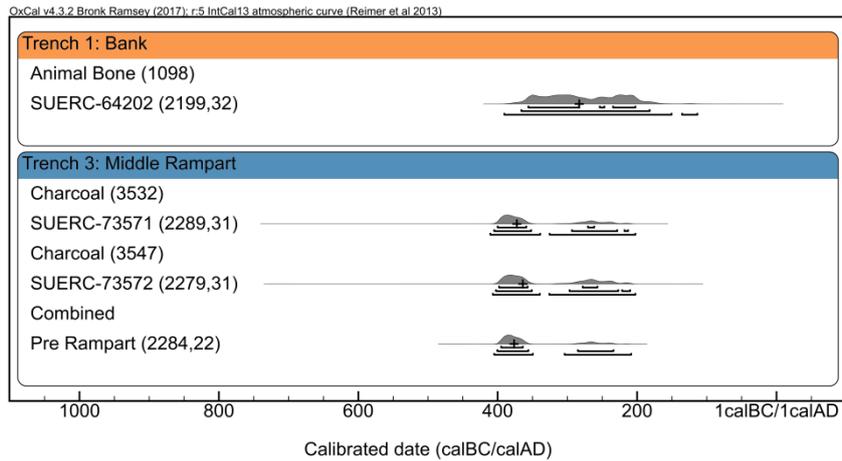


Figure 20. Calibrated radiocarbon dates for Moel-y-Gaer Bodfari.

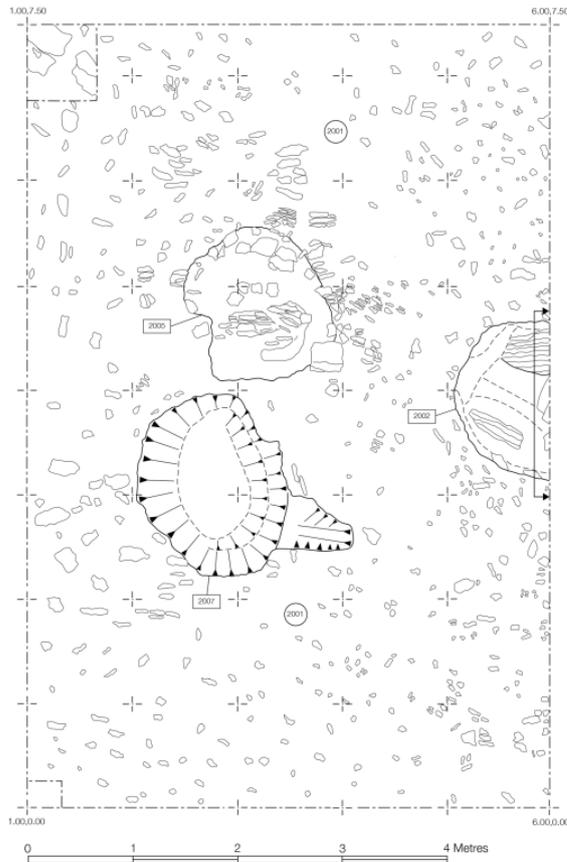
Trench 2

Trench 2 measured 7.5m north to south and 5m east to west, located to investigate three of a larger group of circular geophysical anomalies. The shallow topsoil merged into a thick layer of stony colluvium (2001) which was not fully excavated across the trench although underlying bedrock was identified at a further depth of c. 0.5m in two small sondages in the north-western and south-western corners.

Three cut features were identified which matched the geophysical anomalies, (2002), (2005) and (2007), Figures 21 and 22. All three were cut from a level within (2001) although it was not possible to identify precisely where and, therefore, a sense of where the ground surface was.



Figure 21: Trench 2 fully excavated showing the three cut features identified by geophysical survey



↑ Figure 22: Trench 2 showing the main features.

Cut (2005) was sub-circular in plan with a maximum diameter of c. 1.4m and maximum depth of c.20cm. Its base was irregular with bedrock exposed in places, it contained a single fill (2006) of material which was very similar to the overlying colluvium. Just to the south was cut (2007), a similar sub-circular shaped feature with a maximum diameter of 1.6m although much disturbed by rabbit and root activity. Due to this disturbance it was not possible to ascertain the original shape of this feature but its western edge, which was relatively undamaged, was near vertical and c. 0.4m deep cutting into bedrock towards the bottom. Again, it contained a single fill, (2008), which contained fewer stones than the overlying colluvium with more clay/silt and flecks of charcoal. Towards the top of the fill was found a stone musket ball. At the eastern edge of the trench, and half-sectioned by the trench baulk, was cut (2002), nearly circular but weathered at its top and sides to produce a variable diameter averaging 1m, Figure 23. This was cut through bedrock in places with an uneven base and contained two fills, (2003) overlying (2004), both containing more clay/silt than the colluvium and the uppermost containing large pieces of bedrock and stones. Within (2004) was found a piece of burnt stone.

BOD 12
Trench 2
Pit 2002

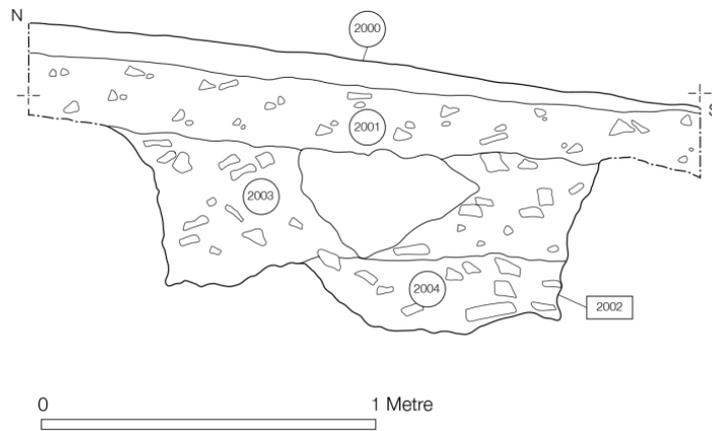


Figure 23: Section of cut feature (2002), a possible pit.

Interpreting these three cut features in relation to the Iron Age occupation of the hillfort must remain inconclusive. It may be significant that on the First Edition OS map published in 1874 the interior of the site is shown as being covered with trees all of which have been subsequently removed. Perhaps related to that activity, cut (2005) is probably a shallow tree-throw as may be (2007) although with the animal disturbance it is more difficult to be sure and it could be a pit. Cut (2002) is the best candidate for a pit related to Iron Age activity within the hillfort based on its size and shape and this conclusion may be supported by the burnt stone in its basal layer. Alternatively, together with the charcoal flecks in nearby feature (2007), this may be associated with burning during tree removal in the early 20th century. The positive outcome from Trench 2, however, is the verification of the geophysical techniques employed in identifying cut features even when they are of minimal depth as feature (2005).

Trenches 3, 3X and 4

Trench 3 lies in the southern, flat area of the hillfort (Figure 7), a location with panoramic views over the Chwiler and Clwyd valleys. The trench was located on a series of geophysical anomalies that suggested cut features. The area of 25m x 20m was divided into 5m squares of which seven were excavated, Figure 24. The depth of bedrock varied tremendously and some cut features were identified that correlated with the geophysical anomalies. The features were difficult to interpret and for most of them it was impossible to tell if they were natural or not. Many were due either to the considerable rabbit activity or were tree throws. One linear feature, a slight bank and hollow running east-west, may have been the product of recent agricultural activities and/or a land boundary. A stone spindle whorl, similar to that found in Trench 1, was found in an indistinct context, which together with one 'found in Bodfari Camp' in the 19th century makes three (Wynne Ffoulkes 1851).



Figure 24: General view of Trench 3 looking east.

The 5m wide extension to Trench 3 (Trench 3X) runs approximately east-west across the suggested inner rampart and the extant middle rampart. This trench was 5m wide and across the middle rampart was excavated in two 2.5m halves, the southern-most first. The intention was that information from the first half would inform the excavation of the second and help clarify what were complex materials and stratigraphical relationships.

To summarise, the rampart was constructed from shale fragments of differing sizes (the bedrock), much of which had slumped from the rampart both into the hillfort and downslope on the outside to create the profile seen today. Within the shale was evidence for structure and phasing in the form of two originally vertical inner faces and a single outer face with the void in between filled with rubble. Up against the second inner face was more material which was possibly some form of revetting bank rather than a third inner face. The rampart appears to have been constructed on an artificially levelled terrace. There is a shallow quarry ditch on the inside and a V-shaped rock-cut ditch on the outside.

The provisional sequence is presented here in more detail⁴. Note that we use the term 'phase' which here has no intrinsic implication other than to describe a sequence of constructional activities based on stratigraphical relationships, with no particular duration between phases to be inferred; potentially phases could be part of a contiguous period of construction or might be separated by short or much longer periods of time.

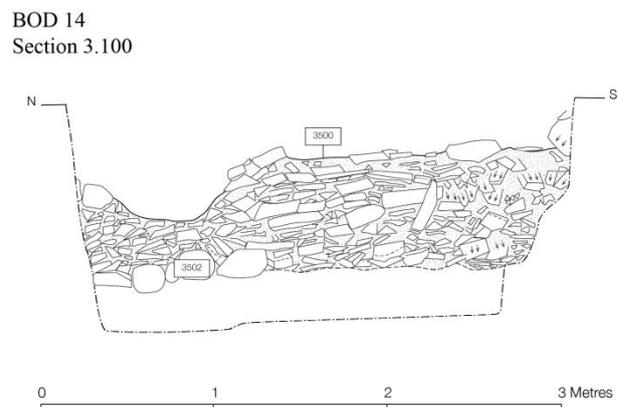
It is worth saying something about the slope of the ground at Trench 3X and observation suggests that the original slope may have had two natural changes of gradient, the sharp break of slope at the top of 3X, the inner rampart, and one at the inner side of the extant middle rampart. Clearly there has been quarrying upslope/inside of the middle rampart

⁴ This account is based on an interim report written by Simon Maddison who worked on the excavation of Trench 3X from beginning to end and did most of the recording for it.

which has steepened the slope, however drawing a virtual line from the top of the slope to the presumed natural under the middle rampart shows a lesser slope than that running downhill from that point. The outer rampart which is further downslope appears to be formed of a ditch cut into the slope and used to form an outer counterscarp bank with the natural slope being the same above and below it. Therefore, the inner and middle ramparts were both constructed so as to take advantage of natural breaks of slope.

A terraced level surface was created on the natural slope of the hill onto which the middle rampart was constructed. This appears to have been done by building up a platform from layers of shale and soil (3020 and 3021) on top of the natural. Within these deposits were small fragments of charcoal which provided two radiocarbon dates of 406-353 Cal BC (SUERC-73571, 95.4%) and 403-352 Cal BC (SUERC-73572, 95.4%), Figure 20. The charcoal could be the result of ground clearance prior to the building of the rampart and if so these dates are for the beginning of the rampart's construction.

The rampart probably originally formed a level platform with a higher outer face and a lower inner face to account for the natural slope. Both faces were of dry stone wall construction. The outer face used glacial erratics, rounded boulders and cobbles, as part of a foundation, Figures 25 and 26, and there was some evidence for the use of small choking stones wedged into the natural surface to provide some stability and stop the foundation stones from slipping down slope. Despite considerable collapse of the front face, especially within the northern half of the trench, some choking stones were still steeply and firmly wedged in. The outer face of the southern half showed a carefully constructed dry stone face still some 1m high in places (3503), Figure 27, in the southern half only the foundation boulders remained *in situ*.



Figures 25 and 26: The boulder foundation stones of the middle rampart front (outer) face, southern half of the trench.



*Figure 27: The middle rampart front (outer) face,
Southern half of the trench.*

Behind this face flat stones had been placed, but with much less care, Figure 28, and formed part of the central fill of the rampart which was a combination of loose stones and lenses of sandy clay. It seems that as the face had been built up, it was filled behind with loose stone, perhaps more carefully laid just behind the face, and then consolidated at various levels with layers of either clay or possibly even turves.



Figure 28: The front (outer) face of the middle rampart to the right with infilling rubble to the left of it with differing layers of stones, soil and possible turves.

The Phase 1 inner face of the rampart (3041) was a neatly and carefully laid dry stone wall some 20-30 cm high. If this initial phase was bounded by the inner and outer faces as described, then it would have formed a platform approximately 1.5m high at the outer face with a low step on the inside. It is possible that this was covered with turves and there is some suggestion of this within (3004). Collapse, whether natural or intentional, of the upper part of the outer face means that the top of the rampart has now gone. This design means the rampart would have looked very impressive when approaching it from downslope, and much bigger than it really was.



Figure 28: The Phase 1 inner rampart face, Northern half of the trench.

Approximately 0.5m back from the phase 1 inner face is a well-constructed dry stone wall surviving to a maximum of 1m high (3005), Figure 29, this is the Phase 2 rampart inner face and represents a widening of the Phase 1 structure. This comprises larger and longer stones than the Phase 1 inner face with 'capping' stones on top forming what may have been a surface. Inside the rampart at this point was loose rubble and sandy clay (3004) which may have been a pile of turves originally. The Phase 2 rampart must have used the same outer face as the Phase 1 structure and if the height of this inner face is extrapolated horizontally to the outer face that must have been some 2.2m high although this is speculative due to collapse of the outer face. It is also notable that Phases 1 and 2 inner faces do not line up, there being a difference in alignment between the two, Figure 31, more exaggerated in the southern half of the trench so the two faces do not run in parallel.



*Figure 29: The Phase 2 rampart inner face,
Northern half of the trench.*

Up against the Phase 2 inner face is Phase 3 material that is more difficult to interpret due to its haphazard construction Figures 30 and 31. Much of the material has the appearance of being tipped up against the Phase 2 face sloping down away from the face with no indication of a possible outer face. At one point, however, there was a very crudely laid series of flatter stones forming an approximate right angle to the Phase 2 wall. This appears to have been some form of internal baffle within a revetting bank of stones up against the Phase 2 face. It is likely that the baffle was constructed first with rubble, albeit containing some large stones, piled up against it.



Figure 30: The Phase 3 revetting bank with internal baffle partly excavated. To the left are the higher Phase 2 inner wall face and the lower Phase 1 face.



Figure 31: The middle rampart showing the Phase 1 and Phase 2 inner faces with the Phase 3 revetting bank and internal baffle on the inside.

To the outside of the outer face is a possible berm of 2.5m and then a V-shaped rock cut ditch which is 4m wide at the top and 1.5m deep (3501), Figures 32 and 33. This was filled with stones and soil forming loose layers suggesting what may be two collapse phases. Layers of larger stones, (3512) would represent an earlier stage collapse, with a wash-down layer (3514) above and then (3508) being the result of a second stage collapse. The primary silting in the bottom of the ditch, (3510) would presumably be natural wash-down prior to any collapse. In terms of phasing there is no direct link between the ditch and the rampart but it must have been the source of a considerable amount of material used in rampart construction.



Figure 32: the rock-cut outer ditch showing layers of rampart collapse and silting.



Figure 33: From the left, the rampart outer face, the berm (over cut) and the outer ditch.

Figures 34 and 35 show the full section across the rampart and ditch with the suggested phases marked, as a traditional drawn section and an orthophoto.

The other source of rampart material is a shallow quarry hollow which runs between 2m and 3m from the inner face of the Phase 2 rampart and is approximately 1.5m wide with a shallow U-shaped profile tapering into the upward slope of the bedrock and a maximum depth of 0.15m filled by, Figure 36. Although, like the main outer ditch, this cannot be stratigraphically related to any of the rampart phases it seems likely that the material for Phases 1 and 2 would have come from the main ditch and Phase 3 from the internal quarry due to its proximity. The other point to note is that the rampart appears to be entirely constructed of stone, earth and perhaps turves with no evidence for timbers either as vertical posts, horizontal lacing within its structure or revetting.

BOD 14
Trench 3X
Section 3.104

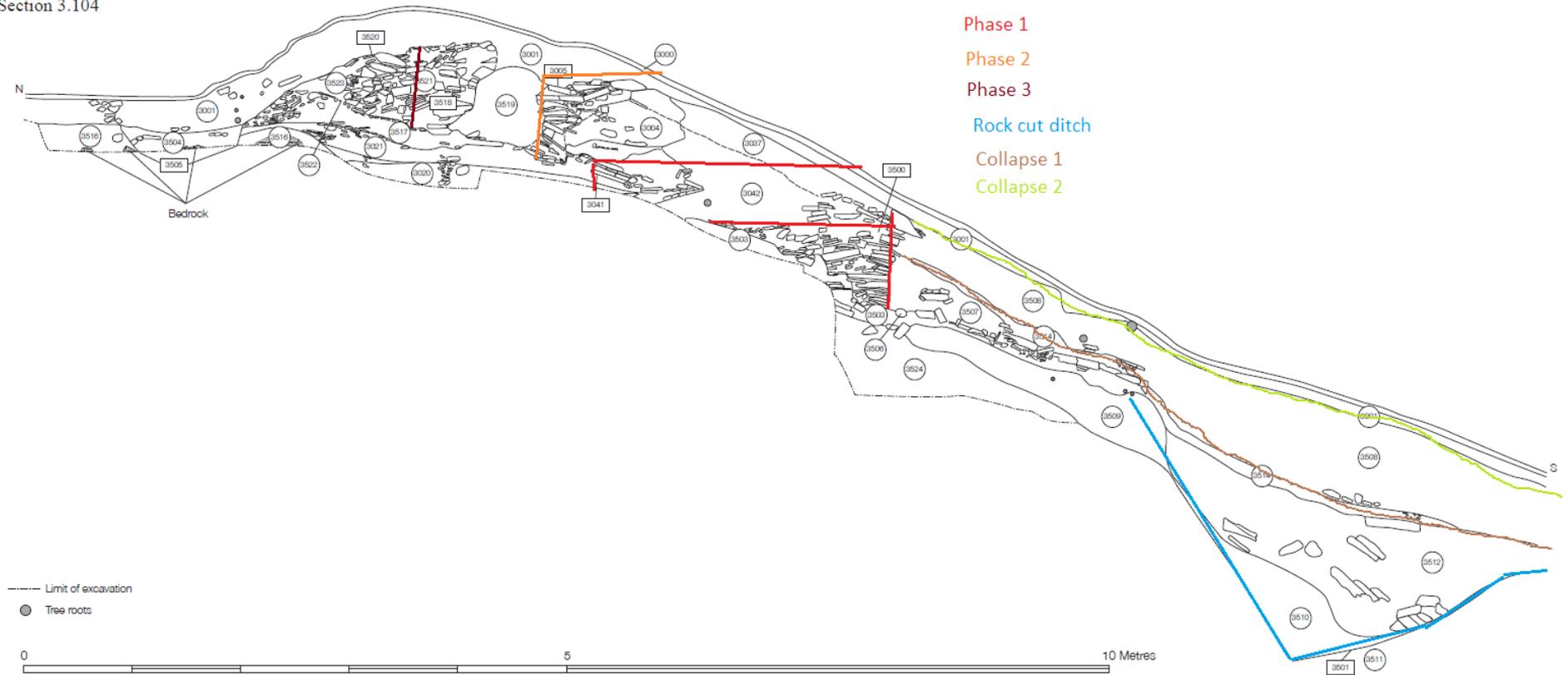


Figure 34: the full section across the middle rampart and ditch showing phases.



Figure 35: an orthophoto image of the section across the middle rampart and ditch showing phases.



Figure 36: the quarry hollow cut into the bedrock inside the rampart.

Upslope from the quarry hollow, and at the upper break of slope, is the inner rampart. This is suggested by both the geophysics (Figure 5) and the LiDAR (Figure 4) and is shown to run along the break of slope around the south western and southern areas of the enclosure. This was excavated at the junction of Trenches 3X and 3.



Figure 37: The inner rampart, Trench 3/3X.

The inner rampart had been heavily robbed and damaged by rabbit activity with only boulders from the foundation levels remaining *in situ*. In the north facing section, Figure 37,

rubble which may have formed the core of the rampart was revealed which together with the boulders suggests a rampart width of approximately 3m.

Trench 4 was located at the southern end of the hillfort to investigate the possible inner rampart further, Figure 7. Again, this appears to have been heavily robbed but evidence for an inner and outer face survived as blocks of stone laid directly onto the bedrock, Figure 38. At this point the suggested width of the rampart is approximately 2.5m. The inner rampart and its role within the development of the hillfort is discussed further below.



Figure 38: The inner rampart, Trench 4.

Discussion

Here we will consider the evidence from Moel-y-Gaer Bodfari in relation to the 'core group' of Clwydian hillforts, namely Penycloddiau, Moel Arthur, Moel-y-Gaer Llanbedr and Moel Fenlli together with Moel-y-Gaer Llantysilio and Caer Drewyn to the south of the Clwydians in the Llantysilio range and included in the Heather and Hillforts Project. Also included here is Moel Fodig, a small hillfort close to Caer Drewyn and not included in the Heather and Hillforts Project and Moel Hirradug, the northern most hillfort of the group and the only site on limestone. Where relevant some further afield hillforts are also mentioned.

It is generally accepted that many hillforts started as univallate enclosures with later multivallate enhancements either replacing or adding to the original single circuit and that the early rampart was of 'box' type whether entirely stone built or timber framed (Davies and Lynch 2000, 155). In north-west Wales, Waddington (2013) has shown that of the 18 excavated hillforts ten are stone built and the remainder are embanked, that is an earth and stone bank rather than a faced wall. This sequence is possible at Moel-y-Gaer Bodfari where the almost entirely robbed-out inner rampart as exposed in Trenches 3X, Figure 37, and 4, Figure 38, forms the univallate enclosure in the south-western and south-eastern quadrants, Figure 39. In the north-western quadrant the first phase rampart was replaced by the

second phase multivallation which was constructed over the top of it whereas to the south it takes a different line further downslope and becomes the middle rampart as described above. The second phase involves the dismantling of the first phase rampart to the south-west and south and building the second rampart and ditch and the outer counterscarp bank with inner ditch around the northern and western sides including the northern inturned entrance. Figure 39 also includes a much later phase, possible post-medieval landscaping. This involved the scarping of the rampart as shown in Trench 3X and the addition of banks running downslope at the mid-western and south-eastern points. Within this enclosed area are 'exotic' trees such as Scots Pine which don't occur anywhere else on the hill.

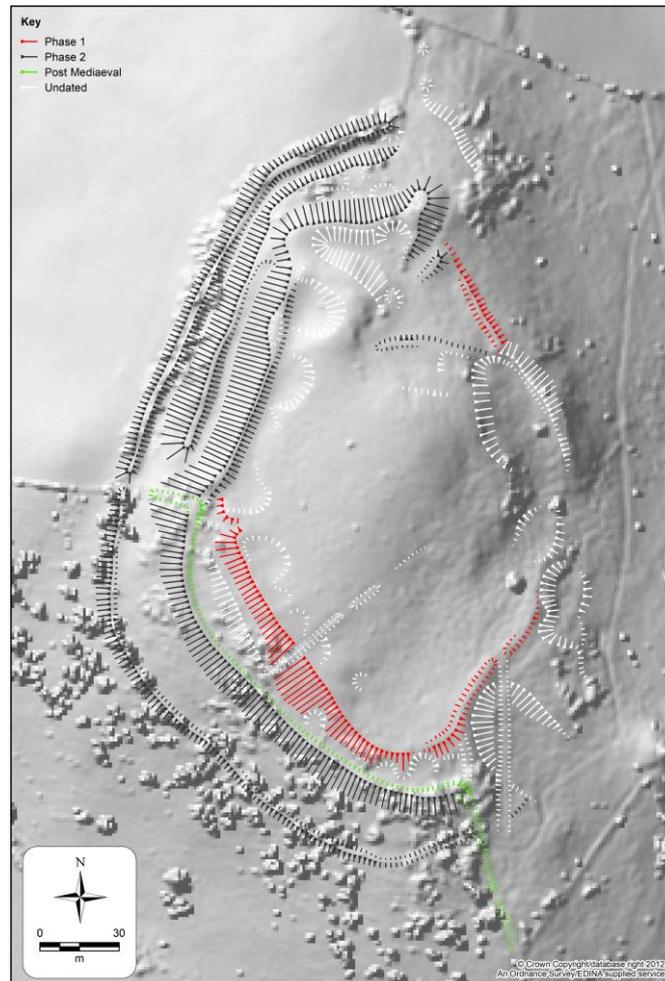


Figure 39: Earthwork plan showing the possible first phase univallate enclosure (red), phase 2 (black) and the post-medieval landscaped enclosure (green).

Because of the position of the roundhouse in relation to the northern entrance it is likely that this is associated with the phase 2 expansion of the enclosure. This is also supported by the radiocarbon dates which place the construction of the Phase 2 middle rampart in the first half of the 4th century cal BC and the roundhouse possibly a little later, Figure 20. This hypothesis is the focus of the Phase 2 excavations which are concentrating on the intersection of the phase 1 and phase two ramparts in the central western area, together with a possible Phase 1 entrance, and the northern in-turned entrance, areas 5 and 6 in

Figure 7. The following brief review of vallation, phasing and dates will show that this proposal fits into the regional picture of hillfort development.

Davies and Lynch (*ibid.*) expand on the development of hillforts suggesting a four stage sequence - earliest 800-550 cal BC, early 550-400 cal BC, middle 400-150 cal BC and late 150 to the Roman occupation. The earliest hillforts are often defined by a palisade with examples in the Marches such as Old Oswestry (Varley 1948) and also at Ffrid Faldwyn in Powys (O'Neil 1942; Guilbert 1981). Moel-y-Gaer Rhosesmor, with 21 radiocarbon dates, also has a first phase palisaded enclosure with roundhouses probably dating to the 8th/7th centuries cal BC (Guilbert 1975b). This was replaced by rampart A c. 800-540 cal BC which was refurbished c. 370 cal BC and then rebuilt as rampart B c. 360 cal BC (Horn 2017). At Dinorben, Conwy, the series of excavations through the 20th century have shown a series of palisades that pre-date the timber laced rampart which are dated to 770-400 cal BC, suggesting that the palisades could be 9th-7th centuries (Gardner and Savory 1964; Guilbert 1980).

The early phase of hillfort building and alteration sees the increased use of box ramparts both entirely stone built and timber-laced invariably univallate as at several of the sites cited above, not least Ffrid Faldwyn and Dinorben. Within the Clwydians only Moel-y-Gaer Llanbedr, Penycloddiau and Moel Hirradug have seen excavation of ramparts. Llanbedr is a bivallate enclosure with an extra bank to the north which is a possible annex. Earthwork survey has suggested several phases with the eastern entrance being made more complex although excavation has shown the rampart to be of a single phase, faced with stone with burnt material in the middle that has been deposited there rather than burnt *in situ* (Karl and Butler 2009). There are five radiocarbon dates two of which are from the rampart fill (507-486 cal BC) and one from the front face of the rampart (507-433) (Lloyd Jones 2017) which makes the site early and certainly earlier than Bodfari. Penycloddiau is bivallate for much of its circuit, univallate in parts, with four lines of banks to the north. The recent excavations have shown the rampart to be c. 4m wide with inner and outer stone faces and a brash core, the outer face being better worked than the inner. Re-facing in places shows that the rampart was refurbished at least once although whether this can be called a second phase is questionable. Interestingly, and unusually, the rampart has an original lime capping and a metalled surface between it and the outer ditch which seems to have been an external walkway (Mason and Pope 2015; 2016; Pope *pers. com.*). Moel Hirradug is a complex site which has an equally complex history of investigation with a series of interventions starting in 1872 when quarrying of the hill began, summarised by Brassil *et. al.* (1982). It probably began as a single enclosure hillfort (*ibid.*, 81) but in its final form has up to three lines of ramparts and ditches on the southern and eastern sides and one on the more precipitous western side. The ramparts are close together to the north but further south they separate to form an eastern enclosure alongside the main western enclosure. Excavation of the northern rampart in the early 1960s showed a stone faced structure with rubble infill approximately 4m wide. With the threat of further quarrying in 1979/80 the middle and outer ramparts and ditches and counterscarp bank were excavated. Both the middle and outer ramparts were of box construction with varying levels of evidence for inner and outer stone revetting walls and rubble fills, the outer being between 1.7m and 2.5m wide while the middle was wider at 3.7m-4.0m. Developmental phasing is uncertain

and the only radiocarbon dates are from the 1970s for the fill of the blocked main entrance, from mid-eight to fourth centuries cal BC making this another possible early site.

At Moel Fodig, further south in the Llantysilios, a single rampart was of stone construction although little was left standing and appeared to the excavators to have been intentionally pushed into the ditch. Within a roundhouse excavated in the interior were two sherds of late Bronze Age/early Iron Age pottery, 9th-7th centuries, which makes this a very early site. The evidence suggests that this enclosure was short lived and due to its proximity to the much larger Caer Drewyn may have been superseded by this site. Carn Drewyn itself is univallate with a large tumbled stone rampart faced with stone blocks in part and an earthen rampart of different character in other areas (Gardner 1922). It has been suggested by survey (Brookes and Laws 2006a) that these represent different phases with the stone rampart overlying the earlier earthen one with, perhaps, a third phase extension shown by another possible rampart going downslope on the western side.

The middle Iron Age is characterised by the introduction of multivallation, including more complex entrances, and often an increase in the size of the enclosed area. Ffridd Faldwyn, for example, shows this sequence with an increase in size from 1.2ha to 4.0ha and Moel-y-Gaer Rhosesmor was re-occupied and the rampart rebuilt in the 4th century. Of the unexcavated hillforts in the Clwydians it is impossible to assign phases within this suggested sequence from earthwork survey alone. Moel Arthur, for example, is massively bivallate on its north eastern side but univallate to the south and west with a very slight rampart (Brookes and Laws 2006b). Moel Fenlli is similar in being bivallate for much of its circuit with massive ramparts to the east and north (Brookes and Laws 2006a). Moel-y-Gaer Llantysilio is superficially of a comparatively simple design being univallate for its entire circuit (Brookes and Laws 2007b). Radiocarbon dates from houses within it, see below, date to the mid 4th to 3rd centuries cal BC showing that developmental schemes based on morphology alone are unreliable.

In North Wales the evidence for late occupation is problematic and often dependant on material culture rather than structural elements. Within the Clwydians at Moel-y-Gaer Llanbedr a single sherd of Roman pottery was found during the 1840s excavation (Wynne Foulkes 1850a; Karl and Butler 2009) and at Moel Fenlli two hoards of Roman coins were found in 1816 and 1845 after heather burns (Gardner 1921). To the north at Moel Hirradug several artefacts including fragments of shield fittings show activity at the site during this period.

Houses

Although the evidence for the Trench 1 house is ephemeral there is enough for it to be compared with other houses known from the immediate and wider area. Davies and Lynch (2000, 158) state that in general the known timber-built roundhouse in Wales are between seven and eleven metres in diameter constructed of wattles daubed with clay. The most informative nearby site for roundhouses is Moel-y-Gaer Rhosesmor, Flintshire, excavated in 1972-3 (Guilbert 1975: 1976). Here twenty two post-built roundhouses were identified closely packed together with porches. The post-rings vary between 4.3m and 7.4m in diameter and only one house retained the evidence for the outer wall which if applied to the others would give floor sizes of between 6.5m and 11.5m. Seven houses had remains of

central hearths shown as 'reddened areas of natural clay' (*ibid.* 308) and charcoal from one produced a radiocarbon date of 900-430 cal. BC (95% probability) (Horn 2017), the wide range due to a combination of 1970's technology, the calibration plateau and the effects of bulk sampling. This house is partially overlain by the Phase 2 rampart and may have belonged to a pre-rampart palisaded enclosure. Phase 2 sees a change in house building technique to stake wall roundhouses with post-built porches of which eleven were excavated. These had diameters of between 5.6m and 8.0m.

Moel Hirradug shows an interesting, and important, combination of stone-built and timber-based roundhouses through a combination of surface and excavated evidence (Brassil *et. al.* 1981-2). Stone roundhouses are common in parts of North Wales, Garn Boduan and Tre'r Ceiri on the Llyn peninsular being the classic examples (Hogg 1960), but as Brassil *et. al.* point out (1981-2, 22) this is west of the Conwy Valley with them being rare in Conwy itself. At Moel Hirradug the surface remains of these structures, so-called hut circles, are spread across the western enclosure with one having been excavated in 1961 revealing the circular low bank to be rubble wall remains (*ibid.* 30). Two more well preserved examples of stone-wall roundhouses, Huts F and F3, were excavated in the early 1960s, with internal areas of 8.6m and 6.5m respectively. These were substantial structures with walls of approximately 1m thick with internal and external facing and rubble infill, internal stone hearths and postholes and a range of material culture. The other form of surface evidence are hut platforms, artificial terracing into a slope to form a flat area, often circular, onto which can be constructed a roundhouse whether stone-built or timber-based. These are numerous at Moel Hirradug throughout the eastern enclosure and parts of the western enclosure. In 1979/80 further rescue excavations in the face of quarrying revealed a ring-slot roundhouse (*ibid.* 68) which was slightly flattened in plan and measuring 6.6m by 6.2m. This was constructed on a platform and the house was built up against the rock cut scarp similar to the situation at Moel-y-Gaer Bodfari, and here at one point the excavators suggesting that the rock face formed part of the rear wall of the house (*ibid.* 74).

A closer example of excavated timber-based roundhouses is those at Moel-y-Gaer Llantysilio excavated by the Clwyd-Powys Archaeological Trust in 2010 (Grant and Jones 2013). Earthwork and geophysical survey (Brooks and Laws 2007b; 2009) indicated 20 possible roundhouses with 11 on platforms. The 20m by 3m trench revealed the drip gully of an earlier house with stones set on edge within the gully, a possible pit containing bread wheat cereal grain, the gully of an internal division, a possible post-pad and a hammer stone. The second house was later and on a raised platform which partly overlay the first house. This had decayed wattle and daub walling and, like the first, was 7m in diameter. Three radiocarbon dates came from an occupation deposit sealing roundhouse 2 (362-171), an occupation deposit pre-dating roundhouse 1 (345-351) and the fill of roundhouse 1 drip gully (388-206), at 95.4% giving a range of mid 4th to 3rd centuries cal BC. At the small hillfort of Moel Fodig two houses were identified by geophysical survey (Brookes 2010a) with one being identified by excavation as having a wall slot gully, internal postholes and a stone-lined pit/hearth/fire pit (Moreton *et al* 2012).

House platforms as surface evidence are common across the Clwydian hillforts but vary greatly in numbers for each site. At Penycloddiau a total of 33 platforms and 49 'circular hollows' which are a similar type of feature have been identified (Jones 2006), plus more by

geophysics some with suggested attached yards (Edwards in Mason and Pope 2013; Mason and Pope 2016). Excavation of one roundhouse platform concluded in 2017 and details are awaited although the walled structure was likely of an organic nature (*ibid*; Pope *pers. com.*). At Moel Arthur there are only two or three platforms and these cluster around the inturned entrance of the hillfort (Brooks and Laws 2006b), a similar position to the platform and house at Bodfari. Moel-y-Gaer Llanbedre has 15 house platforms (Brooks and Laws 2007a), Moel Fenlli the much larger number of 61 and Caer Drewyn eight platforms together with possible stone foundations within the annex (both in Brooks and Laws 2006a).

In conclusion although the Bodfari house seems to be of an unusual constructional technique, not stone built or obviously timber-based, it does fit with some regional characteristics. At 9m diameter its size is within the known range, the central hearth may match the 'burnt clay' evidence from Moel Hirradug as does the locating of part of the wall up against the artificially cut rear face of the platform. The Bodfari date is in line with the only other dates for houses from the immediate area, those from Moel-y-Gaer Llantysilio at 4th to 3rd centuries cal BC.

In terms of the overall understanding of the Bodfari hillfort together with the others on the Clwydian range it is difficult to come to firm conclusion on why it was built and what it was used for. Alcock (1965) has suggested that the larger hillforts of the Clwydians - Penycloddiau, Moel Hirradug and Moel Fenlli - all overlook a stretch of fertile valley so could be a focus for different communities living in the lowlands. This, of course, need not exclude the other sites and argues for the hillforts not to be permanently occupied which the Bodfari evidence supports. He suggests that they could have served different uses such as places of refuge, places for religious, social and political gatherings, and were perhaps nodal points for exchange and/or the centres of elites. This model of hillforts being a central place serving a dispersed community where they could come together at certain times of the year and take part in community events is an attractive one for hillforts. The idea seems more feasible in areas such as Wessex or even parts of the Marches where there is evidence of contemporary farmsteads in the areas around the hillforts where the population would live. In the areas around the Clwydians this is problematic as very few later prehistoric farmsteads are known (Manley 1991). Integral to this idea of occasional use of hillforts by a wider community is the possibility of transhumance, using the higher pastures for summer grazing and moving the animals, and people, back to the lower areas in the winter. The spindle whorls at Bodfari show that sheep were present and their wool was being used. One being found near the roundhouse suggests spinning of wool within or around the house and, therefore, extended lengths of stay there. Pollen analysis from the Moel Llys y Coed mire in the Clwydians (Grant 2008) shows evidence for increased grazing during later prehistory which could be related to hillfort building and use. It also shows evidence for cereal growing which together with the bread wheat grains from the Moel-y-Gaer Llantysilio house, show that in the summer at least the high areas of the Clwydian hills were well used by Iron Age people.

Community involvement

The Bodfari excavations have been committed to involving local people and those from further afield in the work of the team and in the understanding of the site and its wider prehistoric context. Working with Fiona Gale, the County Archaeologist for Denbighshire,

each summer we have held an Open Day and walks to and from the site as part of the Council for British Archaeology's annual Festival of Archaeology. Open Days have typically attracted around 50 people who have had guided tours and explanations of the site, Figure 40.



Figure 40: a group taking part in a site tour as part of Open Day.

We have also welcomed volunteers to take part in the excavations, partly through the project website⁵ and through the CBA publicity. Between 20 and 25 people have been registered each year with 10 to 15 working with the core team each day. Many are local people, some with experience gained through local archaeological societies such as the St. Asaph group and CRAG (Clwydian Range Archaeological Group), although many are complete novices. For some volunteers from abroad this is their first visit to North Wales, we have had people from America, New Zealand, Sweden, France and Germany. Training is given in archaeological techniques such as trowelling, context recognition and recording, planning and section drawing as well as more specialised techniques including magnetic susceptibility sample processing, digital surveying and geophysics. Talks are also given to local societies, day schools on the archaeology of Wales as well as at international academic conferences such as *Computer Applications in Archaeology* and the *Society for American Archaeology*.

Artists in Residence

The excavation has two artists in residence who are inspired by the work of the team and the process of excavation and recording. Simon Callery is a well known painter and Stefan Gant is a university lecturer specialising in drawing and digital representations. Simon is working on large paintings based on the texture and form of excavated surfaces, Figure 41, and has recently displayed some of his work at Fold Gallery in London⁶. Stefan is developing

⁵ <http://www.arch.ox.ac.uk/bodfari.html>

⁶ <http://www.foldgallery.com/exhibition/flat-paintings/>

the concept of 'sonic stratigraphy' where recordings of trowelling noises are digitally transformed into images, Figure 42. In the summer of 2018 there will be an exhibition of their work, together with archaeological background information, at the Oriel Plas Glyn Y Weddw, a gallery in Llanbedrog, Llyn peninsular.



Figures 41 and 42: the artists in residence at work, Simon Callery (left) and Stefan Gant.

Acknowledgements

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This interim report is dedicated to Jon Humble, a good colleague and friend who is greatly missed.

Bibliography

Alcock, L. 1965. Hillforts in Wales and the Marches. *Antiquity*, 35, 184-95.

Brassil, K., Guilbert, G., Livens, R.G., Sread, W.H. and Bevan-Evans, M. 1981-2. Rescue excavations at Moel Hirradug between 1960 and 1980. *Journal of the Flintshire Historical Society*, 30, 13-88.

Brooks, I.P. and Laws, K. 2006a. *Caer Drewyn and Moel Fenlli*, Engineering Archaeological Services Client Report 2006/17.

Brooks, I.P. and Laws, K. 2006b. *Heather and Hillforts survey report: Moel Arthur*. Engineering Archaeological Services Client Report 2006/19.

Brooks, I.P. & Laws, K. 2007a. *Heather and Hillforts Survey Report: Moel-y-Gaer, Llanbedr*. Engineering Archaeological Services Client Report 2007/03.

Brooks, I.P. and Laws, K. 2007b. *Heather and Hillfort survey report: Moel-y-Gaer, Llantysilio*, Engineering Archaeological Services Client Report 2007/01.

Brooks, I.P. & Laws, K. 2008. *Moel-y-Gaer Hillfort Survey May 2008*. Engineering Archaeological Services Client Report 2008/10.

Brooks, I.P. and Laws, K. 2009. *Moel-y-Gaer, Llantysilio: Geophysical survey*, Engineering Archaeological Services Client Report 2009/10.

Brooks, I.P. 2010a. *Moel Fodig geophysical survey*, Engineering Archaeological Services Survey Report 2010/14.

Brooks, I.P. 2010b. *Survey report: Moel Fodig*, Engineering Archaeological Services Survey Report 2010/19.

Brown, I 2004. *Discovering a Welsh landscape. Archaeology in the Clwydian Range*. Macclesfield: Windgather Press.

Brown, I. and Wintle, W. 2008. *Caer Drewyn and its Environs Project. Report No 1. Geophysical survey of Caer Drewyn Hillfort, Denbighshire, October 2008 – Interim results*. Oxford: University of Oxford, unpublished report.

Brown, I. and Karl, R. 2011. *Caer Drewyn and its Environs. Site surveys and analyses 2010-2011. Excavations at Moel Fodig Hillfort, August 2011. Interim Report*. Bangor: University of Bangor, unpublished report.

Davies, Canon E 1949. *Prehistoric and Roman remains of Flintshire*. Cardiff: William Lewis.

- Davies, J.L. and Lynch, F. 2000. The Late Bronze Age and Iron Age, in Lynch, F., Aldhouse-Green, S. and Davies, J.L. *Prehistoric Wales*. Stroud: Sutton Publishing.
- Forde-Johnston, J. 1964. Field work on the hillforts of North Wales. *Journal of the Flintshire Historical Society*, 21, 1-20.
- Forde-Johnston, J. 1965. The hillforts of the Clwyds. *Archaeologia Cambrensis*, 114, 146-78.
- Forde-Johnston, J. 1976. *Hillforts of the Iron Age in England and Wales. A survey of the surface evidence*. Liverpool: Liverpool University Press.
- Gale, F. 1991. The Iron Age, in Manley, J., Greener, S. and Gale, F. (eds), *The archaeology of Clwyd*, 82-96.
- Gardner, W. 1921. The ancient hillfort of Moel Fenlli, Denbighshire. *Archaeologia Cambrensis*, 76, 237-52.
- Gardner, W. 1922. The ancient hill fort known as Caer Drewyn, Merionethshire, *Archaeologia Cambrensis*, 77, 108-125.
- Gardner, W. 1926. The native hillforts of North Wales and their defences, *Archaeologia Cambrensis*, 7th Series, 6, 221-82.
- Gardner, W. and Savory, H.N. 1964. *Dinorben: a hillfort occupied in the Early Iron Age and Roman times*, Cardiff: National Museum of Wales.
- Grant, F. 2008. Human impact and landscape change at Moel Llys y Coed in the Cwydian hills, North Wales: the Mesolithic - present day. *Archaeoleg yng Nghymru/Archaeology in Wales*, 48, 3-15.
- Grant, I. and Jones, N.W. 2013. The investigation of two roundhouses within Moel-y-gaer hillfort, Llantysilio, Denbighshire. *Archaeoleg yng Nghymru/Archaeology in Wales*, 52, 49-55.
- Guilbert, G.C. 1975a. Planned hillfort interiors. *Proceedings of the Prehistoric Society*, 41, 203-21.
- Guilbert, G. C. 1975b. Moel-y-Gaer, 1973: an Area Excavation on the Defences, *Antiquity*, 49, 109—119.
- Guilbert, G. C, 1976. 'Moel-y-Gaer (Rhosesmor) 1972-73: an Area Excavation in the Interior'. In D. W. Harding (ed), *Hillforts later prehistoric earthworks in Britain and Ireland*. London: Academic Press.
- Guilbert, G.C. 1980. Dinorben C14 dates, *Current Archaeology*, 6, 182-88.
- Guilbert, G.C. 1981. Ffridd Faldwyn. *Archaeological Journal*, 138, 20-22.

Gwilt, A. 2003. Understanding the Iron Age: towards an agenda for Wales. In. C.S. Briggs (ed.), *Towards a Research Agenda for Welsh Archaeology*, 105-22. BAR Brit.Ser. 343, Oxford: Archaeopress.

Haselgrove, C, Armit, I, Champion, T, Creighton, J, Gwilt, A, Hill, J D, Hunter, F and Woodward, A 2001. *Understanding the British Iron Age: An Agenda for Action*. Salisbury: Wessex Archaeology for English Heritage and Historic Scotland.

Hogg, A.H.A. 1960. Garn Boduan and Tre'r Ceiri. *Archaeological Journal*, 117, 1-39.

Horn, J. 2017. *The dating of hillforts in Britain and Ireland*. Unpublished PhD thesis, University of Edinburgh.

IFA Wales/Cymru 2008. *Introducing a Research Framework for the Archaeology of Wales*. Cardiff: CADW.

Jones, N.W. 2006. *Penycloddiau Hillfort, Flintshire: Topographical Survey* (Unpublished report # 820, CPAT).

Karl, R. and Butler, H. 2009. *Moel-y-Gaer Llanbedre Dyffryn Clwyd. Excavations, Summer 2009. Preliminary Report*. Bangor: University of Bangor, unpublished report.

Karl, R. and Brown, I. 2010. *Caer Drewyn and its environs. Survey and desktop analyses, 2009-2010. Preliminary Report*. Bangor: University of Bangor, unpublished report.

Lloyd Jones, E. 2017. *Connections between the hillforts of the Clwydian Range and the wider landscape*. Unpublished PhD thesis, Bangor University.

Manley, J. Greenter, S. and Gale, F. (eds) 1991. *The archaeology of Clwyd*. Clwyd County Council.

Manley, J. 1991. Small settlements, in Manley, J., Greenter, S. and Gale, F. (eds), *The archaeology of Clwyd*, 97-116..

Mason, R. and Pope, R. 2012. *Excavations at Penycloddiau Hillfort, Flintshire, North Wales. Interim Report 2012*. Liverpool: University of Liverpool, unpublished report.

Mason, R. and Pope, R. 2013. *Excavations at Penycloddiau Hillfort, Flintshire, North Wales. Interim Report 2013*. Liverpool: University of Liverpool, unpublished report.

Mason, R. and Pope, R. 2015. *Excavations at Penycloddiau Hillfort, Flintshire, North Wales. Interim Report 2014*. Liverpool: University of Liverpool, unpublished report.

Mason, R. and Pope, R. 2016. *Excavations at Penycloddiau Hillfort, Flintshire, North Wales. Interim Report 2015*. Liverpool: University of Liverpool, unpublished report.

Morton Williams S., Moller, K., Brown, I. and Karl, R. 2012. *Hillforts of North Wales: Moel Fodig. Excavations, 2011-2012. Interim Report*. Bangor: Bangor University Studies in Archaeology Report No. 7, unpublished report.

Mrowiec, H. (ed) 2011. *Heather and Hillforts of the Clwydian Range and Llantysilio Mountains*, Ruthin: Heather and Hillforts Partnership Board, Denbighshire County Council.

O'Neil, B. H. St. J. 1942. Excavations at Ffridd Falwyn Camp, Montgomery 1937-30 , *Archaeologia Cambrensis*, 97, 1-57.

Silvester, B. and Owen, W. 2003. *Roman roads in mid and North-East Wales*. Welshpool: Clwyd Powys Archaeological Trust, Report No. 527.

Stapleton, P 1909. Exploration of Moel-y-Gaer, Bodfari. *Archaeologia Cambrensis*, 6th series, IX, 232-238.

SUERC. 2010. *Radiocarbon dating certificate, Moel-y-Gaer, Llanbedr*. Scottish Universities Environmental research Centre.

Waddington, K. 2013. *Settlements of northwest Wales: from the late Bronze Age to the early medieval period*. Cardiff: University of Wales Press.

Wynne Ffoulkes, W. 1850a. Castra Clwydiana No. II. Moel Gaer, Part of Moel Fama, *Archaeologia Cambrensis*, New Series, I, 174-87.

Wynne Ffoulkes, W. 1850b. Castra Clwydiana No. I. Moel Fenlli, *Archaeologia Cambrensis*, New Series, I, 81-9.

Wynne Ffoulkes, W. 1851. Proceedings at the meetings of the Archaeological Institute, *Archaeological Journal*, 8, 426.