A Geophysical Survey of
Bake Rings Enclosure
Pelynt
Cornwall

View of Bake Rings looking south (Heritage Gateway)

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1.0 Introduction
A magnetometer survey of Bake Rings enclosure (NGR. SX 1864 5494; SMC 15008), Pelynt, Cornwall was undertaken by Dr Catherine Frieman of the Australian National University (ANU), Canberra, and James Lewis, Glasgow University, in collaboration with Tim Dawson of Thames Valley Archaeological Survey (TVAS), Reading. The survey took place on the 22nd and 23rd of April and 23rd October 2014 with the consent of the landowners Mr Steve Eastley of Bake Farm, Pelynt and Mr Daniel Philp of Lancare Farm, Pelynt. The survey was carried out as part of a wider project of the Southeast Kernow Archaeology Survey (SEKAS).

1.1 Rationale
Despite many generations of archaeological fieldwork in Britain’s southwestern peninsula and Cornwall’s central role in later prehistoric exchange networks, the prehistory of the southeastern part of the county has not been exposed to the same amount of modern archaeological investigation. The SEKAS project aims to develop a better understanding of the prehistoric landscape of this region which links the metal-rich uplands to the English Channel. The study region for the SEKAS project comprises of the area between the Tamar and the Fowey rivers and south of the A38, and the period from the Neolithic through to the later Iron Age.

The enclosure at Bake Rings is one of a number of prehistoric monuments within the parish of Pelynt. Indeed within the area of southeast Cornwall, no other parish contains more prehistoric enclosures and barrows than Pelynt. Therefore, this area must have been important to past communities and any research into southeast Cornwall, must attempt to investigate these monuments and their setting. Despite the presence of a number of prehistoric monuments in this area there has been no modern investigation of them. A geophysical survey of Bake Rings will present a non-intrusive investigation to establish the extent and character of the sub-surface features.

The site at Bake Rings was scheduled in 1976 and as such any archaeological investigation requires a section 42 License. The license was obtained from Ms Veryan Heale of the South West Office English Heritage on the 28th of February 2014 and was subsequently extended by Mr Nick Russell on the 22nd of October 2014.

1.2 Objectives
The objective of the survey of Bake Rings was to:

1. Undertake the first full magnetic survey of the monument.

2. Establish the character and extent of subsurface remains within the scheduled area.
1.2 Site Location

Bake Rings is located approximately 1.4km west of the village of Pelynt, in the parish of Pelynt and is situated in the district of Caradon in southeast Cornwall (Fig. 1).

Figure 1: The site location (© Ordnance Survey).

The monument comprises two enclosures: a circular one to the west which is connected to a D-shaped enclosure to the east. It is sited on a gentle southwest facing slope near the highest point of a hill. The surrounding landscape is characterised by irregularly shaped fields which are used for a mixture of arable and pasture farming. This landscape is bisected by a number of river valleys, and the enclosure is located within an area that has been defined by the Historic Landscape Character Assessment (HLC) as Ancient Enclosed Land, (Herring 1998).

In the immediate vicinity, small farms and villages predominate and are linked by narrow lanes and roads which are usually enclosed by high hedges. The village of Pelynt is located to the east. It is mentioned in Doomsday Book and is the birth and burial place of Bishop Trelawney, famous for opposing the attempts by James II to legalise freedom of worship for Catholics.

The scheduled extent of the monument is spread across four fields; the fields to the west of the road are owned by Mr Steven Eastley and the field on the eastside of the road which is thought to contain the entrance is owned by Mr Daniel Philp. The majority of the monument lies within one field, however, it does extend into adjoining fields located immediately to the west and the south (see figure 1).

Today, on the surface, the outline of the monument is readily apparent. The ditch which defines the eastern D-shaped annex (from here on labelled as ‘the annex’) can be seen with an inner bank curving from the modern entrance in the southeast corner of the field around to the north and back to a raised, circular platform. This platform represents the circular western enclosure which is located in the southwest corner of the field. The ditches of both the enclosures continue beyond the modern field boundaries to the west and south where they can still be observed on the ground. The southeast corner of the monument, which is also the location where the entrance to the annex is thought to be, is located beyond the road which truncates the eastern side of the monument. This area of the enclosure can be observed as a slightly raised platform located in the northwest corner of the field (see Fig. 2).
The site has extensive views in all directions: to the north-northeast is Caradon Hill with the Cheesewring visible on the horizon, and to the north-northwest there is a clear vista to Bury Down hillfort. Views to the west and southwest are characterised by numerous small river valleys. To the south the land rises enough to block any view of the sea in that direction. Pelynt is just visible to the east; and notably, if the view were not obstructed by present day field boundaries, at least some of the Hendra/Cartole barrows would be visible to the southeast.

The site lies c.136m OD and the underlying geology is Meadfoot Beds, comprising of slate, grit and limestone (BGS 2002).
2.0 Archaeological Background

Cornwall’s Historic Environment Record defines Bake Rings as an Iron Age and Romano-British Round with an attached D-shaped annex to the east. The monument is thought to have been constructed and used at some point between 400BC to 600AD.

There may originally have been between 750-1,000 Rounds within the southwest (Henderson 2007: 220). These are small settlements enclosed by a ‘single bank and ditch and usually sited on hill slopes and spurs’ (Johnson and Rose 1982: 155). Although this definition is generally correct, work at Caervallack (Edwards and Kirkham 2008) and Fraddon (Johnston, Moore and Fasham 1998-99) has demonstrated that rounds can be multivallate. This type of settlement is thought to have been constructed and used between the 4th century BC and 6th century AD but was particularly important during the 2nd and 3rd centuries AD (Quinell 2004 in Young 2012).

Within the project area, investigations of several enclosures have been carried out. To the north, at the multivallate hillfort Bury Down, geophysical survey and excavation was carried out by Keith Ray in the 1990s (Ray 1994; 2001). Ray’s geophysical survey revealed evidence of interior features and the segmentation of the outer ditch, interpreted as the remains of a Neolithic causewayed enclosure which, in turn, surrounds the extant later Iron Age enclosure (Ray 2001:55). Stabilisation work was undertaken along the inner bank; however, no excavation was carried out but localised plans and sections were drawn (Preston-Jones 1996). In 2013, a complete magnetometer survey of the monument was undertaken by the Saltash Heritage Group under the direction of the SEKAS. It found evidence of a possible roundhouse, pits and a rectangular structure within the inner enclosure; however, the outer ditch appears to be continuous with no evidence of any gaps (Nichols and Dawson; Frieman and Lewis forthcoming).

A Middle to Late Bronze Age enclosure was found during construction work at Liskeard Junior and Infant School. The enclosure ditch was heavily truncated, and it was not possible to identify an associated bank. The monument was dated based upon pottery and charcoal which produced a date range of 1396-840 BC (Jones 1998-99:67). During excavations on St. George’s Island (Looe Island) in 2009, Channel Four’s programme ‘Time Team’ found evidence for a Romano-British enclosure (Wessex Archaeology 2009: 22).

No modern investigation has been carried out at Bake Rings. Lysons is regarded as the first person to record Bake Rings. He writes that in “…the Parish of Pelynt is a camp nearly round, with a single vallum, and a ditch 10 feet deep, having an entrance on the southeast side; on the southside is an advanced rampart, extending half round in which is also an entrance, facing that of the camp” (Lysons 1814:ccxlviii). In 1846, the site was planned by Maclauchlan; and it is listed under 'Defensive enclosures’ in the VCH, (Cornwall HER). Bake Rings was surveyed by the OS in 1972 who describe it as an almost circular enclosure about 94m in diameter, situated on a plateau with a D-shaped outwork or annex on the east (Cornwall HER). These features can be clearly seen on the photograph on the cover of this report. The site was scheduled in 1976.
3.0 Methodology

A magnetic survey was undertaken at Bake Rings, the survey employed 20 x 20m grids which were sited using an EDM and extended in a north-south direction. A total of 91 grids were surveyed for the magnetic assessment, with the survey covering a total area of 2.9ha. The survey used a Bartington Grad 601-2 dual sensor fluxgate gradiometer. The zig-zag method was used and readings were taken at 0.25m intervals along traverses 1m apart. This provides 1600 sampling points across a full 20m x 20m grid. The units used were nano-Tesla (nT); and the processed data ranged from a maximum of 10 and a minimum of -10 and produced a standard deviation of 4.16nT.

During the first survey the ground surface was dry and the vegetation was generally low enough to allow for the survey to proceed unhindered. The only problem area was in the southeast corner of the monument, located in the non-contiguous field across the road. Although permission was received from the landowner Mr Daniel Philp to survey the area, it quickly became apparent that the crop was too high to use the equipment effectively. Furthermore, there was unease about conducting the survey over a growing crop, so the decision was taken to return (with the landowner’s permission) at a later date to finish surveying this area. This was done on the 23rd October 2014 when the crop had been removed and so did not impede the equipment and the landowners permission has been obtained.

The magnetometer data was processed using Terrasurveyor Lite 3.0.25.1. Once the downloading was completed, the magnetic results were processed; and the data was clipped, de-staggered, de-stripped and the grids were moved (to re-locate the interior) and range matched.

Anomalies detected using the magnetometer are depicted as either negative or positive. The interpretation of the results is based on previous experience of the surveyors and comparison with other sites. The final results are presented in this report in greyscale format.
In addition to the geophysical survey, a topographical survey (Fig.2) and a plan of the monument was carried out. The topographical survey was undertaken using a Trimble GeoXH Geoexplorer 6000 Series handheld GPS system with sub-decimetre accuracy using TerraSync 5.40 software. Readings were taken along traverses which crossed the site in N-S and E-W directions every 20m and the data was processed using Trimble GPS Pathfinder Office 5.30. This consisted of Differential Correction using the Ordnance Survey base station RINEX data. The results provide detailed physical record of the hilltop which hopefully will allow for a more detailed understanding of the monument.
4.0 Results

Figure 3 displays the results of the geophysical survey. Two enclosures can be clearly observed, the circular enclosure to the west, the annex to the east and the entrance to the southeast, which is truncated from the annex by the road.

![Figure 3](image)

Figure 3: The result of the geophysical survey presented in greyscale format.

4.1 Archaeological Anomalies

Figure 4 (below) depicts all anomalies and these are labelled as archaeological features in red (A-O, V & W), non-archaeological features labelled in blue (P-R) and possible archaeological features in yellow (S-U).

A was recorded as a strong positive anomaly and possibly represents two features consisting of a linear feature which leads into a wide semi-circular feature. It is situated to the north outside the circular enclosure. The linear feature is aligned north-northeast-south-southwest and measures c.40m. The semi-circular feature measures c.15m and the open end is facing northwest with a possible internal feature (pit?) located at the northeast end.

B indicates three linear features which, similar to M, K and O, follow the alignment of and appear to be associated with the upstanding field boundary.

C was recorded as two strong positive responses and is located on the eastern side of the annex. The two anomalies are circular and appear to have internal features. The western anomaly measures c.12m in diameter and the eastern anomaly c.16m. They probably represent the remains of roundhouses and the westernmost of these appears to display a southeast facing entrance.
Figure 4: Survey results with features and anomalies labelled.

**D** was recorded as a positive response and is located in the southeast of the annex. It comprises a small number of semi-circular features.

**E** was recorded as a positive circular anomaly and is situated immediately to the south of the annex. It possibly represents a roundhouse and measures 10m in diameter.

**F, V** and **W** represent a complex of strong positive anomalies which together form the southeast entrance to the annex, c.9m wide. **F** consists of three ditches which extend southeast, however, after a short distance the northern and southern ditches terminate at a point where several anomalies, which might represent pits (circled in red) are located. The central ditch, however, extends southeast beyond the entrance and surveyed area. Extending from this ditch is a curving linear anomaly **V**, which runs roughly northeast-southwest and possibly continues into the field to the north. **V** measures at least 37.5m long. On the southern side of the central ditch, although not connected to it, extends a second curving anomaly (**W**). This runs roughly east-west and continues under the road where it finally terminates close to **E** (see above). **W** measures approximately 60m long.

**G** represents a group of several strong positive anomalies located on the southern limit of the survey. It is not clear what these features are but they might represent a cluster of pits.

**H** was recorded as a strong positive response located on the northeastern corner of the annex. The anomaly is square in shape and with possibly two small linear features extending west from each corner. It is not clear if it forms part of or is truncated by the curvy linear (**K**) feature which follows the line of the hedge. If it is independent from **K** then it might represent a small structure such as a shed and might date to the post-medieval period.
I is the ditch which defines the annex and is recorded as a strong positive anomaly. The ditch measures at least 10m wide and 150m long. A strong response can be observed on the outside of the ditch and a slightly weaker response on the inside; in between these two responses is the fill of the ditch (light grey). The surveying of the southern side of this enclosure was prevented by the presence of an upstanding field boundary, although part of the ditch has been recorded immediately to the south of the boundary.

J is the ditch defining the circular enclosure and is recorded generally as a strong positive anomaly. The response was a little weaker in the northern section of the enclosure, and an entrance can be observed to the southeast (indicated by a red arrow). For the most part (c. 60%), however, the surveying of this enclosure was hampered by the presence of an upstanding field boundary (N, see below). Despite the presence of the hedge, part of the enclosure ditch is visible immediately beyond the present day boundary. The surveyed ditch measured 100m long and c.5m wide.

K is a curving anomaly which appears to be associated with the upstanding field boundary and probably forms part of what is known as a ‘Cornish Hedge’. The remains of a ditch following the hedge line was observed during the field work. As noted, what is not obvious is the relationship of K to the rectangular anomaly H (see above).

L appears to be a line of 5 pits aligned north-northeast by south-southwest and a further pit located to the west. It measures approximately 15m long.

M is a curvilinear anomaly which, although following the predicted line of the circular enclosure, is more similar to K (see above) and is probably associated with the upstanding field boundary.

N signifies two anomalies which are located to the south of the annex entrance; the first a linear anomaly, which is aligned north-south and measures approximately 20m long. It appears to be in line with the present day road located c.18mm to the west but extends beyond the southern limit of the survey. At is northern terminus of N is located a strong circular anomaly which probably indicates a large pit of approximately 5mm in diameter.

O indicates two linear features which, similar to B, M and K, follow the alignment of and appear to be associated with the upstanding field boundary. O measures at least 20m long and extends beyond the eastern limit of the survey.

4.2 Non-Archaeological Anomalies

P is a non-archaeological feature, and denotes the very small areas which we were unable to survey due to the presence of silage bags.

Q indicates two examples of the dark linear patches which are frequently observed across the site. They are aligned northeast-southwest and their uniformity strongly suggest they are the result of underlying geology.

R denotes the extent of the modern/medieval field boundary where it prevented the survey from being undertaken.
4.3 Potential Archaeological Anomalies

S was recorded as a slight positive anomaly and is located within the circular enclosure. It is a semi-circular feature and measures 11m in diameter. It appears to have its open end facing southwest.

T represents points of strong responses which may represent possible archaeological features. A potential linear alignment (east-west) can be observed with a parallel line of responses immediately north of these. If these are features then they are most likely to be pits, however, they could equally be the result of the underlying geology.

U indicates a very weak response just southwest of T. It is circular in shape and might be the remains of a structure, however, the response is so weak that it is difficult to be certain.
5.0 Discussion of Results

Generally, the monument appears to be in good condition and strong positive responses were recorded throughout the site. A number of anomalies were identified both inside and outside the enclosures and this is illustrated in Figure 5 (below).

Figure 5: The plan of the monument with labelled anomalies.

The circular enclosure shows a number of strong responses and the majority of these appear to represent possible pits (L). The line of pits may signify the demarcation of space within the enclosure but without further investigation the character and the function of these features remains unclear.

At least one (U), possibly two (S), responses may be the result of structures within the enclosure. The responses are circular and possibly indicate the presence of roundhouses. The dimensions of these possible features are comparable to those found in the annex, such as C (see below). In comparison, the responses in the circular enclosure are less well defined than those within the annex. There may be several reasons for this difference; the circular enclosure is the highest area within the monument and also the most exposed. This may have made it more vulnerable to weathering and erosion whereas in contrast the features further down slope to the east may have been somewhat protected by the downslope movement of soil. The weak responses might be due to plough damage incurred before the monument was scheduled in 1976. Another alternative explanation, might be that the circular enclosure could have been used very briefly with occupation quickly moving into the larger annex. At Caervallack, the results of geophysical survey observed a similar pattern, with the western round
found to be ‘magnetically quiet’, containing only a few pit-type anomalies, whereas the eastern annex contained a number of linear anomalies and other features (Edwards and Kirkham 2008: 71).

The survey also demonstrates that the circular enclosure was constructed before the annex. The evidence for this stems from the observation that the annex’s enclosure ditch does not extend into the circular enclosure. This suggests two competing interpretations: Firstly, the circular enclosure was constructed, then, not long after this the annex was constructed; and both enclosures were inhabited/used at the same time. Alternatively, the circular enclosure was constructed, inhabited and abandoned. Then, at some subsequent point, the annex was constructed; and people lived there but not in the circular enclosure which might have been used for keeping livestock. However, without further investigation chronological relationship between the two enclosures will remain unanswered.

A comparison of the ditches defining both enclosures illustrates a marked difference between them. The ditch surrounding the annex appears to be twice as large as that defining the circular enclosure. This girth is far more than is required to protect livestock; and, if defence against attack was the main concern, one would have expected to see the circular ditch commensurately enlarged which did not occur. The size of the ditches defining the annex and the monumental entrance (F, V & W) indicate more of a concern with status than with defence.

The survey identified the location of the entrance to the circular enclosure which, notably, is located to the southeast, the same position as the quite complex entrance to the annex. The southeast positioning of both entrances represent a continuity of tradition which specifies the ‘required’ orientation and location in the Iron Age for the placement of entrances (Fitzpatrick 1997: 79). This easterly orientation of enclosure entrances has also been found recently at Padderbury Top (Lewis and Frieman 2014) and at nearby Hall Rings, both of which are thought to date to the Iron Age-Romano British periods. This same pattern can be observed in the western roundhouse (C) in the annex which, again, is a common phenomenon observed throughout roundhouses during the Iron Age (Oswald 1997: 87).

A further reason for the positioning of the entrance to the southeast may be reflected within the local landscape. Figure 6, below, illustrates the location of Bake Rings in relation to other monuments in the area.

Figure 6. The location of Bake Rings with regard to the three local Bronze Age barrow cemeteries.
Similar to today, people in the past lived and worked in landscapes that were ‘palimpsets’ of previous occupations (Van Dyke and Alcock 2003, 1). Highlighted in blue are the location of three barrow cemeteries at Hendra Farm, Wilton Farm and Ashen Cross, all to the southeast of Bake Rings. The siting of the entrance, aligned as it is towards the direction of the earlier monuments, can be taken to demonstrate at the least an awareness of the past within the landscape. The barrows at Hendra would be visible from the entrance at Bake Rings, and, whilst the other two cemeteries would not have been, they do appear to mark a route way across the landscape. The red dashed line denotes the line of a probable track way extending from the entrance of the annex to the point where it joins the present road. Notably, this is the same alignment along which the central ditch in F is aligned. Although it cannot conclusively be proven, it is possible that the original route of the lane (which originates in the southeast at Looe, the closest local harbour) could have carried on towards Bake Rings and, at a later date, this went out of use when new lanes were constructed and the land enclosed.

The survey demonstrated that Bake Rings, similar to the enclosures at Padderbury Top and Bury Down, is not directly connected to any external field system. There are two reasons for this: first, associated field boundaries may not have survived subsequent agricultural activity; however, it would not be unreasonable to expect this to have completely erased all such evidence. Indeed, the presence of the internal and external features found during the survey suggests that subsurface features are reasonably well preserved in this landscape. Alternately, and more likely, the site was always a stand-alone monument. Associated field systems would have been located nearby, but the land immediately adjacent to the enclosures would likely have been used for pasture. The existence of ‘isolated’ field systems from this period has been noted by Young (2013: 91) who demonstrates that they are frequently found in and around the Camel estuary in north Cornwall.
6.0 Conclusion

The objectives of the survey were to undertake a complete magnetic survey of the monument and to establish the character and extent of the subsurface remains. The first objective was successful, only those areas of the monument located under the road or field boundaries were not surveyed.

These results show evidence of habitation characterised by the presence of roundhouses, certainly in the annex and very probably in the circular enclosure. The results also establish the location of the entrances, especially for the circular enclosure, which is not visible on the ground. Furthermore the survey has contributed to the discussion of the role of these sites in the wider landscape, especially in relation to earlier monuments. Many questions still remain, such as the exact chronological relationship between the two enclosures and the definitive character of the anomalies, especially within the circular enclosure. Answering these questions lies beyond the ability of this survey, but this report has highlighted several areas of interest which will hopefully focus future research.
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8.0 References


