A Geophysical Survey of
Bury Down Enclosure
Lanreath
Cornwall

View of Bury Down looking northeast (Heritage Gateway)

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Contents

0.0 List of Figures

1.0. Introduction
   1.1. Rationale
   1.2. Objectives
   1.2. Site Location

2.0 Archaeological Background

3.0. Methodology
   3.1. Magnetometry Survey
   3.2. Resistivity Survey
   3.3. Topographical Survey

4.0. Results
   4.1. Magnetometer Survey
   4.2. Archaeological Anomalies
   4.3. Potential Archaeological Anomalies
   4.4. Resistivity Survey
   4.5. Archaeological Anomalies
   4.6. Potential Archaeological Anomalies
   4.7. Anomalies 15-23
   4.8. Magnetometer Survey outside the inner enclosure
   4.9. Archaeological Anomalies outside the inner enclosure
   4.10. Archaeological Anomalies
   4.11. Possible Archaeological Anomalies
   4.12. Topographical Survey

5.0. Discussion
   5.1. Introduction
   5.2. Inner Enclosure
   5.3. Outer enclosure and beyond
   5.4. Bury Down with the landscape

6.0. Conclusion

7.0. Acknowledgements

8.0. References
0.0 List of Figures

Figure 1. The site location
Figure 2. The result of the geophysical survey presented in greyscale format
Figure 3. Displays the interpretation of the anomalies recorded during the magnetometer survey.
Figure 4. The results of the resistivity survey.
Figure 5. Displays the interpretation of the anomalies recorded during the resistivity survey.
Figure 6. A composite figure illustrating the magnetometer results from both inside the enclosure and features external to the inner enclosure.
Figure 7. A composite figure illustrating the magnetometer results from both inside the enclosure and features external to the inner enclosure. Archaeological and possible archaeological anomalies outside the inner enclosure are depicted as red and blue respectively.
Figure 8. 3D representation of the site.
1.0 Introduction

This report details the results of magnetometer and resistivity survey (License no. SL00103576) and a topographical survey of Bury Down multi-vallate enclosure (NGR SX 1883 5947; SMC 15008), Lanreath, Cornwall. The geophysical survey was undertaken by Peter Nicholas and Les Dodd from the Tamarside Archaeology Group on behalf of Dr Catherine Frieman of the Australian National University (ANU), Canberra, and James Lewis, Glasgow University.

The topographical survey was carried out by Dr Catherine Frieman, Dr Ash Lenton and Jamie Lewis. Both the geophysical and topographical surveys took place during 2015 and 2010 respectively and was undertaken with the consent of the landowners Mr Richard Tamblyn and Ms Julia Tamblyn of Botelet Farm, Lanreath. Both surveys were carried out as part of a wider project of the Southeast Kernow Archaeology Survey (SEKAS).

Bury Down is a prominent hilltop enclosure located in southeast Cornwall. First mentioned by Borlase (1754) but later described by Lysons (1814) as a “camp of irregular form, approaching to a circle”. Lysons also recorded the presence of a beacon within the enclosure which had been constructed in 1804 (1814: ccxlviii). The site is thought to be an Iron Age bivallate enclosure and measures 87m east-west and 95m north-south. It is located on the western side of the highest point in southeast Cornwall, at 202m OD. The inner enclosure is still upstanding, while the outer enclosure is visible as a low bank.

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 south-eastern 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.

Bury Down is one of a number of prehistoric monuments within southeast Cornwall. The location of the enclosure upon the highest point in the area suggests this might have been a place of importance to the local community at that time. Similar enclosures within the area appear not to be located in such noticeable locations, being preferably located off the top of hills and down within valleys. If this site was important to Iron Age and Romano-British communities, any research into southeast Cornwall must try to investigate this monument and place within its wider landscape setting. The two geophysical surveys represent the first stage in this process. The surveys present a non-intrusive investigation to establish the extent and character of the sub-surface features.

The site at Bury Down is a scheduled monument and as such any archaeological investigation requires a Section 42 License. The license was obtained from Mr Samuel Souter, Business Officer of the South West Office English Heritage on the 5th of May 2015 (English Heritage Ref: AA/070945/5/PT1).
1.2 Objectives
The objective of the survey of Bury Down was to:

1. Undertake a full magnetic and resistivity survey of the monument.
2. Establish the character and extent of subsurface remains within the scheduled area.
3. Fully survey the visible upstanding remains of the monument.

1.3 Site Location
Bury Down is located approximately 2.6km northeast of the village of Lanreath, in the parish of Lanreath and is situated in the district of Caradon in southeast Cornwall (Fig. 1).

The monument comprises of a double-ditched enclosure and is sited on a gentle west-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 several 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 site lies c.202m OD and the underlying geology is Lower Devonian Rocks (undifferentiated) - Sandstone and Conglomerate, Interbedded (British Geological Society, 2015).
2.0 Archaeological Background

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).

Cornwall’s Historic Environment Record defines Bury Down as an Iron Age Hillfort and a Neolithic Causewayed enclosure. The interpretation as a causewayed enclosure will be fully discussed in section 5; however, for the purposes of this report, the site will be considered as a hilltop enclosure dating to the Iron Age and Romano-British period. The monument is thought to have been constructed and used at some point between 400BC to 600AD. Recent re-evaluations of historic excavation at Cornish Hillforts and Cliff Castles suggest that these sites were largely built and occupied in the latter half of the 1st millennium BC, and that, while structural remains indicate occupation layers, they may have had more complex functions linked to specialist technologies and trade (Quinnell 2004; Quinnell and Harris 1985; Nowakowski 2011; Nowakowski and Quinnell 2011).

Within the wider area, 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). In recent years geophysical surveys have been undertaken at Padderbury Top, Menheniot, Bake Rings and Hall Rings, Pelynt. The features recorded within these monuments include enclosure ditches, roundhouses and pits (Lewis and Frieman 2014; Lewis and Frieman 2015; Lewis and Frieman 2016).

Archaeological work carried out at Bury Down includes geophysical survey and excavation by Keith Ray (Ray 1994; 2001). Ray’s geophysical survey revealed evidence of interior features and the segmentation of the outer ditch. He interpreted these as the remains of a Neolithic causewayed enclosure which, in turn, surrounds the extant later Iron Age enclosure (Ray 2001:55; Whittle et al. 2011: 476). Stabilisation work was also undertaken along the inner bank; however, no excavation was carried out but localised plans and sections were drawn (Preston-Jones 1996).
3.0 Methodology

3.1. Magnetic Survey
A magnetic survey was undertaken at Bury Down, the survey employed 20 x 20m grids which were sited using an EDM and extended in a north-south direction. A total of 71 grids were surveyed for the magnetic assessment, with the survey covering a total area of 2.84 hectares. The survey used a Geoscan 256 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).

The magnetometer data was processed using Geoscan’s Geoplot software. 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 results are presented in this report in greyscale format.

3.2. Resistivity Survey
The resistivity survey employed 20 x 20m grids and these were sited using an EDM and extended in a north-south direction. A total of 30 grids were surveyed, with the survey covering a total area of 1.2 ha. The survey used a Geoscan RM15 Resistance meter and the survey was conducted using parallel and zig zag traverses at 1 metre separation and sample intervals of 1metre. Post processing of the data was carried out using Geoscan's Geoplot Software.

The raw resistance data was collected in units of Ohms. On downloading the data was subject to initial review and processing to identify spikes and geological noise. The data was then clipped to 3SD, noise spikes were removed and the grids edge matched. The data was then converted to resistivity data (units of Ohm/metres) using the standard multiplier of 1.5707. Further processing was then carried out using a High Pass filter to remove gradient and Interpolation to smooth and enhance the data presentation.

Anomalies detected using the resistivity 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 results are presented in this report in greyscale format.

3.3 Topographical Survey
The topographical survey was carried out using a EDM (Leica Flexline TS02). A total area of ca. 5ha was surveyed, covering the entirety of the visible upstanding monument and a broad area outside it. The survey was carried out using an EDM which recorded a total of 798 points which covered the upstanding and visible remains of the monument. The point data was used to generate a TIN in ArcGIS, with a 3-D surface being prepared from this TIN in ArcScene.
4.0 Results
4.1. Magnetometer Survey
Figures 2 and 3 display the results of the magnetometer survey.

Figure 2: The result of the geophysical survey presented in greyscale format.

Figure 3: Displays the interpretation of the anomalies recorded during the magnetometer survey.
4.2. Archaeological Anomalies

Anomalies 1 and 2 are the remains of a compacted trackway which begins outside the west side of the enclosure and continues through towards the eastern ‘entrance’. Anomaly 3 is located in the centre of the monument; however, this is most likely the remains of a jubilee beacon fire which one of the authors (JL) recalls being placed here in 1977 to mark the 25-year jubilee of the Queen.

4.3. Potential Archaeological Anomalies

Two anomalies, 4 and 5, which might possibly be archaeological features were recorded outside the western entrance. These are semi-circular and measure 10m and 15m long, respectively. These two features might be the remains of a monumental entrance. Located inside the west entrance is an anomaly (6) that presented a strong response. This might possibly be a pit or related to the two strong ferrous responses immediately north of this feature.

Within the enclosure, three anomalies (7, 8 & 9) might represent archaeological features. What these might be is unclear; one of these features might represent the remains of the 1804 beacon which was recorded by Lysons or they might be geological anomalies.

4.4. Resistivity Survey

![Bury Camp Resistivity](image)

Figure 4: The results of the resistivity survey.
4.5. Archaeological Anomalies
Only anomalies 1 and 2 which were found during the magnetometer survey are recorded in the resistivity survey. These anomalies represent the remains of a compacted trackway which begins outside the west side of the enclosure and continues through towards the eastern “entrance”.

4.6. Potential Archaeological Anomalies
Anomaly 7 from the magnetometer survey is also present in the resistivity survey. Anomaly 10 appears to be a solid object and is in the ditch immediately outside the eastern entrance. Anomalies 11, 12, 13 & 14 are located on both sides of the western entrance. These anomalies may represent either or both human and natural activity at the site. For example, they may be archaeological deposits representing bedding stones for post holes which may have formed a gate of some kind. Alternately, they might represent episodes of slippage and erosion from the banks around the entrance. Finally, they might be the result of the stabilisation work which was carried out in 1996 by Preston-Jones (1996).

4.7. Anomalies 15-23
Anomalies 15-23 represent stony areas and episodes of tumble within the fort. They are not thought to be archaeological in nature.
4.8. Magnetometer Survey outside the inner enclosure

Figure 6: A composite figure illustrating the magnetometer results from both inside the enclosure and features external to the inner enclosure.
4.9. Archaeological Anomalies outside the inner enclosure
The survey recorded seven definite archaeological anomalies (red) and seven potential archaeological anomalies (blue) located outside the inner enclosure.

4.10. Archaeological Anomalies
Anomalies 24 and 25 represent the remains of the outer ditch. This feature appears not to encompass the whole of the inner ditch but terminates to the south of the enclosure. In plan, the outer ditch is U-shaped with the open end facing southwest. The recorded remains of the outer ditch measures c.360m however the ditch can be followed on the ground in the areas which have not been surveyed.

Twenty six is a northwest-southeast aligned linear feature which measures c.70m long. It appears to truncate the outer ditch (25), suggesting a later date, and is almost certainly connected to right-angled anomaly 27. This anomaly is aligned NW-SE and turns at a right-angle NE-SW and continues beyond the east edge of the survey area. This anomaly also extends beyond the southern edge of the survey area. Both anomalies are truncated by a 19th century field boundary.
Twenty Eight is a small E-W aligned linear anomaly and which displays a slight curve. It measures c.25m long. To the southwest is a curvilinear anomaly 29 which measures c.25m long. It is possible that these two anomalies (28 & 29) connect or are associated with each other; however, further work need to be carried out to establish this. Anomaly 30 is a right-angled feature which appears to extend from the southern edge of the survey area. This measures at least 85m long.

4.11. Possible Archaeological Anomalies

Thirty one appears to be a possible circular feature located immediately to the southwest of 29. It appears to contain internal features and measures over 20m in diameter. The signal is does not appear to be very strong and its shape is irregular.

Anomalies 32, 34 and 35 are slight linear features which are aligned NE-SW, these are most likely to be the remains of plough furrows or lynchets. Thirty-Three is a small cluster of vague U-shaped features located within and next to 32 and 34 and might represent sheep folds.

4.12 Topographical Survey

The results of the topographical survey showed the inner enclosure in good condition.

![Figure 8: 3D representation of the site.](image)

Figure 8 depicts a 3D representation of the site. It clearly shows the main entrance (37) located at the east of the site and the opposite entrance (38) is much less clearly defined.

Thirty-nine, depicts the inner enclosure in a very good state of perseverance the bank is upstanding and the ditch is still partially open. This is opposed to the outer ditch (40) where bank has almost eroded away and the ditch is filled in. Figure 8 does illustrate the outer ditch as a complete circuit and can be clearly seen continuing around the inner enclosure.
5.0 Discussion

5.1 Introduction
The monument appears to be in good condition and strong positive responses were recorded throughout the site. During the 20th century the monument was ploughed; however, in recent years, the site has been used for pasture and this is a permanent arrangement (Richard Tamblyn pers comm). A number of anomalies were identified both inside and outside the enclosures. It is not the intention here to discuss each individual anomaly but to compare the results here with other similar sites within the area.

5.2 Inner Enclosure
Both Magnetometry and Resistivity survey were only carried out within the inner enclosure. Within the inner enclosure at Bury Down three (1, 2 & 3) definite archaeological anomalies were identified. 1 and 2 represent the remains of a compacted trackway which probably originated at the time of initial use of the monument and which remains visible as a slightly depressed footpath in the present day. Three is most likely to be the remains of a jubilee celebration from 1977 at which JL was present.

The lack of internal structures or other archaeological anomalies is notable when compared to other recently surveyed sites. The enclosures at Bake Rings, Hall Rings and Padderbury Top have all contained several internal anomalies which could be identified as structures pits (Lewis and Frieman 2014; Lewis and Frieman 2015; Lewis and Frieman 2016). These sites display elements of what we would expect to observe if a settlement had existed at or within these sites. These elements have not been observed at Bury Down, and so far this suggests the site was not used for settlement.

5.3. Outer Enclosure and beyond
The magnetometry survey was undertaken outside the inner enclosure and this covered approximately 60% of the immediate environment. The survey established the position of the outer ditch termini (24 & 25) and recorded a small number of other anomalies. Notably the outer ditch does not fully circumvent the inner ditch, and appears to be U-shaped with a large gap facing southwest. Furthermore, it does not appear to be as ‘neat’ as the inner ditch, an observation which contrasts with Padderbury Top where each successive ditch is well ordered, in sequence and reflects the shape of the hill. This apparent difference between the inner and outer ditch might indicate a different date for the construction of the two structures.

Although inner and outer ditches might be different dates, the outer ditch at least does not appear to be a causewayed enclosure as previously suggested by Ray (1994b, 2001). There are several reasons to discount the causewayed enclosure hypothesis; first, the outer ditch, as recorded by the magnetometry and topographical surveys is continuous and not segmented. Secondly, during Ray’s limited excavations of the outer ditch no artefacts such as Neolithic pottery, animal bone or flint normally associated with such a site was recovered. Finally, Ray’s (2001: fig. 4.4) own published profile of a deep V-shaped ditch which contained the burnt remains of a possible ‘palisade’ together indicate this is not a causewayed enclosure, but a ditch with some other purpose.

Despite a wide gap between the inner and outer enclosure, between 20 to 30m in some areas, no anomalies except 26, which appears to be a later linear feature, were recorded. The gap between the ditches is noteworthy in comparison to Hall Rings and Padderbury Top as, at these two sites, the ditches almost abut each other and there are no large gaps between each ditch. Between the two termini of the outer ditch, two anomalies have so far been recorded, 28 and 30. Twenty eight is probably associated with 29 as both anomalies appear to be on the same alignment. Unlike 26 and 30 these anomalies (28 & 29) appear to be a curvilinear feature which might suggest a prehistoric date. Thirty appears to be the corner of a rectangular field, although it is possible it could be the corner of a structural feature, such as a Roman camp, as this location would be an ideal position from which to observe and dominate the local area.
5.4. Bury Down in the Landscape

Bury Down, as noted, is located on the highest point in the area and certainly occupies a ‘visually arresting or dominant’ location (Briault in Lake 2007:2) The enclosure would have been far more noticeable at that time than other comparable monuments in the area, such as Hall Rings and Bake Rings. Furthermore the ridge on which Bury Down is located is aligned north-south, beginning from the coast in the south and leading to an area of high ground 4km north of the site. From here, one has several options depending upon where they would want to go, an individual could either continue north to Bodmin Moor or turn west and carry on further into Cornwall or east. A parallel for Bury Down’s position adjacent to a ridgeway can be found in the nearby Castle Dore, a multi-vallate circular enclosure site with Iron Age settlement evidence located on a hilltop near the navigable Fowey River and on “the Saints Way”, the north-south ridgeway route between Padstow and Fowey.

There is no record of any earlier activity preceding the enclosure; however, given its prominence, it is difficult to think that this hilltop was overlooked by prehistoric people. In modern times beacons have been lit to celebrate jubilees and the millennium and Lysons recorded the existence of a beacon there in 1804 (Lysons 1814), possibly to warn against invasion. The lighting of fires and attendant celebrations could have taken place there in prehistory as well, and only a systematic investigation of the hilltop would find evidence for this. The construction of the enclosure emphasised this location, made it more visible (Bradley 2000: 106) and, as such, was perhaps reinforcing the idea of it being a gathering place. A similar conclusion has been reached by Mitchem who studied Hampshire hill forts (2002: 79).

The authors themselves can attest to the exposure of the site to inclement weather and all wondered out loud whilst being buffeted by wind and rain if the monument was a settlement site! Thus far, evidence indicates Bury Down to have been a meeting or gathering place as opposed to a settlement. The survey revealed a lack of archaeological anomalies usually associated with settlement activity and the exposed location itself appear to mitigate against this being a place where people lived. It is further unlikely that the outer ditch represents a Neolithic causewayed enclosure; although it was possibly not built at the same time as the inner bank and ditch and, without excavation, its date and the chronological sequencing of these features cannot be established.

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 only partially successful, however enough of the area was surveyed to allow some tentative discussion.

Future research must focus upon completing and widening the geophysical survey. As noted above, although there is no evidence thus far of activity before the Iron Age, it is improbable that this landscape feature was overlooked during these periods. A more comprehensive survey focusing on the areas to the south and east would help answer these questions.

Many questions still remain, such as the exact chronological relationship between the two enclosures and the definitive character of the anomalies, outside the enclosures. Answering these questions lies beyond the ability of a geophysical survey and can be only answered by excavation. It is very frustrating there is no fully published report from Ray’s work in the 1990s. The site would benefit from a small targeted excavation through which dating and environmental samples could be obtained. This would present us with a deeper understanding of the site and enable it to be placed within its local and regional context.
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